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Surface Water, Sediment, and Groundwater Sampling Report September 2002 McCormick & Baxter Creosoting Company Site Portland, Oregon

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List of Abbreviations and Acronyms

Acronym	Definition
ACLs	alternative cleanup levels
B-a-P	benzo(a)pyrene
BGS	below ground surface
°C	degrees Celsius
COCs	contaminants of concern
CPAHs	carcinogenic polynuclear aromatic hydrocarbons
DEQ	Oregon Department of Environmental Quality
DGTs	diffusive gel thinfilms
DNAPL	denser-than-water nonaqueous phase liquid
E & E	Ecology and Environment, Inc.
EPA	United States Environmental Protection Agency
FSPs	field sampling plans
ft/ft	foot per foot
FWDA	former waste disposal area
HPAHs	high-molecular-weight PAHs
LNAPL	lighter-than-water nonaqueous phase liquid
LPAHs	light-molecular-weight PAHs
McCormick & Baxter	McCormick & Baxter Creosoting Company
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/L	milligrams per liter
MSD	matrix spike duplicate
NAPL	nonaqueous phase liquid
NCA	North Creek Analytical, Inc.
NGVD	National Geodetic Vertical Datum
OSU	Oregon State University

List of Abbreviations and Acronyms (Cont.)

Acronym	Definition
PAHs	polynuclear aromatic hydrocarbons
PCP	pentachlorophenol
QA	quality assurance
QC	quality control
RAs	remedial actions
RPDs	relative percent differences
SIM	selective ion monitoring
SPMDs	semi-permeable membrane devices
SVOCs	semivolatile organic compounds
TCDD	tetrachlorodibenzo-p-dioxin
TEQ	toxic equivalency quotient
TFA	tank farm area
TICs	tentatively identified compounds
TSS	total suspended solids

1 Introduction

Ecology and Environment, Inc. (E & E) under contract with the Oregon Department of Environmental Quality (DEQ), prepared this September sampling event and remedial actions (RAs) semiannual report for the McCormick & Baxter Creosoting Company (McCormick & Baxter), Portland Plant, site located in Portland, Oregon (Figure 1). The site, a former wood-treating facility, is located along the Willamette River at 6900 North Edgewater Street. This document was prepared under Task Order No. 88-97-39.

This document describes the September 2002 sampling event, which took place from September 5 to 26, 2002. The sampling event was a joint effort between the United States Environmental Protection Agency (EPA), Region 10; DEQ; and Dr. Kim Anderson, Oregon State University (OSU), to collect surface water, pore water, groundwater, and sediment samples for analysis of polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), and metals (arsenic, chromium, copper, and zinc). Also described in this document are routine E & E site activities that occurred from July 1 to December 31, 2002. These activities usually are documented in a separate semiannual report.

The purpose of this report is to present data collected by DEQ and EPA field teams during September 2002. The interpretation of the data contained in this report will be presented in subsequent documents.

1.1 Scope of Investigation

The purpose of the sampling efforts was to provide data for the following interpretive objectives:

- To evaluate the interface zone between the site groundwater and the Willamette River adjacent to the site;
- To define baseline conditions before construction of the subsurface barrier wall and sediment cap;
- To continue monitoring of site groundwater;
- To assess potential water quality impacts to the Willamette River;

- To evaluate the extent of surface water impacts (i.e., mixing zone);
- To further the understanding of groundwater/surface water interactions;
- To assess the relationship between bulk sediment chemistry and pore water chemistry;
- To evaluate the protectiveness of the proposed sediment cap;
- To determine surface water concentrations upstream of the McCormick & Baxter site;
- To aid in re-evaluation of groundwater cleanup goals by testing the current conceptual site model; and
- To test and assess various surface water and porewater sampling techniques for development of a long-term monitoring plan for the sediment cap.

1.2 Report Organization

Following this introduction (Section 1), the surface water, sediment, and groundwater sampling report is organized as follows:

- **Section 2, "Sampling Methodologies."** This section presents the site sample locations, sampling methodologies, and analytical schedules;
- **Section 3, "Summary of Results."** This section presents the results from the sampling event and includes the surface water, pore water, sediment, and groundwater media. The routine activities usually described in a separate semiannual report also are addressed in Section 3. Specifically, this section describes the nonaqueous phase liquid (NAPL) monitoring and extraction activities, and semiannual groundwater monitoring; and
- **Section 4, "Summary."** This section presents a summary of the results discussed in Section 3.

Tables and figures are included in tabbed sections at the end of the text portion of the report.

The following appendices supplement the text:

- **Appendix A.** This appendix contains copies of the field sampling plans (FSPs), used by EPA, Region 10, and DEQ, and the analytical report produced by OSU;

- **Appendix B.** This appendix contains a copy of the certified laboratory analytical data including EPA, Region 10, and E & E memoranda evaluating the laboratory data for the September 2002 event;
- **Appendix C.** Tide charts and plots of transducer data are contained in this appendix;
- **Appendix D.** A summary of site activities performed during the semiannual reporting period is included in this appendix;
- **Appendix E.** Certified laboratory analytical data for the semiannual reporting are contained in this appendix; and
- **Appendix F.** This appendix contains tables of all analytical data for samples of all media types.

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2 Sampling Methodologies

This section describes the methodologies used to collect surface water, pore water, sediment, and groundwater samples during the September 2002 sampling event. In addition, this section describes the methods used to collect groundwater samples from upland site wells as part of the RAs semiannual reporting requirement.

2.1 Methodologies

Field sampling at the McCormick and Baxter site began the week of September 2, 2002. Field sampling teams from EPA Region 10, ODEQ, and OSU completed the sampling that included the following elements:

- Two EPA, Region 10, teams (one shore and one dive team) collected surface water grab samples, pore water samples, and sediment samples. Shore samples were collected adjacent to the river and in less than 3 feet of water;

- The ODEQ field team collected sediment samples along the shore using a hand auger, pore water samples, and grab surface water samples. DEQ collected groundwater samples using nested mini-piezometers and pore water samples using flux chamber methods. DEQ samples were collected from identified NAPL seep areas. DEQ also installed transducers in a stilling well at the railroad bridge and in monitoring well MW35s in Willamette Cove; and

- OSU collected grab surface water samples, deployed and collected passive sampling devices for surface water samples. OSU surface water sampling was completed over a two-week period using semi-permeable membrane devices (SPMDs) and diffusive gel thinfilms (DGTs). On behalf of DEQ, OSU collected surface water grab samples at six of the SPMD locations at the time of deployment. OSU also collected surface water grab samples when the SPMDs and DGTs were collected.

Sample collection took place during ebb tide, with the exception of OSU sampling, to ensure that water would be collected at a time when groundwater was discharging to surface water. The FSP's used by EPA and DEQ, and OSU's analytical report, are in Appendix A.

E & E collected groundwater samples at upland site monitoring wells for semiannual reporting requirements simultaneously with the September 2002 sampling.

E & E collected groundwater samples at upland site monitoring wells for semiannual reporting requirements simultaneously with the September 2002 sampling.

2.2 Sample Location Selection

Sampling sites were selected based on the location of the proposed sediment cap and on the locations of previously identified seeps immediately adjacent to the site at the former waste disposal area (FWDA), near the creosote dock, and in Willamette Cove (Figure 2a). All sampling sites were located geographically using a Global Positioning System (Table 2). Figures 2b, 2c, and 2d correspond to magnified views of creosote dock, FWDA, and Willamette Cove sections of Figure 2a.

2.2.1 Sample Collection Methods – EPA, Region 10, and DEQ

The EPA, Region 10, shore team collected pore water samples along the shoreline/mudflats area using a (MHE) push-point sampling tool. The MHE push-point sampling tool was pushed into the subsurface, the screen was exposed, and a peristaltic pump then was used to bring the pore water sample to the surface and directly into the sample container. The shore team also collected a single sediment sample. The EPA, Region 10, dive team collected co-located surface water grab, pore water, and sediment samples. The pore water (or subtidal seepage) samples were collected using an MHE sampling tool.

For the EPA, Region 10, dive and shore teams, quality control (QC) samples, including one duplicate, one matrix spike duplicate (MSD) with additional volume, and one blank sample, were collected per sampling day for each team.

DEQ collected pore water samples from locations near the FWDA, the creosote dock, and Willamette Cove using flux chamber methods. The cut-off top of a 55-gallon drum was pushed into the sediment, allowing no residual air inside. A 1-liter collection bag with a known volume of river water was connected to the seepage drum for a known time period, then removed.

DEQ collected groundwater samples near the same areas where pore water samples were collected, using nested mini-piezometers installed to depths of approximately 14 inches, 36 inches, and 72 inches below ground surface (BGS).

DEQ collected four sediment samples from two hand auger locations (MBHA-1, MBHA-2) south of the railroad bridge near MW-31s and MW-25s. Sediment samples were collected at one-foot and three feet BGS in this location based on the visual observation of a NAPL seep. Sediment samples were submitted to North Creek Analytical Laboratory in Beaverton, Oregon for Northwest total petroleum hydrocarbons diesel range (NWTPH-Dx).

The field sampling plan for EPA and DEQ sampling is presented in Appendix A.

2.2.2 Sample Collection Methods – OSU

OSU deployed SPMDs, also called passive sampling devices, for in situ monitoring of aquatic bioavailable PAHs and PCP at McCormick & Baxter on September 12, 2002. The SPMDs sample only organic chemicals in solution (dissolved), excluding those sorbed on organic matter or particulates. DGTs also were deployed on September 12, 2002, and used for quantitative determination of in situ labile metals in solution. DGTs were attached to the SPMD cages. All cages were deployed 1 foot from the riverbed. Four of the samplers (SPMD-7, SPMD-11, SPMD-13, and SPMD-15) were attached to permanent structures.

SPMDs and DGTs were retrieved on September 26, 2002. SPMD-13 could not be located at the time of sampler retrieval. All SPMD samples were placed in prelabeled amber jars and stored in a cooler with ice packs. The DGTs were collected in prelabeled sealable plastic bags and stored in a cooler with ice packs. Once samples were returned to the laboratory, they were stored at –20 degrees Celsius (°C) until analysis.

Surface water samples were grabbed on September 26, 2002, from the same locations as those of the SPMD and DGT deployments. All grab samples were collected from 1 foot above the riverbed. Water samples were collected in 250-milliliter high-density polyethylene bottles and preserved on ice at 4°C.

OSU collected and analyzed trip blanks, duplicates, laboratory blanks, and fortified samples for DGT and SPMD sampling.

2.2.3 Semiannual Groundwater Sample Collection Methods

As part of the semiannual monitoring performed at the site, groundwater samples are collected from select monitoring wells. Groundwater samples were collected from 14 monitoring wells to coincide with the surface water, sediment, and pore water sampling performed downgradient of the tank farm area (TFA) and FWDA, and in Willamette Cove. The wells sampled include MW-Ks, MW-LRs, MW-Os, MW-2s, MW-3s, MW-4s, MW-5s, MW-8i, MW-13i, MW-18s, MW-23d, MW-25s, MW-35s, and MW-31s. Groundwater samples were collected from 13 of the 14 wells using submersible pumps (Grundfos Redi-Flow 2) with disposable, clear, flexible polyvinyl chloride tubing. Groundwater was collected from monitoring well MW-Os using a dedicated hand bailer because the well is not plumb, and is constructed with collars at the well joints that inhibit the

Grundfos pump from being lowered to the well screen. Quality assurance (QA)/QC samples, including a rinsate sample, a blind field duplicate sample, and a matrix spike/MSD sample, were submitted to North Creek Analytical, Inc., (NCA), of Portland, for analysis of target metals and semivolatile organic compounds (SVOCs). One duplicate sample was collected from well MW-5 during the sampling event.

2.2.4 Seep Delineation Methods

NAPL seeps were identified by walking along the shoreline and observing NAPL bursts on the sand beach as a result of tidal pumping. In addition, a clam tube and hand auger was used to dig along the shoreline to approximately 24-inches. Product was observed entering the borehole in several locations. The extent of the seeps was identified by visual product seeping into the cores and each seep length was measured and recorded.

2.2.5 Tidal Monitoring

During the field investigation a stilling well was installed beneath the railroad bridge. A two-inch black pipe was attached to a piling in about one foot of water. The bottom end of the pipe was open and slots were cut in the lower 10-inches of the pipe to allow water infiltration. A pressure transducer was installed within the pipe and recorded river stage fluctuation during September 10, 2002. Appendix C contains transducer data that was recorded on September 10, 2004 from 08:00 to 17:00 hours. A pressure transducer was also installed in monitoring well MW-35s, located on the bluff near the railroad in Willamette Cove. The transducer recorded water levels from 08:15 to 18:00 hours on September 10, 2002 (Appendix C).

2.3 Laboratory Analysis

All surface water, pore water, and sediment samples collected by the EPA were analyzed for PAHs and PCP. Samples collected by the EPA, Region 10, shore and dive teams were analyzed by the EPA, Region 10, Manchester Environmental Laboratory, located in Port Orchard, Washington. Samples for all media types were analyzed for PAHs by EPA Method 8270 with selective ion monitoring (SIM). Samples also were analyzed for PCP by EPA Method 8041 and for mercury by EPA Method 1631B. Surface water samples were analyzed for total suspended solids (TSS; Appendix F). The EPA, Region 10, laboratory QA memoranda are provided in Appendix B at the beginning of each laboratory data packet. ODEQ groundwater and sediment samples were analyzed by North Creek Analytical (NCA) of Beaverton, Oregon.

All pore water (flux chamber) and groundwater (MHE) samples collected by DEQ and surface water grab samples collected for DEQ by OSU were analyzed for PAHs by EPA Method 8270-SIM at NCA. Some pore water and surface water grab samples also were analyzed for SVOCs by EPA Method 8270C, diesel range and heavy oil range total petroleum hydrocarbons (Method NWTPH-Dx), and tentatively identified compounds (TICs). Surface water grab samples collected

for DEQ by OSU also were analyzed for arsenic, chromium, copper, and zinc by EPA 6000/7000 Series Methods for total metals. An E & E QA memorandum for the NCA laboratory analyses is provided in Appendix B at the beginning of the NCA laboratory data packets.

SPMD samples collected by OSU were analyzed for PAHs, PCP, trivalent arsenic (As^{+3}), chromium, copper, and zinc at the OSU laboratory. Surface water grab samples were analyzed only for As^{+3}, chromium, copper, and zinc at the OSU laboratory. Laboratory QC is discussed in OSU's analytical report (pp. 11-12) provided in Appendix A.

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3 Summary of Results

This section summarizes the results of the September 2002 sampling event. Sample results are presented by media type. In addition, the semiannual data collection at the McCormick & Baxter site, including NAPL monitoring and extraction, are summarized in this section.

3.1 Seep Delineation

Prior to field sampling, LNAPL seeps were identified by the DEQ shore team on September 9, 2002. Four distinct seeps were visually identified by using a clam tube and digging to a depth of 24-inches BGS. Figure 2e shows the approximate location of each seep. One seep was located within Willamette Cove between the wood pilings. This seep was not noted until passing boats disturbed the shoreline and sheen bursts were observed on the sandy beach. The second seep was observed south of the railroad bridge in the vicinity of MW-25s and MW-31s. This seep was approximately 70 feet long. Two hand augers were used to collect sediment samples (MBHA-1 and MBHA-2) within this seep (see Section 3.4). This seep contained faint creosote odor and some visible product within the silt lenses. The third seep was located approximately 120 feet upstream of MW-31s. The product was observed to be concentrated within the wood debris layers. The fourth seep is located upstream of the former creosote dock. This seep was determined to be approximately 120 long and the product was observed in a dark gray sand unit.

3.2 Analytical Field Sampling Results

The following section summarizes the field sampling conducted at the site during September 2002. Table 1 lists the media sampled, types of sampling and sample designations used by the field sampling teams. The following list summarizes the media types and sample names for the samples collected by each group participating in the September 2002 sampling event:

- The EPA, Region 10, shore team collected seven pore water samples (Beach B-1 [EPA-SH-1], EPA [SH] 2, EPA [SH] 3, EPA [SH] 4, EPA [SH] 5, EPA [SH] 7, and EPA [SH] 8) and one sediment sample (EPA [SH] 6);

- The EPA, Region 10, dive team collected nine sediment samples (SED-1 through SED-9), nine surface water samples (SED-1 through SED-9), and four pore water samples (SED-3, SED-4, SED-5, and SED-7). Samples for all media types were co-located;
- OSU collected 19 SPMD samples (SPMD-1 through SPMD-12 and SPMD-14 through SPMD-20; SPMD-13 was lost), 20 surface water grab samples (SPMD-1 through SPMD-20), and 19 DGT samples (SPMD-1 through SPMD-20). All sample types were co-located at the 20 collection points; and
- DEQ collected six pore water samples (CreoDock N. Drum, CreoDock North Flux, CreoDock S. Drum, FWDA-Flux, WC1-Flux, and WC-Blue-Flux) and nine groundwater samples (ODEQ [SH-1] through ODEQ [SH-9]). OSU collected six filtered and unfiltered surface water grab samples (SPMD-1, SPMD-2, SPMD-5, SPMD-11, SPMD-15, and SPMD-20) for DEQ. The surface water samples were collected from the same locations as those of the OSU samples.

The contaminants of concern (COCs), identified in the EPA, Region 10, *Record of Decision* (1996) for McCormick & Baxter, are listed in Table 3. Tables within the report list only COCs. Tables of the complete analytical data are presented in Appendix F.

3.2.1 Surface Water

Surface water samples were collected by the following field teams:

- EPA Dive Team collected grab surface water samples;
- The OSU field team collected grab surface water samples;
- The OSU field sampling team collected surface water with the passive sampling devices (SPMDs). These samples were collected in the same sampling location as the SPMDs; and
- ODEQ had grab surface water samples collected by OSU. These samples were analyzed by NCA.

Two types of surface water samples were collected: grab and SPMD. The collection times represented by the grab samples in comparison to those of the SPMD samples are quite different, as described in Section 2. The analyses for these different groups of surface water samples are addressed separately. COC analytical results for surface water are presented in Table 4. Results for all analyzed constituents in surface water are presented in Appendix F.

3.2.1.1 Surface Water Grab Samples

A total of 41 surface water grab samples were collected by the EPA dive team, DEQ field team, and the OSU field team. Sample results are presented in Table 4. All samples collected from the various field teams were analyzed for PAHs and

PCP, except the OSU surface water grab samples. Figure 3a shows the sample locations and concentrations of acenaphthene, phenanthrene, and total PAHs for surface water grab samples. The following PAHs (included in the list of COCs) were detected in the grab samples: acenaphthene, benzo(a)anthracene, chrysene, fluoranthene, phenanthrene, and pyrene. The most commonly detected PAH (COC) was fluoranthene, with concentrations ranging from 0.0041microgramos per liter (µg/L) at SED-5 to 0.032 µg/L at SED-3. The PAH (COC) with the highest concentration was phenanthrene at 22.7 µg/L (SED-6). Samples were also analyzed for metals including arsenic, chromium, copper, and zinc.

3.2.1.2 EPA Dive Team Grab Sample Results

The EPA dive team collected nine grab surface water samples (SED-1 through SED-9). Table 4 presents the grab surface water results.

PAH Results

Detections of total PAHs (COCs) for grab samples ranged from 0.0041 µg/L at SED-5 to 61.5 µg/L at SED-6 (Table 4). Grab sample SED-6 was collected offshore and slightly upstream of the NAPL seep identified near the FWDA (Figure 3a). Total carcinogenic PAHs ranged from non-detect at 0.0080 at SED-9 to 4.22 at SED-6.

PCP Results

PCP was detected in 5 of the 21 surface water grab samples analyzed for PCP. Detections of PCP ranged from 0.025 µg/L in SED-8 to 0.079 µg/L in SED-3. Detection limits for PCP in samples from SED-1 through SED-9 averaged 0.019 µg/L.

Metals Results

Metals concentrations were detected in all nine grab surface water samples. Samples were analyzed for Arsenic, Chromium, copper, and zinc. Copper and zinc were detected in all of the surface water grab samples. Copper concentrations ranged from 2.0 µg/L at SED-1 to 20.9 µg/L at SED-7. Zinc concentrations ranged from 4.7 µg/L at SED-1 to 18.1 µg/L at SED-9 (Table 4).

3.2.1.3 OSU Grab Surface Water Sample Results

OSU collected 20 grab surface water samples (SPMD-1 through SPMD-20). Surface water grab samples were unfiltered and analyzed for metals only.

Metals Results

The surface water grab samples were analyzed for trivalent arsenic (As^{+3}), chromium, copper, and zinc. Arsenic or zinc was not detected in any of the OSU surface water grab samples (Table 4). The detection limit for arsenic and zinc was 0.005 µg/L. Chromium was detected in 15 of the 20 surface water grab samples. Detections of chromium ranged from 0.01 µg/L at several sample locations to 0.04 µg/L at SPMD-11. Copper was detected in all 20 of the SPMD surface water

grab samples, with concentrations ranging from 0.95 µg/L at SPMD-14 to 1.70 µg/L at SPMD-3, which is located upstream of the site (Figure 2a).

3.2.1.4 ODEQ Grab Sample Results

The DEQ field team collected six filtered and six unfiltered grab surface water samples. The samples were collected at the OSU corresponding sample locations (SPMD-1, SPMD-2, SPMD-5, SPMD-11, SPMD-15, and SPMD-20). The samples were collected at these locations to determine differences in contaminant concentrations between filtered and unfiltered samples and comparison to the OSU SPMD surface water samples.

PAH Results

PAHs were detected in only one sample (SPMD-15). Fluoranthene was detected at SPMD-15 at concentrations of 0.0313 µg/L in the unfiltered sample, and 0.0595 µg/L in the filtered sample. PAHs were only detected in the duplicate sample. Pyrene was detected in the filtered sample at a concentration of 0.0423 µg/L.

PCP Results

Pentachlorophenol results were below the method reporting limit of 0.236 µg/L for both the filtered and unfiltered samples collected.

Metals Results

The DEQ filtered and unfiltered samples also were analyzed for arsenic, chromium, copper, and zinc. Grab samples were filtered for direct comparison to SPMD samples. Chromium, copper, and zinc were detected in the unfiltered grab samples collected by DEQ. Copper was detected in the filtered DEQ grab samples, with concentrations ranging from 0.00141 µg/L to 0.00257 µg/L. SPMD-5 was the only sample with a detection of arsenic (0.00121 µg/L). Detection limits for arsenic were generally 0.001 µg/L.

3.2.1.5 SPMD Surface Water Samples

Nineteen surface water SPMD samples (SPMD-1 through SPMD-12 and SPMD-14 through SPMD-20) were collected at the site using passive sampling devices. SPMD-13 could not be located at the time of sampler retrieval. All SPMD samples were analyzed for PAHs and PCP. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for SPMD surface water samples is presented in Figure 3b. The DGT samples (SPMD-1 through SPMD-20) associated with the SPMDs were analyzed for arsenic (As^{+3}), chromium, copper, and zinc. Analytical results for all surface water samples are presented in Table 4.

PAH Results

PAHs were detected in all SPMD surface water samples. Total PAHs (COCs) ranged from 0.1652 µg/L at SPMD-3 to 1.37 µg/L at SPMD-15. Sample SPMD-15, the sample with the highest concentration of total PAHs, was collected

at the NAPL seep in Willamette Cove. The lowest detection was from sample SPMD-3, located upstream of the site.

PCP Results

Results for analyses of SPMD samples for PCP indicated that all samples were below detection limits.

Metals Results

Similar to the grab surface water samples, arsenic and zinc were not detected in any of the SPMD surface water samples (Table 4). The detection limit for arsenic and zinc was 0.002 µg/L. Chromium was detected in 9 of the 19 SPMD samples. Detections of chromium ranged from 0.26 µg/L at SPMD-14 to 0.54 µg/L at SPMD-11. Detection limits for chromium were 0.2 µg/L. Copper was detected in three of the 19 SPMD grab samples, with concentrations ranging from 0.01 to 0.03 µg/L. The highest detection for copper was in SPMD-4, within the sediment cap area on the upstream end of the site.

3.2.1.6 Comparison of Grab versus SPMD Surface Water Samples

Total PAHs were compared between the grab and passive sampling devices. In general, total PAHs concentrations were significantly higher for samples collected with the passive sampling devises (SPMDs). Total PAH concentrations on average were an order of magnitude higher for the SPMD samples.

On average, higher concentrations of metals were detected in the grab surface water samples. Both the grab and SPMD samplers collected surface water approximately one foot above the river bottom.

3.3 Pore Water Sample Results

Twenty pore water samples were collected from offshore and onshore locations (SED-3, SED-4, SED-5, SED-7, Beach B-1 [EPA-SH-1], EPA [SH] 2 through EPA [SH] 8, CreoDock N. Drum, CreoDock North-Flux, CreoDock S. Drum, FWDA-Flux, WC1-Flux, and WC-Blue-Flux). Three shallow groundwater samples (ODEQ [SH-3], ODEQ [SH-6], and ODEQ [SH-9]) can also be considered as pore water. All samples were analyzed for PAHs, arsenic, chromium, copper, and zinc. The EPA, Region 10, dive team and onshore team samples also were analyzed for PCP. Analytical results for COCs in pore water samples are presented in Table 5. Results for all analyzed constituents in pore water are presented in Appendix F.

3.3.1 Off-Shore Pore Water Sample Results

Pore water samples were collected at four off-shore locations (SED-3, SED-4, SED-5 and SED-7) by the EPA Dive Team. A duplicate sample, SED-51 is a duplicate of sample SED-5. Pore water samples were collected approximately 1 foot below the river bottom. A summary of analytical results for the off-shore pore water samples is presented in Table 5.

PAH Results

PAHs were detected in all four pore water samples. Total PAHs ranged from 9.42 µg/L at SED-7 to 149.1 µg/L at SED-3, which is located upstream of the site.

PCP Results

Pentachlorophenol was not detected above the method reporting limit in the four samples collected.

Metals Results

Pore water samples were analyzed arsenic, chromium, copper, and zinc. Concentrations of metals were detected in all off-shore pore water samples analyzed. The highest metal detected was arsenic at SED-5 at 52.3 µg/L.

3.3.2 On-Shore Pore Water Sample Results

Sixteen pore water samples were collected by the EPA and DEQ sample teams from the following onshore locations: Beach B-1 (EPA-SH-1), EPA (SH) 2 through EPA (SH) 5, EPA (SH) 7, EPA (SH) 8, CreoDock N. Drum, CreoDock North-Flux, CreoDock S. Drum, FWDA-Flux, WC1-Flux, and WC-Blue-Flux (Table 5). In addition, three shallow groundwater samples (ODEQ [SH-3], ODEQ [SH-6], and ODEQ [SH-9]) can also be considered as on-shore pore water. Samples were collected using MHE piezometers and flux chambers. DEQ flux chamber measurements are presented in Table 6, which includes volumes and rates.

MHE Samples-PAH Results

Figure 4 shows the onshore sample locations for the PAHs acenaphthene, phenanthrene, and total PAHs. Total PAH (COC) concentrations ranged from 0.151 µg/L at Creosote Dock S. Drum to 513,929 µg/L at EPA (SH-8), which is located adjacent to the NAPL seep south of the former creosote dock. The PAH (COC) acenaphthene showed the highest concentrations in the pore water samples collected. Naphthalene had the highest concentration of the PAHs analyzed for sample EPA (SH) 8, at 421,000 µg/L.

MHE Samples-PCP Results

PCP was detected only in samples EPA (SH) 7 and EPA (SH) 8, at 0.36 µg/L and 2.5 µg/L, respectively (Table 5). Depending on the laboratory dilution factor, detection limits for PCP ranged from 0.019 to 0.021 µg/L.

MHE Samples-Metals Results

Pore water samples were analyzed arsenic, chromium, copper, and zinc. Concentrations of metals were detected in all on-shore pore water samples analyzed, with the exception of sample Beach B-1 (EPA-SH-1). The highest metal detected was zinc at EPA (SH) 5 at 11.8 µg/L.

Flux Chamber Samples-PAH Results
Six flux chamber samples were collected (Creosote Dock N. Drum, CreoDock North Flux, CreoDock S. Drum, FWDA Flux, WC-1-Flux, and WC-Blue-Flux). Total PAHs ranged from below the method reporting limit at FWDA-Flux to 963 µg/L at ODEQ (SH-9).

Flux Chamber Samples-PCP Results
Pentachlorophenol results were all below the method reporting limit. PCP was not analyzed for at CreoDock S. Drum and WC-Blue-Flux.

3.3.3 Supplemental Analysis

A total of four samples (CreoDock N. Drum, CreoDock North-Flux, FWDA-Flux, WC1-Flux) were submitted for semivoloatile organic compounds (SVOC) by EPA Method 8270C, TPH analysis by Method NWTPH-Dx, and tentatively identified compounds (TICs). A summary of analytical results for these constituents are presented in Table 5.

SVOC Results
SVOCs were detected in three of the four samples submitted for analyses (SVOCs were not detected above the MRL of 5.0 µg/Lat FWDA-Flux). Acenaphthene was detected in three of the samples ranging from 17.3 µg/L at CreoDock N. Drum to 70.7 µg/L at WC1-Flux (Table 5a). SVOCs detected at sample WC1-Flux also included anthracene (5.31 µg/L), fluoranthene (7.13 µg/L), fluorene (41.7 µg/L), and pyrene (3.44 µg/L).

TPH Results
Diesel range organics were detected in all four samples submitted for analysis. Diesel range organics ranged from 0.061 mg/L at FWDA-Flux to 1.1 mg/L at WC1-Flux (Table 5b). Heavy oil range hydrocarbons were detected at WC1-Flux at 0.1 mg/L.

TIC Results
Tentatively identified compounds were only detected at the WC1-Flux sample location. Detected compounds and concentrations are presented in Table 5c.

3.3.4 Comparison of MHE and Flux Chamber Results

Total PAHs were detected in both the MHE and flux chamber sampling devices. Total PAH concentrations were significantly higher in the MHE sample points. The highest concentration of total PAHs using the MHE probes was detected at sample location EPA (SH) 8 at 513,929 µg/L. The highest detected concentration of total PAHs using the flux chamber was at sample WC-1-Flux at 117.7 µg/L.

Flux chamber measurements were recorded from five locations during the sampling event. Flux chamber measurements are presented in Table 6. Flux chamber flux rates ranged from 0.0 ml hour to 543 ml/hour.

3.4 Sediment

Ten sediment samples (SED-1 through SED-9, and EPA [SH] 6) and one QC sample (SED-51 [5A]) were collected at the site. Sample SED-51 (5A) was collected at the same location as SED-5. All samples were analyzed for PAHs and PCP. In addition, samples SED-1 through SED-9, SED-51A, and EPA (SH) 6 were analyzed for metals. Analytical results for sediment samples are presented in Table 7. Results for all analyzed constituents in sediment are presented in Appendix F.

PAH Results

PAHs were detected in all sediment samples. Total PAH (COC) concentrations ranged from 305 micrograms per kilogram (µg/kg) at SED-2 to 303,264 µg/kg at SED-1. A map of concentrations of acenaphthene, phenanthrene, and total PAHs for sediment is presented in Figure 5. Sample SED-1, with the highest total PAH concentration, was collected at the northeast edge within the proposed sediment cap footprint in Willamette Cove. Sample SED-1 also contained the highest concentration of carcinogenic PAHs (CPAHs; COCs; Figure 6). The individual PAHs (COCs) with the highest concentrations varied from sample to sample. The highest individual PAH (COC) concentration was for naphthalene in sediment sample SED-3, collected from the Willamette Cove seep. Phenanthrene had the highest concentration of all the PAHs (COCs) for samples SED-1, SED-5, SED-7, and EPA (SH) 6. The highest PAH (COC) concentration for samples SED-2, SED-4, and SED-9 was of fluoranthene.

Pentachlorophenol Results

PCP was detected in all but one of the sediment samples. Analytical results for SED-2, collected from the northwest edge of the proposed sediment cap, indicated no concentration of PCP above the detection limit of 1.6 µg/kg. The highest concentration of PCP was detected in SED-7. Sample SED-7 was collected from an identified hotspot offshore and in the Willamette riverbed slightly south of the FWDA.

Metals Results

Metals were detected in all sediment samples submitted for analyses. The COC for metals include arsenic, chromium, copper, and zinc. Metals concentrations were consistent between each sampling location with arsenic concentrations ranging from 2,360 µg/kg at SED-51 (5A), which is a duplicate sample of SED-5, to 7,500 µg/kg at SED-3. Chromium concentrations ranged from 10,300 µg/kg at SED-3 to 29,600 µg/kg at SED-1. Copper concentrations ranged from 13,800 µg/kg at EPA (SH) 6 to 57,000 µg/kg at SED-1. Zinc concentrations ranged from 47,700 µg/kg at SED-2 to 259,000 µg/kg at SED-1.

TPH Results

ODEQ collected four sediment samples using a hand auger within the seep just south of the railroad bridge (Figure 2e). Samples were analyzed for NWTPH-Dx. Diesel range organics were detected in one sample at MBHA-1-3 (27.3 mg/kg).

All other samples were below the method reporting limit. A summary of sample results is presented in Table 2a, Appendix F.

3.4.1 Co-Located Sediment, Pore Water, and Surface Water Samples

The EPA, Region 10, dive team collected co-located sediment, pore water, and surface water samples from four locations (SED-3 through SED-5, and SED-7). Histograms showing total PAH (COC) concentrations in each medium for each location are presented in Figures 7a through 7d. The plots compare PAH results at different locations. These bar graphs are intended only to compare PAHs detected in sediment at specific sampling locations. Figures 7a through 7d compare sediment, porewater, and surface water at specific sampling locations. Although the data was collected at various intervals within the water column and sediment, it is interesting to see the differences in concentrations at each location.

The plots show significantly higher concentrations of total PAHs in sediment samples compared to concentrations in pore water and surface water samples from the same locations. Total PAH concentrations in pore water were higher than the concentrations in surface water for all locations.

3.5 Groundwater

Nine groundwater samples were collected for analyses during the September sampling event (ODEQ [SH-1] through ODEQ [SH-9]). Groundwater samples ODEQ (SH-1) through ODEQ (SH-3), collected near the creosote dock, were from 3.7 feet, 1.95 feet, and 0.95 foot BGS. Groundwater samples ODEQ (SH-4) through ODEQ (SH-6), collected near the FWDA, were from 4.29 feet, 1.5 feet, and 0.85 foot BGS. Groundwater samples ODEQ (SH-7) through ODEQ (SH-9), collected onshore in Willamette Cove, were from 5.5 feet, 2.5 feet, and 1 foot BGS. Manometer readings were collected to examine vertical gradients (Table 8). All groundwater samples were analyzed for PAHs and PCP. Analytical results for groundwater samples are presented in Table 9. Results for all analyzed constituents in groundwater are presented in Appendix F. Concentrations of acenaphthene, phenanthrene, and total PAHs are mapped in Figure 8. PAHs were detected in all samples, with naphthalene, acenaphthene, and phenanthrene exhibiting the highest concentrations of the COCs. Total PAH (COCs) concentrations ranged from 1.57 to 97,797 µg/L for groundwater samples.

Figures 9a through 9d present concentrations of anthracene, naphthalene, phenanthrene, and total PAHs (COCs) with corresponding sample depths. Concentrations of the plotted PAHs increase with depth, with one exception. Naphthalene from 2.5 feet BGS, from the Willamette Cove samples, exhibited the lowest concentration (Figure 9b).

PCP was detected in three (ODEQ[SH-1] to ODEQ[SH-3]) of the nine groundwater samples. PCP concentrations ranged from 0.021 to 1.1 µg/L.

3.5.1 Transducer Measurements During Sampling

Two transducers were installed at monitoring well MW-35s and the new stilling well installed under the railroad bridge in one foot of water. Transducer plots are presented in Appendix C. Comparison of the two plots indicates that the groundwater elevation recorded at MW-35s, and river elevation recorded at the stilling well does not correspond well to each other. Following the sampling activities, well MW-35s was sounded and several feet of gravel had entered the well screen. This well was placed in the gravel road adjacent to the railroad line, and UPRR levels the gravel road periodically. Based on the data collected following the September sampling, the well data at MW-35s should be considered erroneous. A replacement well network is planned for installation in this area within the next few months.

3.5.2 Semiannual Groundwater Monitoring

E & E sampled select site groundwater monitoring wells from September 23 to 26, 2002, to coincide with the surface water, sediment, pore water, and groundwater sampling performed in front of the site and in Willamette Cove. Semiannual groundwater monitoring at the site included groundwater level measurements and sampling at select wells. Groundwater level measurements were recorded monthly at site wells that historically have not contained NAPL. The objective of semiannual groundwater sampling is to determine whether select perimeter monitoring wells have exceeded the alternative cleanup levels (ACLs) for the site.

3.5.3 Groundwater Elevation Measurements

Groundwater levels were measured manually and were recorded at approximately 24 wells located throughout the site. Based on previous automated transducer data, daily groundwater fluctuations of several feet are common in some of the monitoring wells, mainly because of river stage elevation changes, tidal influences, precipitation, and barometric pressure. Figures 10 and 11 present shallow groundwater contour maps for September 2002 and December 2002, respectively. The contours indicate that the general movement of shallow groundwater is from the site toward the Willamette River and Willamette Cove. Previous data showed localized shallow groundwater gradient reversals along the riverfront during high river stage. However, these reversed groundwater gradients were not observed during 2002. Figure 12 charts the average daily river elevation data obtained from the United States Geological Survey at the Morrison Bridge station. The data are corrected for National Geodetic Vertical Datum (NGVD) in front of the McCormick & Baxter site, and cover the period from March 1996 through December 2002. The figure shows the tail end of the 1996 flood event in Portland, Oregon, and the high river stage during the unusually wet spring in 1998. The river data indicate that the river has not exceeded the ordinary high water line since June 1996. The maximum river stage recorded during the reporting period was 7.96 feet NGVD on July 1, 2002.

Horizontal groundwater gradients calculated for the reporting period are presented in Table 10. These gradients were generally toward the river, were 0.010 foot per foot (ft/ft) to 0.008 ft/ft in the TFA, and ranged from 0.009 to 0.001 ft/ft in the FWDA. These gradients are somewhat steeper than typical, but are within ranges previously measured across the site during similar times of year.

3.5.4 Groundwater Sampling Activities

To evaluate the extent of groundwater contamination in the shallow, intermediate, and deep groundwater zones at the site, groundwater samples were collected from 14 monitoring wells (MW-Ks, MW-LRs, MW-Os, MW-2s, MW-3s, MW-4s, MW-5s, MW-8i, MW-13i, MW-18s, MW-23d, MW-25s, MW-31s, and MW-35s) from September 23 to 26, 2002 (Table 11). Well identifications are labeled to indicate the depth of the well: *s* for shallow wells, *i* for intermediate wells, and *d* for deep wells. Figure 13 depicts the locations of the monitoring wells sampled during September 2002. On September 27, 2002, the samples were submitted to NCA for chemical analysis, including SVOCs and target metals. SVOCs, including PCP and PAHs, were analyzed by EPA Method 8270-SIM. Target metals, including arsenic, chromium, copper, and zinc, were analyzed by EPA Method 6000/7000 Series. In addition, groundwater samples collected from MW-31s and MW-LRs were analyzed for dioxin/furan compounds by EPA Method 1613. The dioxin/furan analysis was subcontracted by NCA to Pace Analytical of Minneapolis, Minnesota.

3.5.5 Semiannual Groundwater Sampling Results

Analytical results for this semiannual sampling event were compared to the ACLs, which are listed in the EPA, Region 10, *Record of Decision* and presented in Table 11. The table also presents analytical results for:

- Total CPAHs, including benzo(a)anthracene, benzo(a)pyrene (B-a-P), benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene;
- Light-molecular-weight PAHs (LPAHs), including acenaphthene, acenaphthalene, anthracene, fluorene, naphthalene, and phenanthrene; and
- High-molecular-weight PAHs (HPAHs), including benzo(a)anthracene, B-a-P, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, pyrene, and indeno(1,2,3-cd)pyrene.

In addition, analytical results for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran are presented in Table 11, using the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalency quotient (TEQ) concentration provided by Pace Analytical.

Target analyte metals exceeded the respective ACLs in one of the groundwater samples from the 14 wells sampled. The ACL for zinc (1 milligram per liter [mg/L]) was exceeded in groundwater sampled from MW-Os at 2.16 mg/L, which is consistent with the result from the previous reporting period. No other target metals analytical results for samples obtained from the wells sampled during the reporting period exceeded the respective ACLs.

PCP and total PAH analytical results did not exceed the respective ACLs, 5,000 µg/L for PCP and 43,000 µg/L for total PAHs, in any of the wells sampled. PCP was detected in three of the 14 wells sampled, at 233 µg/L (MW-8i), 114 µg/L (MW-LRs), and 205 µg/L (MW-18s). The wells with PCP detections are identical to the wells with PCP detections during the previous reporting period, with similar detection values. Detected total PAH results ranged from 0.11 µg/L (MW-3s) to 9,090 µg/L (MW-8i). ACLs have not been established for CPAHs, LPAHs, or HPAHs. Dioxin/furan compounds were detected in the groundwater samples from MW-LRs and MW-31s. Detected concentrations of 2,3,7,8-TCDD TEQ, 3.5×10^{-7} µg/L (MW-LRs) and 2.1×10^{-7} µg/L (MW-31s), did not exceed the ACL of 2.0×10^{-4} µg/L.

The relative percent differences (RPDs) between PCP and PAH analyte concentrations in the groundwater sample from MW-5s and its field duplicate, labeled "MW-15-092602," were within QC limits (less than 25% RPD). The RPDs between arsenic and zinc concentrations exceeded the QC limits. The concentrations were either nondetect or at trace levels (i.e., sample concentrations were less than five times the reporting limit); therefore, no problems in data quality were noted.

3.6 NAPL Gauging and Extraction

This section presents a summary of NAPL extraction operations that are performed routinely at the site. These operations include measurement of lighter-than-water nonaqueous phase liquid (LNAPL) and denser-than-water nonaqueous phase liquid (DNAPL) thickness, and manual extraction of NAPL. NAPL thickness is measured to document the location and quantity of mobile NAPL in order to determine site trends and to predict mobile NAPL locations during seasonal groundwater fluctuations. The intent of NAPL extraction is to maximize the quantity of mobile NAPL extracted and to minimize the quantity of water removed from the subsurface. The monitoring and extraction activities at the site were performed from July 1 through December 31, 2002.

3.6.1 Nonaqueous Phase Liquid Measurements

Monitoring wells in the TFA and FWDA are measured for NAPL thickness twice monthly. LNAPL and DNAPL measurements are recorded from select monitoring and extraction wells located throughout the site. Tables 12 and 13 present monthly, historical, and maximum LNAPL and DNAPL thickness, respectively.

LNAPL did not exceed the historical maximum thickness measurements at any well during this reporting period (Table 1). The measured LNAPL thickness for this period ranged from 0.01 foot in several wells to 6.3 feet in EW-15s in July 2002. Ten wells in the FWDA, four wells in the TFA, and MW-1 exhibited LNAPL during this reporting period.

DNAPL was not detected in any of the site wells during this reporting period. DNAPL may have migrated below the intake screens of the site wells, or may have pooled in areas without monitoring or extraction wells. E & E measured MW-23d, a deep well located in the TFA, in September 2002. No evidence of NAPL was observed in MW-23d.

Table 13 presents NAPL well classifications from July 1997 through the current reporting period (June 2002). Wells are classified by presence of LNAPL, DNAPL, both, or neither. Figure 14 maps the NAPL well locations and classifications, as shown in Table 13, for the current reporting period.

Two TFA wells (EW-1s and EW-24s) that previously did not contain LNAPL contained LNAPL during this reporting period. EW-24s, which previously contained only DNAPL, contained only LNAPL during this reporting period. No other TFA wells changed classifications during this reporting period.

FWDA well MW-Gs changed classification from LNAPL and DNAPL during the previous reporting period to only LNAPL during this reporting period. Well MW-20i, which previously did not contain NAPL, briefly contained LNAPL during this reporting period. No other FWDA wells changed classifications during this reporting period.

3.6.2 Nonaqueous Phase Liquid Extraction

NAPL extraction activities performed during this reporting period included manual and passive skimmer extraction. NAPL extraction quantities for TFA and FWDA wells during the reporting period are summarized in Table 14.

3.6.2.1 Pure-Phase and Manual Nonaqueous Phase Liquid Extraction

Manual NAPL extraction was conducted throughout this reporting period. The extraction process involved measurement of LNAPL and DNAPL in select wells for the presence of pure-phase product, and removal of the pure-phase product using hand bailers. The removed product was transported to the sludge tank in the TFA shop building. Pure-phase NAPL extraction is conducted periodically based on measured NAPL thickness. During the reporting period, approximately 6.08 gallons of NAPL was extracted manually from the TFA wells and approximately 44.25 gallons of NAPL was extracted manually from the FWDA wells. Total NAPL recovered by manual extraction was approximately 50.33 gallons, which is a significant increase from the previous reporting period by

9.53 gallons. This increase can be attributed to more frequent extraction attempts. Table 14 identifies well locations and summarizes the quantity of NAPL extracted manually during this period.

3.6.2.2 Passive Skimmer LNAPL Removal

Passive LNAPL skimmers are utilized to collect NAPL with minimal effort. The devices are emptied periodically depending on the NAPL production characteristics of the specific wells. Five passive LNAPL skimmers were in operation at the site during the reporting period and were deployed at EW-10s, EW-15s, EW-23s, MW-21s, and MW-Rs.

The passive skimmer locations and quantities of collected LNAPL are presented in Table 14. Approximately 7.13 gallons of LNAPL was recovered from the passive LNAPL skimmers during the reporting period, which is a significant increase of 5.98 gallons from the previous period. Approximately 0.19 gallon of LNAPL was collected from wells in the TFA, and approximately 6.94 gallons were collected from wells in the FWDA. This increase is attributable to the deployment of two new skimmers and the replacement of oil wicks in the existing steel skimmers.

3.6.2.3 Continuous Nonaqueous Phase Liquid Extraction

The FWDA and TFA continuous NAPL extraction systems are shut down and have not been operating since fall 2000. NAPL was not extracted by these systems during this reporting period.

Willamette Cove NAPL Seeps. NAPL seeps were observed in Willamette Cove during this reporting period. River water fell to very low levels in August 2002. Figure 12 represents corrected river elevation data in front of the McCormick & Baxter site. Sheen and NAPL blebs were observed almost immediately following decreasing river stage as hydrostatic pressures decreased, allowing NAPL discharge. West Coast Marine deployed DEQ's NAPL containment boom on August 23, 2002. The NAPL-sorbent boom absorbed much of the free product, and was changed out frequently. Approximately 5 cubic yards of sorbent boom was used during the reporting period. After river stage rose during December 2002, the seeps became inactive, and the containment booms were removed.

In response to concerns regarding public exposure to the NAPL seeps, a fence, with a swinging gate, was installed in Willamette Cove in October 2002, from the railroad embankment to an offshore piling. The fence is 6-foot-high chain link, topped with three-strand barbed wire. The fence extends into the water past waist height during low river stage. Signs were placed near the fence gate, on the attached piling, and on other pilings to provide hazard warning from all approaches.

4 Summary

EPA, Region 10; DEQ; and OSU participated in a cooperative sampling event that took place between September 5 and 26, 2002, at the McCormick & Baxter site. Surface water, pore water, groundwater, and sediment samples were collected from 46 locations onshore and offshore of the site. Laboratory analyses were completed for PAHs, PCP, SVOCs, TPH, arsenic, chromium, copper, and zinc. Additional analyses included mercury, total suspended solids, dissolved organic carbon, and total organic carbon (Appendix F).

The most commonly detected PAHs (of the COCs) were acenaphthene, fluoranthene, naphthalene, and phenanthrene. The highest concentrations of PAHs were detected in sediment samples. The lowest concentrations of PAHs were detected in surface water samples. The highest concentrations of PAHs also were associated with identified NAPL seeps and hotspots with the exception of SED-1. SED-1, located at the downstream edge of the sediment cap, showed relatively high concentrations of total PAH (COCs) for sediment and pore water. Some surface water samples also were analyzed for the priority pollutant metals arsenic, chromium, copper, and zinc. Arsenic was detected at a low concentration (0.00121 µg/L) in one of 32 surface water grab samples. Detections of chromium ranged from 0.01 to 0.54 µg/L for all grab samples. Detections of copper ranged from 0.01to 1.7 µg/L for all grab samples. Zinc was not detected in any samples.

Analytical samples collected at the site confirm the presence of contaminated sediment, porewater, groundwater and surface water. Although some single sampling points did not contain high concentrations of PAHs and metals, heavy sheen and NAPL was observed in other areas that were not sampled during the September event.

The following sections summarize each of the field components of the September 2002 sampling event.

Seep Delineation

Four distinct seeps were visually identified by using a clam tube and hand auger and digging to a depth of 36-inches BGS. One seep was located within Willamette Cove between the wood pilings. This seep was not noted until passing

boats disturbed the shoreline and sheen bursts were observed on the sandy beach. The second seep was observed south of the railroad bridge in the vicinity of MW-25s and MW-31s. This seep was approximately 70 feet long. This seep contained faint creosote odor and some visible product within the silt lenses. The third seep was located approximately 120 feet upstream of MW-31s. The product was observed to be concentrated within the wood debris layers. The fourth seep is located upstream of the former creosote dock. This seep was determined to be approximately 120 long and the product was observed in a dark gray sand unit.

Surface Water Sampling

The EPA dive team, DEQ field team, and the OSU field team collected a total of 41 surface water grab samples. In addition, nineteen surface water SPMD samples were collected at the site using passive sampling devices.

In general, total PAHs concentrations were significantly higher for samples collected with the passive sampling devises (SPMDs). Total PAH concentrations on average were an order of magnitude higher for the SPMD samples.

On average, higher concentrations of metals were detected in the grab surface water samples. Both the grab and SPMD samplers collected surface water approximately one foot above the river bottom.

Pore Water Sampling

Twenty pore water samples were collected from offshore and onshore locations. Samples were collected using MHE piezometers and flux chamber sampling devices. Total PAHs ranged from below MRL to 513,929 µg/L. Metals concentrations were detected in all but one sample location (Beach B-1 EPA (SH) 1).

Total PAHs were detected in both the MHE and flux chamber sampling devices. Total PAH concentrations were significantly higher in the MHE sample points. The highest concentration of total PAHs using the MHE probes was detected at sample location EPA (SH) 8 at 513,929 µg/L. The highest detected concentration of total PAHs using the flux chamber was at sample WC-1-Flux at 117.7 µg/L.

Flux chamber measurements were recorded from five locations during the sampling event. Flux chamber flux rates ranged from 0.0 ml hour to 543 ml/hour.

Sediment Sampling

Ten sediment samples were collected at the site. All samples were analyzed for PAHs and PCP. In addition, samples SED-1 through SED-9, SED-51A, and EPA (SH) 6 were analyzed for metals.

PAHs were detected in all sediment samples. Total PAH (COC) concentrations ranged from 305 micrograms per kilogram (µg/kg) at SED-2 to 303,264 µg/kg at SED-1. The individual PAHs (COCs) with the highest concentrations varied from

sample to sample. The highest individual PAH (COC) concentration was for naphthalene in sediment sample SED-3, collected from the Willamette Cove seep. Phenanthrene had the highest concentration of all the PAHs (COCs) for samples SED-1, SED-5, SED-7, and EPA (SH) 6. The highest PAH (COC) concentration for samples SED-2, SED-4, and SED-9 was of fluoranthene.

PCP was detected in all but one of the sediment samples. Analytical results for SED-2, collected from the northwest edge of the proposed sediment cap, indicated no concentration of PCP above the detection limit of 1.6 µg/kg. The highest concentration of PCP was detected in SED-7. Sample SED-7 was collected from an identified hotspot offshore and in the Willamette riverbed slightly south of the FWDA. Metals were detected in all sediment samples submitted for analyses. Metals concentrations were consistent between each sampling location.

A comparison of co-located sediment, porewater and surface water sampling show significantly higher concentrations of total PAHs in sediment samples compared to concentrations in pore water and surface water samples from the same locations. Total PAH concentrations in pore water were higher than the concentrations in surface water for all locations sampled.

Groundwater Sampling

Nine groundwater samples were collected for analyses during the September sampling event. PAHs were detected in all samples, with naphthalene, acenaphthene, and phenanthrene exhibiting the highest concentrations of the COCs. Total PAH (COCs) concentrations ranged from 1.57 to 97,797 µg/L for groundwater samples. PCP was detected in three of the nine groundwater samples. PCP concentrations ranged from 0.021 to 1.1 µg/L.

Groundwater samples were collected at upland monitoring wells to evaluate the extent of groundwater contamination in the shallow, intermediate, and deep groundwater zones at the site. Target analyte metals exceeded the respective ACL for zinc in one of the groundwater samples from the 14 wells sampled. PCP and total PAH analytical results did not exceed the respective ACLs in any of the wells sampled. Detected total PAH results ranged from 0.11 µg/L to 9,090 µg/L (MW-8i). ACLs have not been established for CPAHs, LPAHs, or HPAHs. Dioxin/furan compounds were detected in the groundwater samples from MW-LRs and MW-31s. Detected concentrations of 2,3,7,8-TCDD TEQ, 3.5×10^{-7} µg/L (MW-LRs) and 2.1×10^{-7} µg/L (MW-31s), did not exceed the ACL of 2.0×10^{-4} µg/L.

NAPL Removal

Results of LNAPL did not exceed the historical maximum thickness measurements at any well during this reporting period. The measured LNAPL thickness for this period ranged from 0.01 foot in several wells to 6.3 feet in EW-15s in July 2002. Ten wells in the FWDA, four wells in the TFA, and MW-1 exhibited LNAPL during this reporting period.

DNAPL was not detected in any of the site wells during the reporting period. DNAPL may have migrated below the intake screens of the site wells, or may have pooled in areas without monitoring or extraction wells. E & E measured MW-23d, a deep well located in the TFA, in September 2002. No evidence of NAPL was observed in MW-23d.

Table 1

HISTORICAL AND MONTHLY LNAPL THICKNESS
July 1 through December 31, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	Maximum LNAPL Thickness (ft)	Maximum LNAPL Date	July 2002 LNAPL Thickness (ft)	August 2002 LNAPL Thickness (ft)	September 2002 LNAPL Thickness (ft)	October 2002 LNAPL Thickness (ft)	November 2002 LNAPL Thickness (ft)	December 2002 LNAPL Thickness (ft)
Tank Farm Area								
EW-1s	1.3	unknown	0.00	0.00	0.02	0.02	0.07	0.00
EW-4s	1.5	Sep-92	0.00	nm	0.00	nm	0.00	nm
EW-5s	0.9	Sep-94	0.00	nm	0.00	nm	0.00	nm
EW-7s	1.4	Sep-92	0.00	nm	0.00	nm	0.00	nm
EW-8s	0.02	Apr-99	0.00	nm	0.00	nm	0.00	nm
EW-12s	0.30	Nov-97	0.00	nm	0.00	nm	0.00	nm
EW-17s	3.06	May-01	0.00	0.00	0.00	0.00	0.00	0.00
EW-18s	4.43	Jul-94	0.48	0.26	0.85	1.03	0.68	0.78
EW-24s	4.45	Nov-01	0.00	0.00	0.00	0.18	0.35	0.69
EW-25s	trace	Mar-00	0.00	nm	0.00	nm	0.00	nm
MW-Is	2.82	Mar-96	0.00	0.00	0.00	0.01	0.00	0.00
MW-LRs	nd	-	nm	nm	nm	nm	nm	nm
MW-Ps	nd	-	nm	nm	nm	nm	nm	nm
MW-Rs	3.1	Mar-96	0.00	0.00	0.00	1.25	1.28	0.96
MW-7s	2.76	Sep-92	nm	nm	nm	nm	nm	nm
MW-8i	nd	-	0.00	0.00	0.00	nm	nm	nm
MW-10s	8.08	Feb-93	0.00	0.04	0.15	0.00	0.30	0.02
MW-22i	0.01	Jul-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-23d	nd	-	0.00	0.00	0.00	nm	nm	nm
MW-29	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-1s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-3s	-	-	nm	nm	nm	nm	nm	nm
TM-4s	-	-	nm	nm	nm	nm	nm	nm
TM-5s	0.01	Aug-99	0.00	0.00	0.00	0.00	0.00	0.00
Former Waste Disposal Area								
EW-2s	0.04	Jun-99	0.00	nm	0.00	nm	0.00	nm
EW-3s	1.41	Sep-99	0.21	0.10	0.55	0.77	0.13	0.17
EW-6s	3.5	Aug-94	0.35	0.42	1.01	0.74	0.00	0.04
EW-9s	0.42	Oct-98	0.00	nm	0.00	nm	0.00	nm
EW-10s	7.5	Jul-93	0.79	0.50	0.81	0.09	0.49	0.46
EW-13s	0.03	Jul-99	0.00	0.00	0.00	0.00	0.00	0.00
EW-14s	4.87	Oct-01	0.09	0.00	0.13	0.55	0.00	0.02
EW-15s	11.98	Nov-01	6.30	1.82	4.24	3.96	0.31	0.00
EW-16s	nd	-	0.00	nm	0.00	nm	0.00	nm
EW-19s	0.13	Aug-99	0.00	nm	0.00	nm	0.00	nm
EW-20s	1.11	May-96	0.00	nm	0.00	nm	0.00	nm
EW-22s	0.01	Apr-99	0.00	nm	0.00	nm	0.00	nm
EW-23s	7.67	Jul-00	2.85	1.99	2.33	0.72	0.12	0.16
MW-Ds	5.72	Feb-99	0.00	0.00	0.44	0.31	0.00	0.00
MW-Es	3.44	Nov-01	0.03	0.03	0.00	0.06	0.29	0.10
MW-Fs	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Gs	2.34	Sep-92	0.00	0.00	0.00	0.00	0.00	0.00
MW-18s	0.14	Sep-94	nm	nm	nm	nm	nm	nm
MW-20i	0.55	Apr-98	0.00	nm	0.11	nm	0.00	nm
MW-21s	10.28	Sep-92	0.00	0.02	0.67	3.07	0.91	2.98
MW-34i	nd	-	0.00	nm	0.00	nm	0.00	nm
Other Areas								
EW-11s	0.02	Nov-99	0.00	nm	0.00	nm	0.00	nm
MW-1s [4]	4.04	Jul-00	nm	nm	nm	nm	nm	nm
MW-19s	0.01	Jul-98	0.00	nm	0.00	nm	0.00	nm

Key:
- = Not applicable.
ft = Feet.
ID = Identification.
LNAPL = Lighter-than-water nonaqueous phase liquid
NAPL = Nonaqueous phase liquid
nd = Nondetect.
nm = Not measured.

Notes:
1. Measured LNAPL values in reversed highlight indicate a historical maximum LNAPl value recorded during the reporting period
2. The accuracy of the oil/water interface probe is not reliable at NAPL thicknesses less 0.01 foot. Therefore, trace amounts of NAPL may exist where the measured NAPL v 0.00 foot. When a NAPL sheen has been observed (on the probe tip) in these cases value is noted as *trace*.
3. The oil/water interface probe was out of service during January 2002 for repairs
4. MW-1s contains significant black, viscous NAPL. The NAPL is too thick to be reac by the guaging tape and probe

Table 2 Geographical Sample Locations
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample Location	Latitude deg min sec	Longitude deg min sec
EPA dive team samples		
SED-1	45 34.755 N	122 44.833 W
SED-2	45 34.745 N	122 44.857 W
SED-3	45 34.758 N	122 44.714 W
SED-4	45 34.685 N	122 44.650 W
SED-5	45 34.662 N	122 44.700 W
SED-51/5A	45 34.662 N	122 44.700 W
SED-6	45 34.679 N	122 44.626 W
SED-7	45 34.643 N	122 44.650 W
SED-8	45 34.593 N	122 44.407 W
SED-9	45 34.627 N	122 44.614 W
OSU samples		
SPMD-1	*	*
SPMD-2	*	*
SPMD-3	*	*
SPMD-4	45° 34' 35" N	122° 44' 27" W
SPMD-5	45° 34' 36" N	122° 44' 27" W
SPMD-6	45° 34' 36" N	122° 44' 29" W
SPMD-7	45° 34' 33" N	122° 44' 27" W
SPMD-8	45° 34' 36" N	122° 44' 36" W
SPMD-9	45° 34' 37" N	122° 44' 31" W
SPMD-10	45° 34' 37" N	122° 44' 31" W
SPMD-11	45° 34' 38" N	122° 44' 36" W
SPMD-12	45° 34' 40" N	122° 44' 38" W
SPMD-13	45° 34' 33" N	*
SPMD-14	45° 34' 39" N	122° 44' 42" W
SPMD-15	45° 34' 46" N	122° 44' 43" W
SPMD-16	45° 34' 43" N	122° 44' 46" W
SPMD-17	45° 34' 44" N	122° 44' 49" W
SPMD-18	45° 34' 47" N	122° 44' 46" W
SPMD-19	45° 34' 49" N	122° 44' 44" W
SPMD-20	45° 34' 37" N	122° 44' 54" W
DEQ samples		
WCa (Steel Drum)	45° 34' 45.25" N	122° 44' 42.63" W
WCb (Blue Drum)	45° 34' 45.30" N	122° 44' 42.70" W
FWDA	45° 34' 45.25" N	122° 44' 38.64" W
Creosote Dock, South Drum	45° 34' 39.28" N	122° 44' 29.85" W
Creosote Dock, North Drum	45° 34' 39.77" N	122° 44' 31.06" W
WC Seep West	45° 34' 45.16" N	122° 44' 42.61" W
WC Seep East	45° 34' 45.6" N	122° 44' 42.23" W
ODEQ SH 1-3	45.5776483	-122.7415932
ODEQ SH 4-6	45.57810742	-122.7442046
ODEQ SH 7-9	45.57910854	-122.7451862
EPA shoreline team samples		
EPA SH-1	near EPA SH-2	near EPA SH-2
EPA SH-2	45.57819161	-122.7444664
EPA SH-3	45.57810059	-122.7439482
EPA SH-4	45.57811023	-122.7440664
EPA SH-5	45.57813373	-122.7440945
EPA SH-6	next to SH-5	next to SH-5
EPA SH-7	45.57784004	-122.7421554
EPA SH-8	45.57766487	-122.7416181

* Locations pending

Table 3 Contaminants of Concern
McCormick & Baxter Creosoting Company
Portland, Oregon

Contaminants of Concern	
Dioxins/Furan	
Pentachlorophenol	
Arsenic	
Chromium	
Copper	
Zinc	
Polynuclear Aromatic Hydrocarbons (PAHs)	
Acenaphthene	L
Acenaphthylene	L
Anthracene	L
Benzo[a]anthracene	H,C
Benzo[b]fluoranthene	H,C
Benzo[k]fluoranthene	H,C
Benzo[a]pyrene	H,C
Benzo[g,h,i]perylene	H
Chrysene	H,C
Dibenz[a,h]anthracene	H,C
Fluoranthene	H
Fluorene	L
Ideno[1,2,3-cd]pyrene	H,C
Naphthalene	L
Phenanthrene	L
Pyrene	H
Total LPAHs	
Total HPAHs	
Total Carcinogenic PAHs	
Total PAHs	

Table 4 Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

		EPA DIVE TEAM SURFACE WATER GRAB SAMPLES GRAB - UNFILTERED									
CONTAMINANT OF CONCERN		SED-1 (ug/L)	SED-2 (ug/L)	SED-3 (ug/L)	SED-4 (ug/L)	SED-5 (ug/L)	SED-6 (ug/L)	SED-7 (ug/L)	SED-8 (ug/L)	SED-9 (ug/L)	SED-51 (5A) (ug/L)
Date Sampled		9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
Pentachlorophenol		<0.018	<0.019	0.079	<0.019	<0.018	0.078	0.051	0.025	<0.019	0.025
Arsenic		<0.63	<0.63	<0.63	0.67	0.64	1.1	<0.63	0.94	0.68	<0.63
Chromium		<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	2.1	1.3	<1.3
Copper		2.0	8.45	2.4	2.7	3.9	3.10	20.9	5.5	5.0	19.2
Zinc		4.7	7.53	4.3	4.4	4.9	8.79	7.4	12.5	18.1	5.2
Polynuclear Aromatic Hydrocarbons (PAHs)											
Acenaphthene	L	<0.018	<0.019	<0.020	<0.019	<0.018	9.8	<0.019	0.013 J	<0.019	<0.019
Acenaphthylene	L	<0.018	<0.019	<0.020	<0.019	<0.018	0.042	<0.019	<0.019	<0.019	<0.019
Anthracene	L	<0.018	<0.019	<0.020	<0.019	<0.018	3.8	<0.019	<0.019	<0.019	<0.019
Benzo[a]anthracene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	1.5	<0.037	0.0051 J	0.0041	<0.037
Benzo[b]fluoranthene	H, C	<0.018	<0.019	<0.020	<0.019	<0.018	0.77	<0.019	<0.019	<0.019	<0.019
Benzo[k]fluoranthene	H	<0.018	<0.019	<0.020	<0.019	<0.018	0.39	<0.019	<0.019	<0.019	<0.019
Benzo[a]pyrene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.44	<0.037	<0.038	<0.037	<0.037
Benzo[g,h,i]perylene	H, C	<0.018	<0.019	<0.020	<0.019	<0.018	0.087	<0.019	<0.019	<0.019	<0.019
Chrysene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	1.2	<0.037	0.0067 J	0.0039	<0.037
Dibenzo[a,h]anthracene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.093 J	<0.037	<0.038	<0.037	<0.037
Fluoranthene	H	<0.018	0.0084	0.032	0.0071 J	0.0041	11.9	0.0083 J	0.024 J	0.018	0.0043 J
Fluorene	L	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	<0.036	<0.037	<0.039	<0.037	<0.036	0.13	<0.037	<0.038	<0.037	<0.037
Naphthalene	L	<0.018	<0.019	<0.020	<0.019	<0.018	3.3	<0.019	<0.019	<0.019	<0.019
Phenanthrene	L	<0.018	0.0098	0.013	<0.019	<0.018	22.7	<0.019	<0.019	0.0087	<0.019
Pyrene	H	<0.018	<0.019	0.016	<0.019	<0.018	5.3	<0.019	0.013 J	0.011	<0.019
Total LPAHs		MRL	0.0098	0.0130	MRL	MRL	39.6	MRL	0.0130	0.0087	MRL
Total HPAHs		MRL	0.0084	0.0480	0.0071	0.0041	21.8	0.0083	0.0488	0.0370	0.0043
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	4.22	MRL	0.0118	0.0080	MRL
Total PAHs		MRL	0.0182	0.0610	0.0071	0.0041	61.5	0.0083	0.0618	0.0457	0.0043

* Results pending
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate
Sample SED-51 (5A) is a duplicate sample of SED-5.

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

DEQ SURFACE WATER GRAB SAMPLES GRAB - UNFILTERED								
CONTAMINANT OF CONCERN		**SPMD-1 (ug/L)**	**SPMD-2 (ug/L)**	**SPMD-5 (ug/L)**	**SPMD-11 (ug/L)**	**SPMD-15 (ug/L)**	**SPMD-15 (duplicate) (ug/L)**	**SPMD-20 (ug/L)**
Date Sampled		**9/12/2002 10:00:00 AM**	**9/12/2002 10:55:00 AM**	**9/12/2002 5:10:00 PM**	**9/12/2002 4:00:00 PM**	**9/12/2002 3:00:00 PM**	**9/12/2002 3:00:00 PM**	**9/12/2002 1:40:00 PM**
Pentachlorophenol		<0.236	<0.238	<0.236	<0.239	<0.253	<0.249	<0.240
Arsenic		<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium		<0.00100	<0.00100	<0.00100	0.00101	<0.00100	**0.00300**	<0.00100
Copper		**0.00376**	**0.00207**	**0.00584**	**0.0256**	<0.00200	**0.00951**	**0.00362**
Zinc		**0.00767**	**0.00509**	**0.00602**	**0.0169**	<0.00500	**0.0221**	**0.00710**
Polynuclear Aromatic Hydrocarbons (PAHs)								
Acenaphthene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Acenaphthylene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Anthracene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]anthracene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[b]fluoranthene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[k]fluoranthene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]pyrene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[g,h,i]perylene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Chrysene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Dibenzo[a,h]anthracene	H, C	<0.0472	<0.0476	<0.0472	<0.0478	<0.0506	<0.0498	<0.0481
Fluoranthene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	**0.0313**	<0.0240
Fluorene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Ideno[1,2,3-cd]pyrene	H, C	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Phenanthrene	L	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Pyrene	H	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Total LPAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total HPAHs		MRL	MRL	MRL	MRL	MRL	**0.0313**	MRL
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		MRL	MRL	MRL	MRL	MRL	**0.0313**	MRL

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

		DEQ SURFACE WATER GRAB SAMPLES GRAB - FILTERED						
CONTAMINANT OF CONCERN		**SPMD-1 (ug/L)**	**SPMD-2 (ug/L)**	**SPMD-5 (ug/L)**	**SPMD-11 (ug/L)**	**SPMD-15 (ug/L)**	**SPMD-15 (duplicate) (ug/L)**	**SPMD-20 (ug/L)**
Date Sampled		**9/12/2002 10:00:00 AM**	**9/12/2002 10:55:00 AM**	**9/12/2002 5:10:00 PM**	**9/12/2002 4:00:00 PM**	**9/12/2002 3:00:00 PM**	**9/12/2002 3:00:00 PM**	**9/12/2002 1:40:00 PM**
Pentachlorophenol		<0.236	<0.248	<0.240	<0.238	<0.256	<0.270	<0.242
Arsenic		<0.00100	**0.00121**	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium		<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Copper		**0.00257**	**0.00177**	**0.00154**	**0.00217**	**0.00141**	**0.00147**	**0.00191**
Zinc		<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Polynuclear Aromatic Hydrocarbons (PAHs)								
Acenaphthene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Acenaphthylene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Anthracene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]anthracene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[b]fluoranthene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[k]fluoranthene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]pyrene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[g,h,i]perylene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Chrysene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Dibenzo[a,h]anthracene	H, C	<0.0472	<0.0495	<0.0481	<0.0476	<0.0513	<0.0541	<0.0483
Fluoranthene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0595**	<0.0242
Fluorene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Ideno[1,2,3-cd]pyrene	H, C	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Phenanthrene	L	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Pyrene	H	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0423**	<0.0242
Total LPAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total HPAHs		MRL	MRL	MRL	MRL	MRL	0.1018	MRL
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		MRL	MRL	MRL	MRL	MRL	0.1018	MRL

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

OREGON STATE UNIVERSITY PASSIVE SAMPLING DEVICES																
CONTAMINANT OF CONCERN		**SPMD-1 (ug/L)**	**SPMD-2 (ug/L)**	**SPMD-3 (ug/L)**	**SPMD-4 (ug/L)**	**SPMD-5 (ug/L)**	**SPMD-6 (ug/L)**	**SPMD-7 (ug/L)**	**SPMD-8 (ug/L)**	**SPMD-9 (ug/L)**	**SPMD-10 (ug/L)**	**SPMD-11 (ug/L)**	**SPMD-12 (ug/L)**	**SPMD-13 (ug/L)**	**SPMD-14 (ug/L)**	**SPMD-15 (ug/L)**
Date Sampled																
Pentachlorophenol		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Arsenic		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Chromium		<0.2	**0.35**	<0.2	<0.2	<0.2	<0.2	**0.31**	**0.37**	**0.33**	<0.2	**0.54**	<0.2	<0.2	**0.26**	<0.2
Copper		<0.005	<0.005	<0.005	**0.03**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Polynuclear Aromatic Hydrocarbons (PAHs)																
Acenaphthene	L	**0.0155**	**0.0122**	**0.0102**	**0.03334**	**0.0355**	**0.0425**	**0.0055**	**0.00629**	**0.0354**	**0.0496**	**0.0341**	**0.0631**	*	**0.0238**	**0.0671**
Acenaphthylene	L	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021	*	<0.0021	<0.0021
Anthracene	L	**0.0041**	**0.00316**	**0.0028**	**0.0157**	**0.0116**	**0.0137**	**0.0033**	**0.0025**	**0.0224**	**0.0218**	**0.0145**	**0.0216**	*	**0.0038**	**0.0351**
Benzo[a]anthracene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	*	--	--
Benzo[b]fluoranthene	H, C	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	*	<0.00015	<0.00015
Benzo[k]fluoranthene	H	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015	*	<0.00015	<0.00015
Benzo[a]pyrene	H, C	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033	*	<0.00033	<0.00033
Benzo[g,h,i]perylene	H, C	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149	*	<0.0149	<0.0149
Chrysene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	*	--	--
Dibenzo[a,h]anthracene	H, C	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	*	<0.007	<0.007
Fluoranthene	H	**0.0361**	**0.031**	**0.0237**	**0.166**	**0.0937**	**0.107**	**0.0287**	**0.0272**	**0.199**	**0.192**	**0.163**	**0.196**	*	**0.0386**	**0.232**
Fluorene	L	**0.143**	**0.113**	**0.0952**	**0.362**	**0.382**	**0.447**	**0.105**	**0.112**	**0.382**	**0.512**	**0.369**	**0.638**	*	**0.274**	**0.675**
Ideno[1,2,3-cd]pyrene	H, C	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152	*	<0.0152	<0.0152
Naphthalene	L	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	*	<0.0014	<0.0014
Phenanthrene	L	**0.0225**	**0.0157**	**0.0124**	**0.0787**	**0.0534**	**0.0642**	**0.0153**	**0.013**	**0.106**	**0.0993**	**0.062**	**0.0971**	*	**0.029**	**0.155**
Pyrene	H	**0.0301**	**0.0262**	**0.0209**	**0.121**	**0.07**	**0.0779**	**0.025**	**0.0244**	**0.132**	**0.154**	**0.131**	**0.146**	*	**0.033**	**0.21**
Total LPAHs		**0.1851**	**0.1441**	**0.1206**	**0.4897**	**0.4825**	**0.5674**	**0.1291**	**0.1338**	**0.5458**	**0.6827**	**0.4796**	**0.8198**	*	**0.3306**	**0.9322**
Total HPAHs		**0.0662**	**0.0572**	**0.0446**	**0.2870**	**0.1637**	**0.1849**	**0.0537**	**0.0516**	**0.3310**	**0.3460**	**0.2940**	**0.3420**	*	**0.0716**	**0.4420**
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	MRL	*	MRL	MRL
Total PAHs		**0.2513**	**0.2013**	**0.1652**	**0.7767**	**0.6462**	**0.7523**	**0.1828**	**0.1854**	**0.8768**	**1.03**	**0.7736**	**1.16**	*	**0.4022**	**1.37**

-- Not Analyzed
* Sampler missing upon retrieval
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit

Surface water samples collected by OSU using a passive sampling device (SPMD).
Samples were deployed on September 12, 2002 and collected on September 26, 2002.
Samples were placed approximately 1-foot off the river bottom. Samples were analyzed at the OSU laboratory. Laboratory results are presented in the OSU Analytical Report in App. A.

OREGON STATE UNIVERSITY PASSIVE SAMPLING DEVICES						
CONTAMINANT OF CONCERN		**SPMD-16 (ug/L)**	**SPMD-17 (ug/L)**	**SPMD-18 (ug/L)**	**SPMD-19 (ug/L)**	**SPMD-20 (ug/L)**
Date Sampled						
Pentachlorophenol		BDL	BDL	BDL	BDL	BDL
Arsenic		<0.002	<0.002	<0.002	<0.002	<0.002
Chromium		**0.28**	<0.2	**0.28**	<0.2	**0.29**
Copper		**0.02**	<0.005	<0.005	**0.01**	<0.005
Zinc		<0.002	<0.002	<0.002	<0.002	<0.002
Polynuclear Aromatic Hydrocarbons (PAHs)						
Acenaphthene	L	**0.0313**	**0.0215**	**0.011**	**0.0103**	**0.0149**
Acenaphthylene	L	<0.0021	<0.0021	<0.0021	<0.0021	<0.0021
Anthracene	L	**0.0114**	**0.0065**	**0.004**	**0.0051**	**0.0053**
Benzo[a]anthracene	H, C	--	--	--	--	--
Benzo[b]fluoranthene	H, C	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
Benzo[k]fluoranthene	H	<0.00015	<0.00015	<0.00015	<0.00015	<0.00015
Benzo[a]pyrene	H, C	<0.00033	<0.00033	<0.00033	<0.00033	<0.00033
Benzo[g,h,i]perylene	H, C	<0.0149	<0.0149	<0.0149	<0.0149	<0.0149
Chrysene	H, C	--	--	--	--	--
Dibenzo[a,h]anthracene	H, C	<0.007	<0.007	<0.007	<0.007	<0.007
Fluoranthene	H	**0.0869**	**0.05**	**0.035**	**0.0479**	**0.445**
Fluorene	L	**0.343**	**0.253**	**0.156**	**0.15**	**0.192**
Ideno[1,2,3-cd]pyrene	H, C	<0.0152	<0.0152	<0.0152	<0.0152	<0.0152
Naphthalene	L	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
Phenanthrene	L	**0.0445**	**0.0266**	**0.018**	**0.0225**	**0.0226**
Pyrene	H	**0.0708**	**0.045**	**0.0314**	**0.0386**	**0.0440**
Total LPAHs		**0.4302**	**0.3076**	**0.1890**	**0.1879**	**0.2348**
Total HPAHs		**0.1577**	**0.0950**	**0.0664**	**0.0865**	**0.4890**
Total Carcinogenic PAHs		MRL	MRL	MRL	MRL	MRL
Total PAHs		**0.5879**	**0.4026**	**0.2554**	**0.2744**	**0.7238**

Table 4 Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

		OREGON STATE UNIVERSITY GRAB - UNFILTERED														
CONTAMINANT OF CONCERN		**SPMD-1 (ug/L)**	**SPMD-2 (ug/L)**	**SPMD-3 (ug/L)**	**SPMD-4 (ug/L)**	**SPMD-5 (ug/L)**	**SPMD-6 (ug/L)**	**SPMD-7 (ug/L)**	**SPMD-8 (ug/L)**	**SPMD-9 (ug/L)**	**SPMD-10 (ug/L)**	**SPMD-11 (ug/L)**	**SPMD-12 (ug/L)**	**SPMD-13 (ug/L)**	**SPMD-14 (ug/L)**	**SPMD-15 (ug/L)**
Date Sampled																
Pentachlorophenol																
Arsenic		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium		<0.01	**0.01**	**0.02**	<0.01	**0.01**	**0.02**	**0.03**	<0.01	**0.01**	**0.03**	**0.04**	**0.02**	**0.02**	**0.01**	**0.04**
Copper		**0.98**	**1.25**	**1.70**	**1.45**	**1.16**	**1.00**	**1.15**	**1.10**	**1.29**	**1.22**	**1.50**	**1.40**	**1.41**	**0.95**	**1.36**
Zinc		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Polynuclear Aromatic Hydrocarbons (PAHs)																
Acenaphthene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo[a,h]anthracene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	H	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total LPAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total HPAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Carcinogenic PAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PAHs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH

Surface grab water samples were collected by OSU on September 26, 2002. Samples were collected from approximately 1 foot off river bottom. Samples were analyzed at the OSU laboratory. Laboratory results are presented in the OSU Analytical Report in Appendix A.

OREGON STATE UNIVERSITY GRAB - UNFILTERED						
CONTAMINANT OF CONCERN		SPMD-16 (ug/L)	SPMD-17 (ug/L)	SPMD-18 (ug/L)	SPMD-19 (ug/L)	SPMD-20 (ug/L)
Date Sampled						
Pentachlorophenol						
Arsenic		<0.005	<0.005	<0.005	<0.005	<0.005
Chromium		**0.02**	**0.01**	**0.01**	<0.01	<0.01
Copper		**1.31**	**1.21**	**1.46**	**1.27**	**1.18**
Zinc		<0.005	<0.005	<0.005	<0.005	<0.005
Polynuclear Aromatic Hydrocarbons (PAHs)						
Acenaphthene	L	--	--	--	--	--
Acenaphthylene	L	--	--	--	--	--
Anthracene	L	--	--	--	--	--
Benzo[a]anthracene	H, C	--	--	--	--	--
Benzo[b]fluoranthene	H, C	--	--	--	--	--
Benzo[k]fluoranthene	H	--	--	--	--	--
Benzo[a]pyrene	H, C	--	--	--	--	--
Benzo[g,h,i]perylene	H, C	--	--	--	--	--
Chrysene	H, C	--	--	--	--	--
Dibenzo[a,h]anthracene	H, C	--	--	--	--	--
Fluoranthene	H	--	--	--	--	--
Fluorene	L	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	--	--	--	--	--
Naphthalene	L	--	--	--	--	--
Phenanthrene	L	--	--	--	--	--
Pyrene	H	--	--	--	--	--
Total LPAHs		--	--	--	--	--
Total HPAHs		--	--	--	--	--
Total Carcinogenic PAHs		--	--	--	--	--
Total PAHs		--	--	--	--	--

Table 5 Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		SED-3 (ug/L)	SED-4 (ug/L)	SED-5 (ug/L)	SED-7 (ug/L)	SED-51 (5A) (ug/L)	Beach B-1 (EPA-SH-1) (ug/L)	EPA (SH) 2 (ug/L)	EPA (SH) 3 (ug/L)	EPA (SH) 4 (ug/L)	EPA (SH) 5 (ug/L)
Date Sampled		**9/6/2002**	**9/6/2002**	**9/5/2002**	**9/5/2002**	**9/5/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**	**9/10/2002**
Pentachlorophenol		<0.019	<0.019	<0.019	<0.020	<0.019	<0.020	<0.020	<0.021	<0.021	<0.020
Arsenic		**22.0**	**0.67**	**52.3**	**41.9**	<0.63	<0.63	**6.0**	**6.64**	**4.90**	**8.84**
Chromium		<1.3	<1.3	<1.3	**4.2**	<1.3	<1.3	<1.3	<1.3	<1.3	**1.6**
Copper		**1.6**	**2.4**	**1.6**	**8.6**	**19.2**	<1.3	<1.3	**1.4**	<1.3	**5.7**
Zinc		**17.7**	**4.3**	**8.64**	**22.0**	**5.2**	<2.5	<2.5	**3.2**	<2.5	**11.8**
Polynuclear Aromatic Hydrocarbons (PAHs)											
Acenaphthene	L	**104**	**6.6**	**25.4**	**8.5**	**65.5**	<0.020	**19.3**	**0.048**	**3.4**	**9.5**
Acenaphthylene	L	**0.24**	<0.019	**0.024**	<0.020	**0.046**	<0.020	**0.067**	<0.021	<0.021	**0.062**
Anthracene	L	**3.5**	**0.42**	**0.35**	**0.048**	**0.98**	<0.020	**0.17**	**0.012**	**0.042**	**0.11**
Benzo[a]anthracene	H, C	**0.23**	**0.39**	**0.040**	**0.011 J**	**0.21**	<0.040	**0.014 J**	<0.043	<0.043	**0.017**
Benzo[b]fluoranthene	H, C	**0.058**	**0.069**	<0.019	<0.020	**0.075**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[k]fluoranthene	H	**0.043**	**0.034**	<0.019	<0.020	**0.056**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[a]pyrene	H, C	**0.049**	**0.033**	<0.038	<0.039	**0.061**	<0.040	<0.040	<0.043	<0.043	<0.041
Benzo[g,h,i]perylene	H, C	**0.0089 J**	<0.019	<0.019	<0.020	**0.037**	<0.020	<0.020	<0.021	<0.021	<0.020
Chrysene	H, C	**0.19**	**0.34**	**0.037**	**0.01 J**	**0.17**	<0.040	**0.013 J**	<0.043	<0.043	**0.014**
Dibenzo[a,h]anthracene	H, C	<0.037	<0.037	<0.038	<0.039	<0.038	<0.040	<0.040	<0.043	<0.043	<0.041
Fluoranthene	H	**3.1**	**3.3**	**0.48**	**0.077**	**1.7**	<0.020	**0.17**	**0.0096**	**0.018 J**	**0.17**
Fluorene	L	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	<0.037	<0.037	<0.038	<0.039	**0.036 J**	<0.040	<0.040	<0.043	<0.043	<0.041
Naphthalene	L	**2.8**	<0.074	**0.17**	**0.46**	**0.35**	<0.030	<0.056	<0.039	<0.021	**1.2**
Phenanthrene	L	**33.3**	**5.1**	**3.4**	**0.27**	**11.1**	<0.020	**0.043**	**0.017**	**0.019 J**	**0.26**
Pyrene	H	**1.6**	**1.8**	**0.20**	**0.041**	**0.73**	<0.020	**0.16**	**0.069**	**0.035**	**0.070**
Total LPAHs		**143.8**	**12.1**	**29.3**	**9.28**	**78.0**	MRL	**19.6**	**0.077**	**3.46**	**11.1**
Total HPAHs		**5.28**	**5.97**	**0.757**	**0.139**	**3.08**	MRL	**0.357**	**0.079**	**0.053**	**0.271**
Total Carcinogenic PAHs		**0.536**	**0.832**	**0.077**	**0.021**	**0.589**	MRL	**0.027**	**0.000**	MRL	**0.031**
Total PAHs		**149.1**	**18.1**	**30.1**	**9.42**	**81.0**	MRL	**19.9**	**0.156**	**3.51**	**11.4**

-- Not Analyzed; * Results pending
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

CreoDock N. drum and CreoDock North Flux were collected from the same location and same flux chamber; however, the samples were collected on separate days.
Two flux chamber were installed within the area of the active WC seep (i.e., in the boomed area, visible staining on rocks).
WC-Blue-Flux was collected from the blue plastic flux chamber installed approximately 10 feet further offshore of flux chamber WC-1-Flux and within the boomed area.
Supplemental analyses included a full SVOC analysis (EPA 8270) including identification of tentatively identified compounds (TICs) and total petroleum hydrocarbons.
Flux chamber samplers were collected using a peristaltic pump, with the exception of CreoDock N. Flux collected on 9/11/02, which was collected from the Tedlar bag.
Flux chamber samples and the ODEQ samples were analyzed by NCA.

Table 5 Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE		EPA (SH) 7 (ug/L)	EPA (SH) 8 (ug/L)	CreoDock N. Drum (ug/L)	CreoDock North-Flux (ug/L)	CreoDock S. Drum (ug/L)	FWDA -Flux (ug/L)	WC1-Flux (ug/L)	WC-Blue-Flux (ug/L)
Date Sampled		9/10/2002	9/10/2002	9/10/2002 5:10:00 PM	9/11/2002 7:10:00 AM	9/10/2001 3:27:00 PM	9/10/2002 3:15:00 PM	9/10/2002 2:10:00 PM	9/11/2002 8:15:00 AM
Pentachlorophenol		0.36	2.5	<10.0	<10.0	--	<10.0	<10.0	--
Arsenic		<0.63	--	--	--	--	--	--	--
Chromium		<1.3	--	--	--	--	--	--	--
Copper		1.9	--	--	--	--	--	--	--
Zinc		<2.5	--	--	--	--	--	--	--
Polynuclear Aromatic Hydrocarbons (PAHs)									
Acenaphthene	L	10.3	23800	14.7	18.1	<0.100	<0.100	71.8	0.564
Acenaphthylene	L	0.11	141	<1.00	0.217	0.151	<0.100	<2.50	0.188
Anthracene	L	0.20	10200	<1.00	0.222	<0.100	<0.100	4.62	<0.100
Benzo[a]anthracene	H, C	0.011	2090	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[b]fluoranthene	H, C	<0.020	969	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[k]fluoranthene	H	<0.020	599	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[a]pyrene	H, C	<0.041	699	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[g,h,i]perylene	H, C	<0.020	115	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Chrysene	H, C	0.024	2270	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Dibenzo[a,h]anthracene	H, C	<0.041	95.2 J	<2.00	<0.200	<0.200	<0.200	<5.00	<0.200
Fluoranthene	H	0.26	13600	<1.00	0.227	<0.100	<0.100	6.05	0.405
Fluorene	L	--	--	1.59	1.64	<0.100	<0.100	31.8	<0.100
Ideno[1,2,3-cd]pyrene	H, C	<0.041	181	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene	L	0.21	421000	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Phenanthrene	L	0.090	32000	<1.00	0.637	<0.100	<0.100	<2.50	<0.100
Pyrene	H	0.097	6170 J	<1.00	0.120	<0.100	<0.100	3.44	0.251
Total LPAHs		10.9	487141	16.3	20.8	0.151	MRL	108.2	0.752
Total HPAHs		0.392	26788	MRL	0.347	MRL	MRL	9.5	0.656
Total Carcinogenic PAHs		0.035	6419	MRL	MRL	MRL	MRL	MRL	MRL
Total PAHs		11.3	513929	16.3	21.2	0.151	MRL	117.7	1.41

-- Not Analyzed; * Results pending
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate

Pore Water Samples with the prefix ODEQ were collected by DEQ on September 11, 2002.
Samples were collected approximately 1 foot below the sediment surface
Samples were analyzed by North Creek Analytical Laboratory, Portland, Oregon.

CreoDock N. drum and CreoDock North Flux were collected from the same location and same flux chamber; however, the samples were collected on separate days.
Two flux chamber were installed within the area of the active WC seep (i.e., in the boomed area, visible staining on rocks).
WC-Blue-Flux was collected from the blue plastic flux chamber installed approximately 10 feet further offshore of flux chamber WC-1-Flux and within the boomed area.
Supplemental analyses included a full SVOC analysis (EPA 8270) including identification of tentatively identified compounds (TICs) and total petroleum hydrocarbons.
Flux chamber samplers were collected using a peristaltic pump, with the exception of CreoDock N. Flux collected on 9/11/02, which was collected from the Tedlar bag.
Flux chamber samples and the ODEQ samples were analyzed by NCA.

Table 5 Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE		ODEQ (SH-3) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-9) (ug/L)
Date Sampled		**9/11/2002**	**9/11/2002**	**9/11/2002**
Pentachlorophenol		**0.20**	<0.020	<0.020
Arsenic		**1.5**	**7.92**	**2.8**
Chromium		<1.3	<1.3	**2.1**
Copper		**3.1**	<1.3	**6.1**
Zinc		**7.82**	**4.4**	**11.3**
Polynuclear Aromatic Hydrocarbons (PAHs)				
Acenaphthene	L	**0.040**	**3.0**	**118**
Acenaphthylene	L	<0.020	**0.025**	**0.35**
Anthracene	L	**0.13**	**0.078**	**14.1**
Benzo[a]anthracene	H, C	**0.042**	**0.026 J**	**0.76**
Benzo[b]fluoranthene	H, C	**0.050**	**0.046**	**0.15**
Benzo[k]fluoranthene	H	**0.054 J**	**0.032 J**	**0.099**
Benzo[a]pyrene	H, C	<0.039	**0.069**	**0.097**
Benzo[g,h,i]perylene	H, C	**0.019 J**	**0.054**	**0.012**
Chrysene	H, C	**0.075**	**0.023 J**	**0.62**
Dibenzo[a,h]anthracene	H, C	<0.039	<0.041	<0.040
Fluoranthene	H	**0.46**	**0.028**	**15.8**
Fluorene	L	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	**0.021 J**	**0.046**	**0.020**
Naphthalene	L	<0.15	<0.069	**703**
Phenanthrene	L	**0.47**	**0.031**	**104**
Pyrene	H	**0.21**	**0.025**	**6.2**
Total LPAHs		**0.640**	**3.13**	**939**
Total HPAHs		**0.931**	**0.349**	**23.8**
Total Carcinogenic PAHs		**0.207**	**0.264**	**1.66**
Total PAHs		**1.57**	**3.48**	**963**

-- Not Analyzed; * Results pending
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
MRL Method Reporting Limit
J reported value is an estimate
CreoDock N. drum and CreoDock North Flux were collected from the same location and same flux chamber; however, the samples were collected on separate days.
Two flux chamber were installed within the area of the active WC seep (i.e., in the boomed area, visible staining on rocks).
WC-Blue-Flux was collected from the blue plastic flux chamber installed approximately 10 feet further offshore of flux chamber WC-1-Flux and within the boomed area.
Supplemental analyses included a full SVOC analysis (EPA 8270) including identification of tentatively identified compounds (TICs) and total petroleum hydrocarbons.
Flux chamber samplers were collected using a peristaltic pump, with the exception of CreoDock N. Flux collected on 9/11/02, which was collected from the Tedlar bag.
Flux chamber samples and the ODEQ samples were analyzed by NCA.

Table 6 Flux Chamber Measurements
McCormick & Baxter Creosoting Company
Portland, Oregon

Willamette Cove					
Location	**Date**	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
Steel Drum	9/10/2002	10:47			
		14:10	5.3	15	2.8
	9/10/2002	14:10	Flux sample collected (WC-1-Flux)		
	9/11/2002	8:00	17.8	1080	60.7
Blue Drum	9/10/2002	13:20	3.4	15	4.4
	9/11/2002	8:10	Flux sample collected (WC-Blue-Flux)		
			17.8	2310	129.8
FWDA	**Date**	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
Location	9/10/2002	15:07	5.0	0	0.0
FWDA		15:15	Flux sample collected (FWDA-Flux)		
		7:30	16.3	0	0.0
	9/11/2002	9:00	1.5	30	20.0
	Date	**Time**	**Period**	**Flux (ml)**	**Rate (ml/hour)**
Creosote Dock					
Location	9/10/2002	17:00	5.5	-35	-6.4
South Drum	9/10/2002	17:30	Flux sample collected (CreoDock S.)		
	9/10/2002	7:15	13.8	0	0.0
	9/10/2002	16:40	5.0	2715	543.0
North Drum	9/10/2002	17:30	Flux sample collected (CreoDock N.)		
	9/10/2002	7:10	13.7	2260	165.3
	9/11/2002		Flux sample collected (from bag)		

Notes:
Flux chamber samples and the ODEQ samples were analyzed by NCA.
Flux chamber samples were collected by a peristaltic pump with the exception of CreoDock N. collected on 9/11/02, which was collected from the Tedlar bag.
Sample drum WC-Blue-Flux was partially exposed during sampling at low tide.
Sample FWDA-Flux zero reading was because the valve was not left opened during the overnight hours.

Table 7 Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		SED-1 (ug/kg)	SED-2 (ug/kg)	SED-3 (ug/kg)	SED-4 (ug/kg)	SED-5 (ug/kg)	SED-6 (ug/kg)	SED-7 (ug/kg)	SED-8 (ug/kg)	SED-9 (ug/kg)	SED-51 (5A) (ug/kg)	EPA (SH) 6 (ug/kg)
Date Sampled		**9/5/2002**	**9/5/2002**	**9/6/2002**	**9/6/2002**	**9/5/2002**	**9/6/2002**	**9/5/2002**	**9/5/2002**	**9/6/2002**	**9/5/2002**	**9/10/2002**
Pentachlorophenol		27	<1.6	360	20	3.7	58	630	24	26	2.8	130
Arsenic		4,280	2,790	7,500	5,800	2,610	8,100	4,050	3,420	4,960	2,360	4,790
Chromium		29,600	11,900	10,300	16,500	17,400	16,400	29,200	23,100	22,100	13,700	10,600
Copper		57,000	15,100	15,600	23,900	21,000	30,300	40,900	40,600	53,700	20,500	13,800
Zinc		259,000	47,700	58,800	71,700	73,400	83,300	95,600	80,200	150,000	67,100	53,500
Polynuclear Aromatic Hydrocarbons (PAHs)												
Acenaphthene	L	48800	3.4	1720	274	2130	405	1370	18.6	902	440	14800
Acenaphthylene	L	161	2.4	113	19.7	<46.6	14.8	29.3	6.7 J	30.1	5.3 J	81.4
Anthracene	L	23300	6.7	157	526	466	213	1480	31.8 J	358	110 J	8420
Benzo[a]anthracene	H, C	13200	29.5	36.0	787	380	333	844	90.7 J	485	201 J	3380
Benzo[b]fluoranthene	H, C	6300	25.1	16.4	632	250	373	558	99.9 J	383	130 J	1010
Benzo[k]fluoranthene	H	4740	16.9	10.1	419	178	199	327 J	69.3 J	235	86.8 J	840
Benzo[a]pyrene	H, C	4930	17.1	16.0	298	146	181	452	55.9 J	230	84 J	763
Benzo[g,h,i]perylene	H, C	1120	11.9	<11.9	93.3	47.9	68.2	207	32 J	82.1	25.1 J	139
Chrysene	H, C	12700	33.3	35.4	999	408	339	861	92.2 J	565	190 J	2750
Dibenzo[a,h]anthracene	H, C	243	1.3	<23.8	64.3 J	<93.2	40.3 J	93 J	17.6 J	17.2	14.6 J	126
Fluoranthene	H	57700	65.9	306	5250 J	1300	1020	3790	203 J	2850	892 J	20300
Fluorene	L	--	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	1590	12.5	<23.8	139	63.7	92.4	218	37.9 J	110	32.8 J	221
Naphthalene	L	3180	12.2	241000	310	832	495	810	41.4 J	2100	651 J	3990
Phenanthrene	L	94300	18.8	956	2450	2280	668	4310	61.5 J	2180	887 J	35000
Pyrene	H	31000	48.1	223	2290	683	525 J	1990	148 J	1240	399 J	9600
Total LPAHs		169741	43.5	243946	3580	5708	1796	7999	160	5570	2093	62291
Total HPAHs		133523	262	643	10972	3457	3171	9340	847	6197	2055	39129
Total Carcinogenic PAHs		40083	131	104	3013	1296	1427	3233	426	1872	678	8389
Total PAHs		303264	305	244589	14551	9165	4967	17339	1007	11767	4149	101420

-- Not Analyzed; * Results pending
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
J reported value is an estimate
SED-51 (5A) is a duplicate sample of SED-5.

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 8 Manometer Readings
McCormick & Baxter Creosoting Company
Portland, Oregon

Date	Time	Probe Depth (feet)	Probe Depth (cm)	Groundwater Measurement (cm)	Surface Water Measurement (cm)	Head Difference (cm)	Vertical Gradient
Willamette Cove							
Ebb Tide: 9/10/2002	13:40	5.3	161.54	76	72	4	0.02
		2.5	76.20	67.5	67	1	0.01
		1.75	53.34	65	62	3	0.06
		1.2	36.58	--	--	--	--
Rising Tide: 9/11/2002	8:30	6	182.88	56	71	-16	-0.08
		3	91.44	68.5	75.5	-7	-0.08
FWDA							
9/10/2002	15:40	5.3	161.54	75.5	69	7	0.04
		2.7	82.30	72.5	67.5	5	0.06
		1.1	33.53	75	71.5	4	0.11
Creosote Dock							
9/10/2002	16:30	3.6	109.73	74	66	8	0.07
		2.45	74.68	79	71	8	0.11

Table 9 Groundwater Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

CONTAMINANT OF CONCERN		ODEQ (SH-1) (ug/L)	ODEQ (SH-2) (ug/L)	ODEQ (SH-3) (ug/L)	ODEQ (SH-4) (ug/L)	ODEQ (SH-5) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-7) (ug/L)	ODEQ (SH-8) (ug/L)	ODEQ (SH-9) (ug/L)
Date Sampled		**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**	**9/11/2002**
Depth of Sample (ft)		**3.7**	**1.95**	**0.95**	**4.29**	**1.5**	**0.85**	**5.5**	**2.5**	**1.0**
Pentachlorophenol		1.1	0.021	0.20	<0.020	<0.022	<0.020	<0.020	<0.020	<0.020
Arsenic		395	2.9	1.5	0.87	13.2	7.9	10.4	7.11	2.8
Chromium		29.1	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	2.1
Copper		66.9	2.4	3.1	1.5	2.7	<1.3	1.3	<1.3	6.1
Zinc		219	6.1	7.82	5.1	12	4.4	3.5	3.5	11.3
Polynuclear Aromatic Hydrocarbons (PAHs)										
Acenaphthene	L	10100	1.3	0.040	42.1	1.5	3.0	222	163	118
Acenaphthylene	L	87.7	<0.020	<0.020	0.24	<0.11	0.025	0.57	0.44	0.35
Anthracene	L	4140	0.59	0.13	1.6	0.26	0.078	19.6	17.6	14.1
Benzo[a]anthracene	H, C	720	0.030	0.042	0.12	<0.22	0.026 J	0.28	0.36	0.76
Benzo[b]fluoranthene	H, C	264	<0.020	0.050	0.028	<0.11	0.046	0.022	0.046	0.15
Benzo[k]fluoranthene	H	157	<0.020	0.054 J	0.023 J	<0.11	0.032 J	0.024	0.04 J	0.099
Benzo[a]pyrene	H, C	180	<0.041	<0.039	0.018 J	<0.22	0.069	0.019	0.031 J	0.097
Benzo[g,h,i]perylene	H, C	29.2	<0.020	0.019 J	<0.020	0.071	0.054	<0.020	<0.020	0.012
Chrysene	H, C	533	0.048	0.075	0.095	0.11	0.023 J	0.21	0.29	0.62
Dibenzo[a,h]anthracene	H, C	20.0	<0.041	<0.039	<0.041	<0.22	<0.041	<0.040	<0.040	<0.040
Fluoranthene	H	4910	0.67	0.46	1.9	1.2	0.028	12.7	12.6	15.8
Fluorene	L	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	H, C	46.0	<0.041	0.021 J	<0.041	<0.22	0.046	<0.040	<0.040	0.020
Naphthalene	L	62900	8.8	<0.15	1.4	0.38	<0.069	958	397	703
Phenanthrene	L	11600	3.6	0.47	12.8	1.1	0.031	151	125	104
Pyrene	H	2110	0.30	0.21	0.89	0.52	0.025	5.2	5.7	6.2
Total LPAHs		88828	14.3	0.640	58.1	3.24	3.13	1351	703	939
Total HPAHs		8969	1.05	0.931	3.07	1.90	0.349	18.5	19.1	23.8
Total Carcinogenic PAHs		1792	0.078	0.207	0.261	0.181	0.264	0.531	0.727	1.66
Total PAHs		97797	15.3	1.57	61.2	5.14	3.48	1370	722	963

-- Not Analyzed
L low molecular weight PAH (LPAH)
H high molecular weight PAH (HPAH)
C Carcinogenic PAH
J reported value is an estimate
ODEQ samples were analyzed by the EPA Manchester Laboratory.

Groundwater samples were collected by DEQ using MHE samplers on September 11, 2002. Samples were analyzed by North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.

Table 10

GROUNDWATER ELEVATION GRADIENTS
JULY 1 THROUGH DECEMBER 31, 2001
McCORMICK AND BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

TFA Monitoring Wells

Date	MW-Os Groundwater Elevation (ft,MSL)	MW-LRs Groundwater Elevation (ft,MSL)	Horizontal Distance (ft)	Angle of Flowpath Deviation (degrees)	Horizontal Gradient (ft/ft)	Horizontal Gradient (ft/mile)
September-02	10.15	3.43	767	28	0.01	52
December-02	9.53	4.54	767	36	0.008	42

FWDA Monitoring Wells

Date	MW-Js Groundwater Elevation (ft,MSL)	MW-18s Groundwater Elevation (ft,MSL)	Horizontal Distance (ft)	Angle of Flowpath Deviation (degrees)	Horizontal Gradient (ft/ft)	Horizontal Gradient (ft/mile)
September-02	8.57	2.56	689	3	0.009	46
December-02	8.26	7.69	689	6	0.001	4

Key:
ft = feet
ft/ft = feet per foot
ft/mile = feet per mile
FWDA = Former Waste Disposal Area
TFA = Tank Farm Area
MSL = mean sea level
Angle of Flowpath = The angle of flowpath is referred to as the flowpath deviation angle. This angle is measured following placement of the isopleths. A line is drawn between the wells in question and the estimated angle between this line and the nearest representative flowpath line is measured.

Table 11

JULY 1, 2002 THROUGH DECEMBER 31, 2002
SEMIANNUAL GROUNDWATER SAMPLING ANALYTICAL RESULTS
SAMPLE COLLECTION DATES: SEPTEMBER 23, 25 AND 26, 2002
MCCORMICK & BAXTER CREOSOTING COMPANY SITE
PORTLAND, OREGON
(ug/L)

Sample Identification	Analytes									
	Arsenic	Copper	Chromium	Zinc	PCP	Total PAHs	Total LPAHs	Total HPAHs	Total CPAHs	2,3,7,8-TCDD TEQ
EW-19s	-	-	-	-	-	-	-	-	-	-
MW-Ks	**4.76**	**2.96**	**1.90**	**217**	1 U	**0.92**	**0.92**	MRL	MRL	-
MW-LRs	**10.9**	2 U	**1.99**	5 U	**114**	**3,157**	**3,156**	**1.54**	MRL	-
MW-Os	**10.3**	**23.9**	**6.63**	**2,160**	1 U	MRL	MRL	MRL	MRL	-
MW-2s	1 U	2 U	**1.83**	5 U	1 U	**0.15**	**0.15**	MRL	MRL	-
MW-3s	**2.09**	2 U	**1.35**	5 U	1 U	**0.11**	**0.11**	MRL	MRL	-
MW-4s	**7.47**	2 U	**1.64**	5 U	1 U	**2.71**	**2.71**	MRL	MRL	-
MW-5s	**7.47**	2 U	**1.37**	5 U	100 U	**2,088**	**2,070**	**18.5**	**1.92**	-
MW-5s Duplicate	**7.91**	2 U	**1.60**	5 U	100 U	**2,047**	**2,030**	**17.6**	**1.89**	-
MW-8i	**118**	2 U	**1.23**	5 U	**233**	**9,090**	**9,071**	**18.3**	**4.43**	-
MW-13i	**18.4**	2 U	**2.78**	5 U	1 U	**1.52**	**1.52**	MRL	MRL	-
MW-19s	-	-	-	-	-	-	-	-	-	-
EW-25s	-	-	-	-	-	-	-	-	-	-
MW-18s	**24.3**	2 U	**1.80**	5 U	**205**	**6,061**	**6,057**	**4.49**	**0.11**	**3.5×10^{-7}**
MW-23d	**2.62**	2 U	1 U	5 U	1 U	**0.85**	**0.37**	**0.48**	MRL	-
MW-25s	**15.7**	2 U	**1.07**	5 U	1 U	**928**	**928**	**0.36**	MRL	-
MW-35s	1 U	2 U	1 U	5 U	1 U	**1.96**	**1.96**	MRL	MRL	-
MW-31s	**12.6**	2 U	1 U	5 U	1 U	**196**	**195**	**1.22**	MRL	**2.1×10^{-7}**
RINSATE	1 U	2 U	1 U	**6.55**	1 U	**2.18**	**2.04**	**0.15**	MRL	-

ACL CONCENTRATIONS (ug/L)									
Arsenic	Copper	Chromium	Zinc	PCP	Total PAHs	Total LPAHs	Total HPAHs	Total CPAHs	2,3,7,8-TCDD TEQ
1,000	1,000	1,000	1,000	5,000	43,000	-	-	-	0.0002

Notes:
Analyte detections, above reporting limits, are shown in reverse highlighted text.
Results reported in 3 signifigant digits.
Groundwater samples were not collected from EW-19s and MW-19s in September 2002 because of the presence of lighter-than-water nonaqueous phase liquid (LNAPL) in the well.
Total arsenic, chromium, copper, and zinc analysis by EPA Method 6000/7000 series.

Key:

	= exceeds ACL concentrations
ACL	= Alternative cleanup level, as listed in the EPA Record of Decision.
CPAHS	=Carcinogenic PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h,)anthracene, and indeno(1,2,3-cd)pyrene.
EPA	=United States Environmental Protection Agency.
HPAHs	=High molecular weight PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, fluoranthene, chrysene, dibenzo(a,h,)anthracene, pyrene, and indeno(1,2,3-cd)pyrene.
J	= Concentration qualified as estimated based on QA/QC results associated with this sample.
LPAHs	=Light-molecular weight PAHs (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene)
MRL	= Analyzed for, but not detected. Multiple compounds represented; therefore, no reporting limit is displayed.
PAHs	=Polynuclear aromatic hydrocarbons by EPA Method 8270 SIM.
PCP	=Pentachlorophenol by EPA Method 8270 SIM.
SIM	=Selective ion monitoring.
2,3,7,8-TCDD TEQ	=2,3,7,8-tetrachlorodibenzo-p-dioxin toxic equivalency quotient by EPA Method 1613.
U	=Compound was analyzed for, but was not detected; the corresponding value is the maximum reporting limit for the analyte.
ug/L	= Micrograms per liter.
–	= Not available, not applicable, or not analyzed.
TCDD	=Tetrachlorodibenzo-p-dioxin.

Table 12

HISTORICAL AND MONTHLY DNAPL THICKNESS
July 1 through December 31, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	Maximum DNAPL Thickness (ft)	Date	July 2002 DNAPL Thickness (ft)	August 2002 DNAPL Thickness (ft)	September 2002 DNAPL Thickness (ft)	October 2002 DNAPL Thickness (ft)	November 2002 DNAPL Thickness (ft)	December 2002 DNAPL Thickness (ft)
Tank Farm Area								
EW-1s	4.7	Oct-94	0.00	0.00	0.00	0.00	0.00	0.00
EW-4s	6.2	Mar-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-5s	2.92	Dec-95	0.00	0.00	0.00	0.00	0.00	0.00
EW-7s	2.09	Dec-94	0.00	0.00	0.00	0.00	0.00	0.00
EW-8s	2.7	Jul-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-12s	4.5	Jan-99	0.00	0.00	0.00	0.00	0.00	0.00
EW-17s	1.41	Nov-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-18s	2.47	Aug-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-24s	10.27	Mar-00	0.00	0.00	0.00	0.00	0.00	0.00
EW-25s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Is	9.93	Aug-87	0.00	0.00	0.00	0.00	0.00	0.00
MW-LRs	nd	-	nm	nm	nm	nm	nm	nm
MW-Ps	nd	-	nm	nm	nm	nm	nm	nm
MW-Rs	0.55	Oct-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-7s	4.55	Jan-98	nm	nm	nm	nm	nm	nm
MW-8i	3.62	Mar-96	0.00	0.00	0.00	0.00	0.00	0.00
MW-10s	0.60	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-22i	4.11	Mar-98	0.00	0.00	0.00	0.00	0.00	0.00
MW-23d	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-29s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-1s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
TM-5s	ND	-	0.00	0.00	0.00	0.00	0.00	0.00
Former Waste Disposal Area								
EW-2s	1.90	Aug-91	0.00	0.00	0.00	0.00	0.00	0.00
EW-3s	0.35	May-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-6s	3.40	Aug-93	0.00	0.00	0.00	0.00	0.00	0.00
EW-9s	6.10	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-10s	1.36	Aug-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-13s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-14s	1.90	Dec-97	0.00	0.00	0.00	0.00	0.00	0.00
EW-15s	0.72	Mar-98	0.00	0.00	0.00	0.00	0.00	0.00
EW-16s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-19s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-20s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-22s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
EW-23s	0.07	Apr-00	0.00	0.00	0.00	0.00	0.00	0.00
MW-Ds	6.01	Jan-94	0.00	0.00	0.00	0.00	0.00	0.00
MW-Es	4.20	Aug-87	0.00	0.00	0.00	0.00	0.00	0.00
MW-Fs	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-Gs	14.85	Mar-91	0.00	0.00	0.00	0.00	0.00	0.00
MW-18s	nd	-	nm	nm	nm	nm	nm	nm
MW-20i	34.32	Dec-94	0.00	0.00	0.00	0.00	0.00	0.00
MW-21s	2.25	Aug-99	0.00	0.00	0.00	0.00	0.00	0.00
MW-34i	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
Other Areas								
EW-11s	nd	-	0.00	0.00	0.00	0.00	0.00	0.00
MW-1s	3.16	Jan-98	nm	nm	nm	nm	nm	nm
MW-19s	2.14	Dec-98	0.00	0.00	0.00	0.00	0.00	0.00

Key:
- = Not applicable.
DNAPL = Denser-than-water nonaqueous phase liquid.
ft = Feet.
ID = Identification.
NAPL = Nonaqueous phase liquid.
nd = Nondetect.
nm = Not measured.

Notes:
1. The accuracy of the oil/water interface probe is not reliable at NAPL thicknesses less than 0.01 foot. Therefore, trace amounts of NAPL may exist where the measured NAPL value is 0.00 foot. When a NAPL sheen has been observed (on the probe tip) in these cases, the value is noted as *trace*.
2. The oil/water interface probe was out of service during January 2002 for repairs.

Table 13

HISTORICAL NAPL WELL CLASSIFICATIONS
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

Well ID	3rd Quarter 1997	4th Quarter 1997	1st Quarter 1998	2nd Quarter 1998	2nd Half 1998	1st Half 1999	2nd Half 1999	1st Half 2000	2nd Half 2000	1st Half 2001	2nd Half 2001	1st Half 2002	2nd Half 2002
Tank Farm Area													
EW-1s	●	●	●	●	◒	●	◒	-	⊕	◓	◓	⊕	◓
EW-4s	●	◓	◓	◓	◒	⊕	◒	◓	⊕	⊕	⊕	⊕	⊕
EW-5s	●	●	●	●	●	●	-	-	⊕	⊕	⊕	⊕	⊕
EW-7s	●	◓	◓	◓	●	⊕	●	◓	⊕	⊕	⊕	⊕	⊕
EW-8s	◒	◒	◒	●	◒	●	-	-	-	⊕	⊕	⊕	⊕
EW-12s	●	●	●	●	◒	◒	-	-	-	◓	⊕	⊕	⊕
EW-17s	●	◓	◓	●	●	◓	●	◓	◓	◓	◓	⊕	⊕
EW-18s	●	◓	◓	◓	●	◒	-	-	◓	◓	◓	◓	◓
EW-24s	-	-	-	-	◒	●	●	●	●	◓	◓	◒	◓
EW-25s	-	-	-	-	⊕	⊕	⊕	◓	◓	⊕	⊕	⊕	⊕
MW-Is	●	●	●	●	●	●	-	-	-	-	◓	⊕	◓
MW-LRs	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-	-	⊕	-
MW-Ps	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	◓	-	⊕	-
MW-Rs	◓	◓	◓	◓	●	◓	●	●	◓	◓	◓	◓	◓
MW-7s	◒	◒	●	◒	◒	◒	●	-	⊕	◓	⊕	⊕	-
MW-8i	◒	◒	◒	◒	◒	◒	-	-	⊕	⊕	⊕	⊕	⊕
MW-10s	●	◓	◓	●	●	◓	●	●	◓	◓	◓	◓	◓
MW-11s	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-	-	-
MW-22i	◒	◒	◒	●	●	◒	-	-	-	⊕	⊕	⊕	⊕
MW-23d	-	-	-	-	-	-	-	-	-	-	-	-	⊕
MW-29	-	-	-	-	-	-	-	-	-	-	-	-	⊕
TM-1s	-	-	-	-	-	-	◓	◓	-	⊕	⊕	⊕	⊕
TM-3s	-	-	-	-	-	-	⊕	⊕	-	⊕	⊕	⊕	-
TM-4s	-	-	-	-	-	-	⊕	⊕	-	⊕	⊕	⊕	-
TM-5s	-	-	-	-	-	-	◓	⊕	◓	⊕	⊕	⊕	⊕
Former Waste Disposal Area													
EW-2s	◒	⊕	⊕	◓	●	●	●	◒	◒	⊕	⊕	⊕	⊕
EW-3s	◓	◓	●	●	●	◓	◓	◓	◓	◓	◓	◓	◓
EW-6s	●	●	●	◒	●	●	●	-	-	◓	◓	◓	◓
EW-9s	◒	●	●	●	●	◒	●	◒	◒	⊕	⊕	⊕	⊕
EW-10s	●	◓	◓	◓	◓	◓	●	●	◓	◓	◓	◓	◓
EW-13s	◒	⊕	⊕	⊕	⊕	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕
EW-14s	◓	●	●	●	●	◓	●	●	◓	◓	◓	◓	◓
EW-15s	●	◓	●	◓	◓	●	◓	◓	◓	◓	◓	◓	◓
EW-16s	-	-	-	-	-	-	-	-	-	-	-	-	⊕
EW-19s	◒	⊕	⊕	⊕	⊕	◓	◓	◓	◓	⊕	⊕	⊕	⊕
EW-20s	◓	⊕	◓	◓	⊕	◓	●	⊕	⊕	⊕	⊕	⊕	⊕
EW-22s	-	-	-	-	⊕	◓	⊕	◓	⊕	⊕	⊕	⊕	⊕
EW-23s	-	-	-	-	◓	◓	●	●	◓	◓	◓	◓	◓
MW-Ds	◒	●	●	●	●	●	◒	-	-	◓	◓	◓	◓
MW-Es	●	●	●	●	●	◓	-	-	-	◓	◓	◓	◓
MW-Fs	-	-	-	-	-	-	-	-	-	-	-	-	⊕
MW-Gs	●	●	●	●	●	●	◒	-	-	◓	◓	●	⊕
MW-18s	◒	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	–
MW-20i	◒	●	●	●	●	◒	◒	-	-	⊕	⊕	⊕	◓
MW-21s	●	●	●	●	●	●	●	●	◓	◓	◓	◓	◓
MW-34i	-	-	-	-	-	-	-	-	-	-	-	-	⊕
Other Areas													
EW-11s	◒	◒	⊕	⊕	⊕	⊕	◓	⊕	⊕	⊕	⊕	⊕	⊕
MW-1s	◓	◓	●	●	◓	◓	◓	◓	◓	◓	◓	◓	◓
MW-19s	◒	◒	◒	●	●	◓	◒	◒	◓	⊕	⊕	⊕	⊕
MW-35s	-	-	-	-	⊕	⊕	⊕	⊕	⊕	⊕	⊕	⊕	-

Key:
◓ = LNAPL thicknesses measured during reporting period.
◒ = DNAPL thicknesses measured during reporting period.
● = LNAPL and DNAPL thicknesses measured during reporting period.
⊕ = No NAPL thicknesses measured during reporting period.
- = Not measured.
DNAPL = Denser-than-water nonaqueous phase liquid.
ID = Identification.
LNAPL = Lighter-than-water nonaqueous phase liquid.
NAPL = Nonaqueous phase liquid.

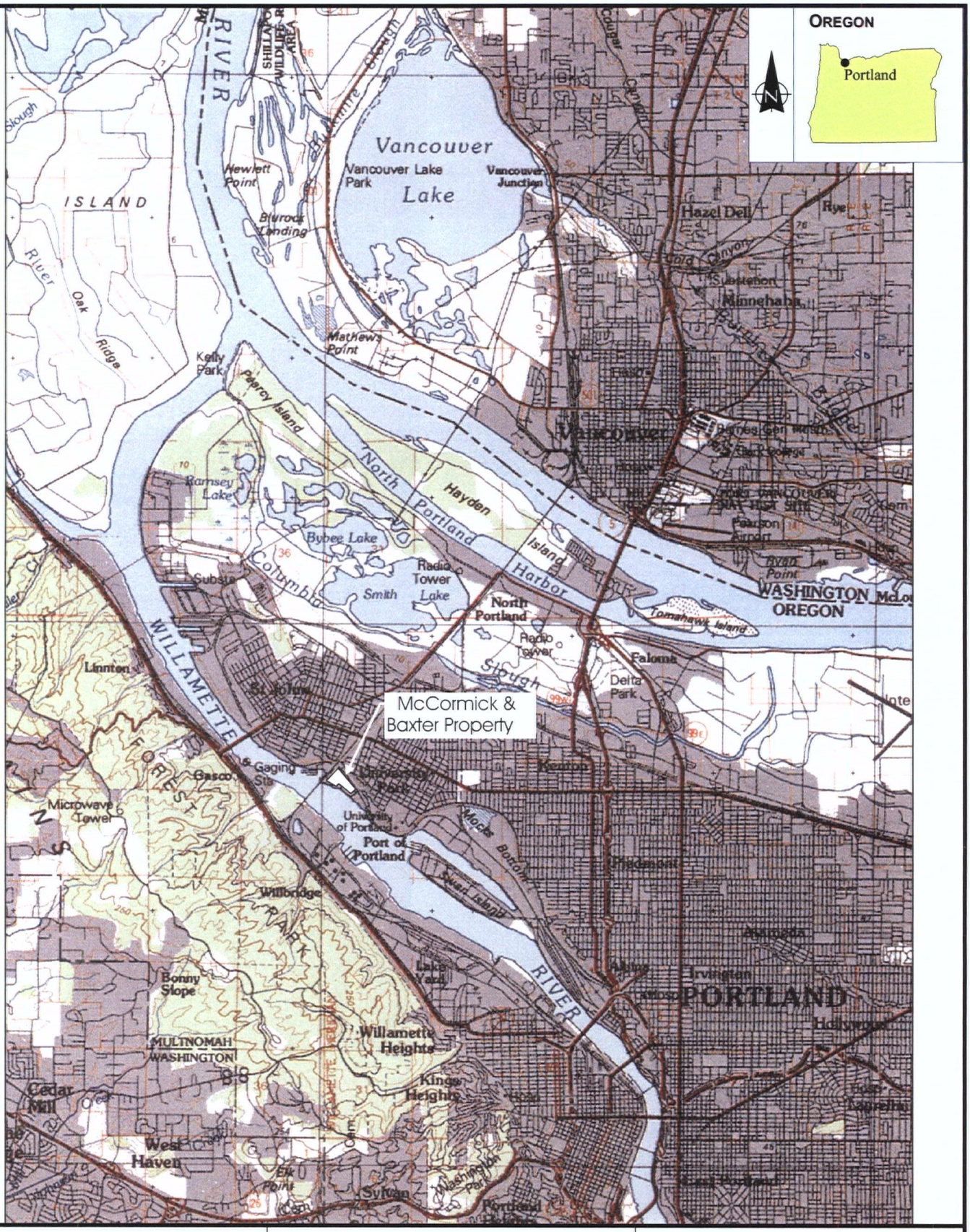
Table 14

PURE-PHASE NAPL EXTRACTION SUMMARY
July through December, 2002
McCORMICK & BAXTER CREOSOTING COMPANY
PORTLAND, OREGON

	NAPL Extracted for Period (US Gallons)
Manual Extraction[1] - TFA Wells	
EW-18s	6.08
Subtotal:	*6.08*
Manual Extraction[1] - FWDA Wells	
EW-3s	0.50
EW-6s	3.70
EW-10s	8.60
EW-14s	0.03
EW-15s	19.20
EW-23s	9.28
MW-Ds	0.48
MW-Rs	0.50
MW-21s	2.48
Subtotal:	*44.25*
Total Manual Extraction:	**50.33**
LNAPL Skimmers - TFA Wells	
MW-Rs	0.19
Subtotal:	*0.19*
LNAPL Skimmers - FWDA Wells	
EW-10s	2.55
EW-15s	1.50
EW-23s	0.71
MW-Ds	0.00
MW-21s	2.18
Subtotal:	*6.94*
Total LNAPL Skimmer Extraction:	**7.13**
TOTAL NAPL EXTRACTED:	**57.46**

Key:
FWDA = Former waste disposal area.
LNAPL = Lighter-than-water nonaqueous phase liquid.
NAPL = Nonaqueous phase liquid.
TFA = Tank farm area.
US = United States.

Notes:
[1] Manual extraction is typically conducted biweekly when NAPL accumulation measurements exceed 0.5 feet in a particular well.



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McCORMICK & BAXTER
CREOSOTING CO.
Portland, Oregon

Figure 1

SITE LOCATION MAP

Date:
3-26-02

10:000749OB051302\fig 1

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N W E S

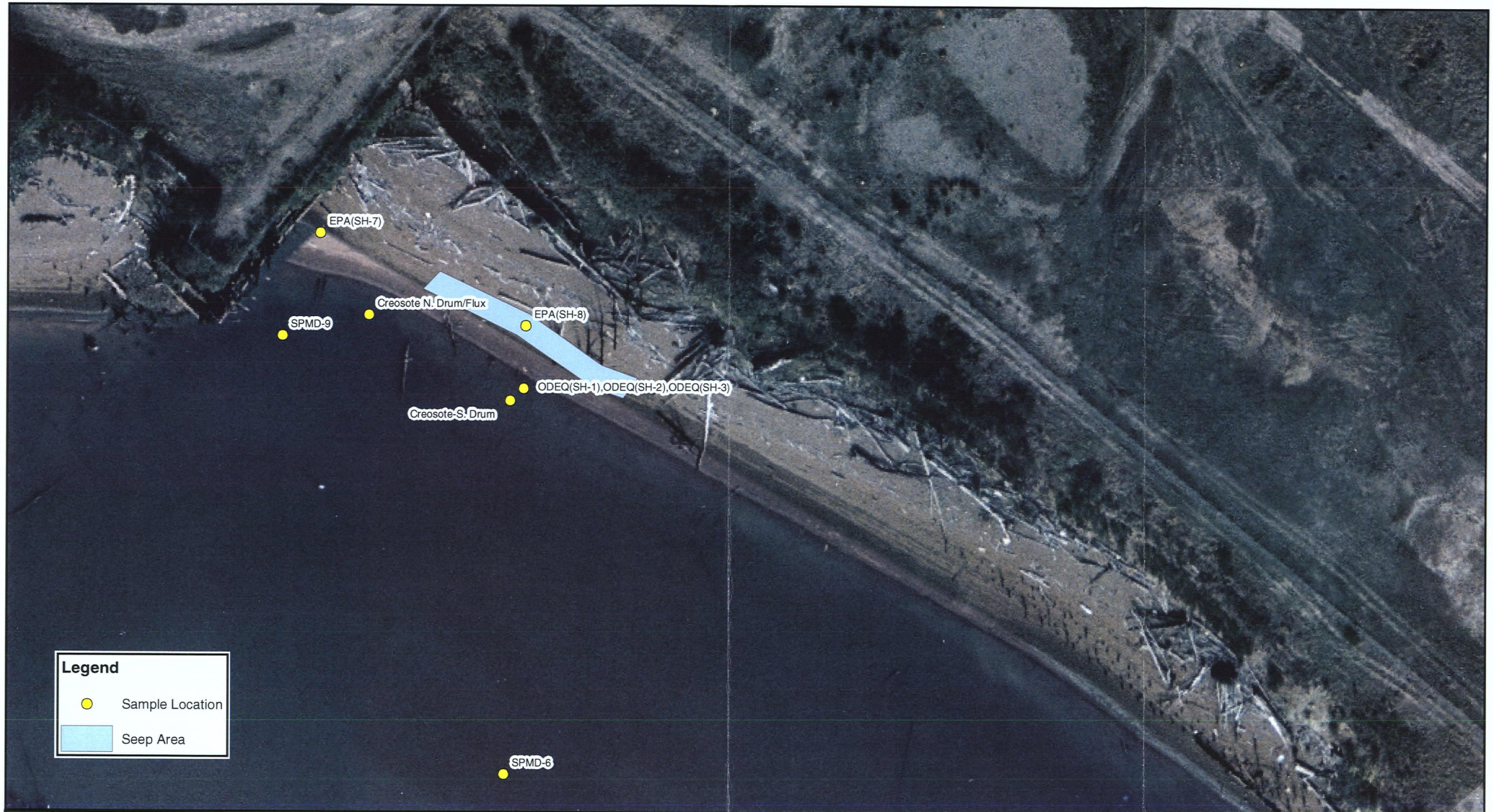
0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2a
Sample Locations
September 2002 Sampling Event

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01



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N W E S

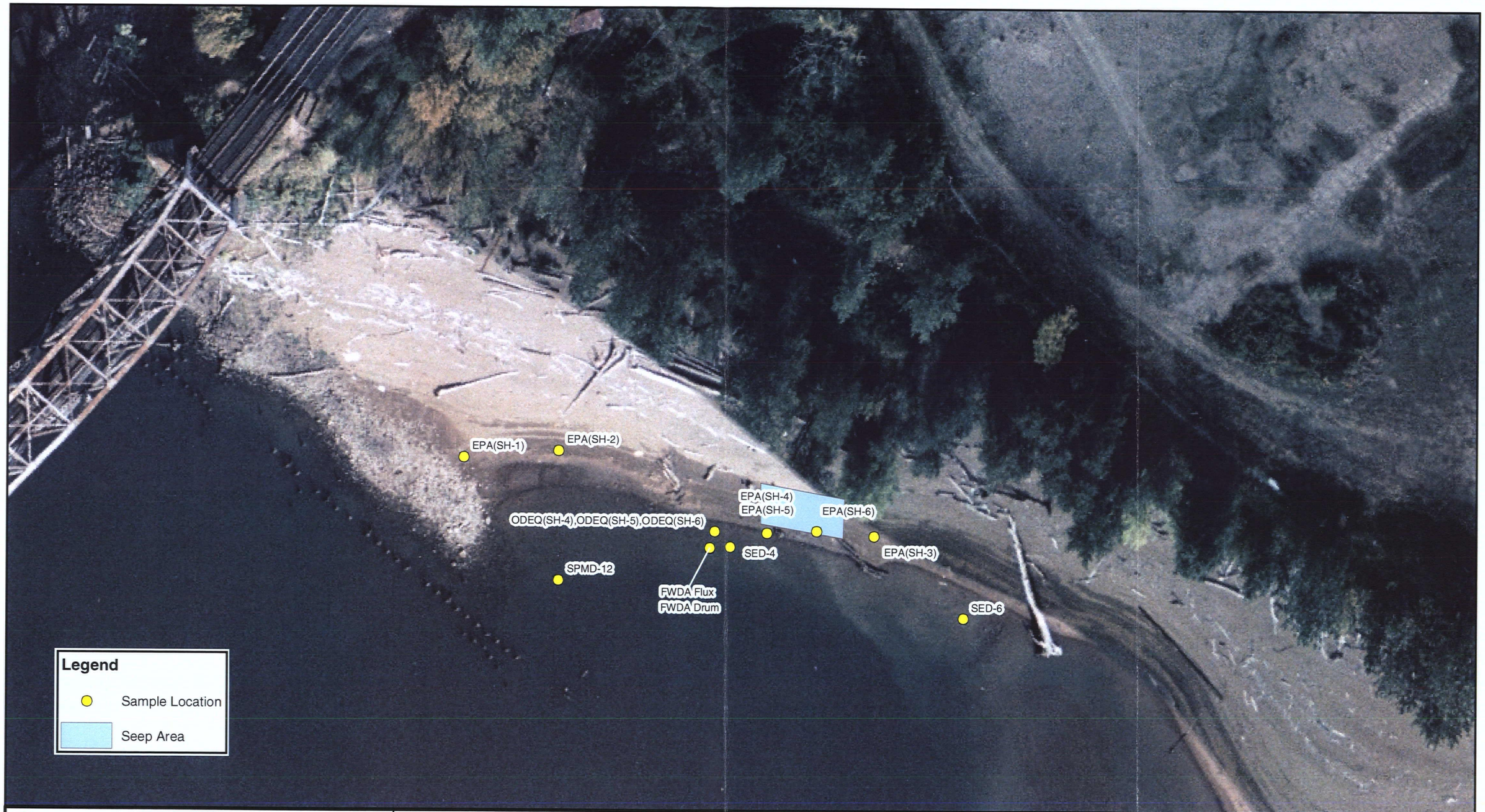
0 15 30 60 90 120
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2b
Creosote Dock Area

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01



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N W E S

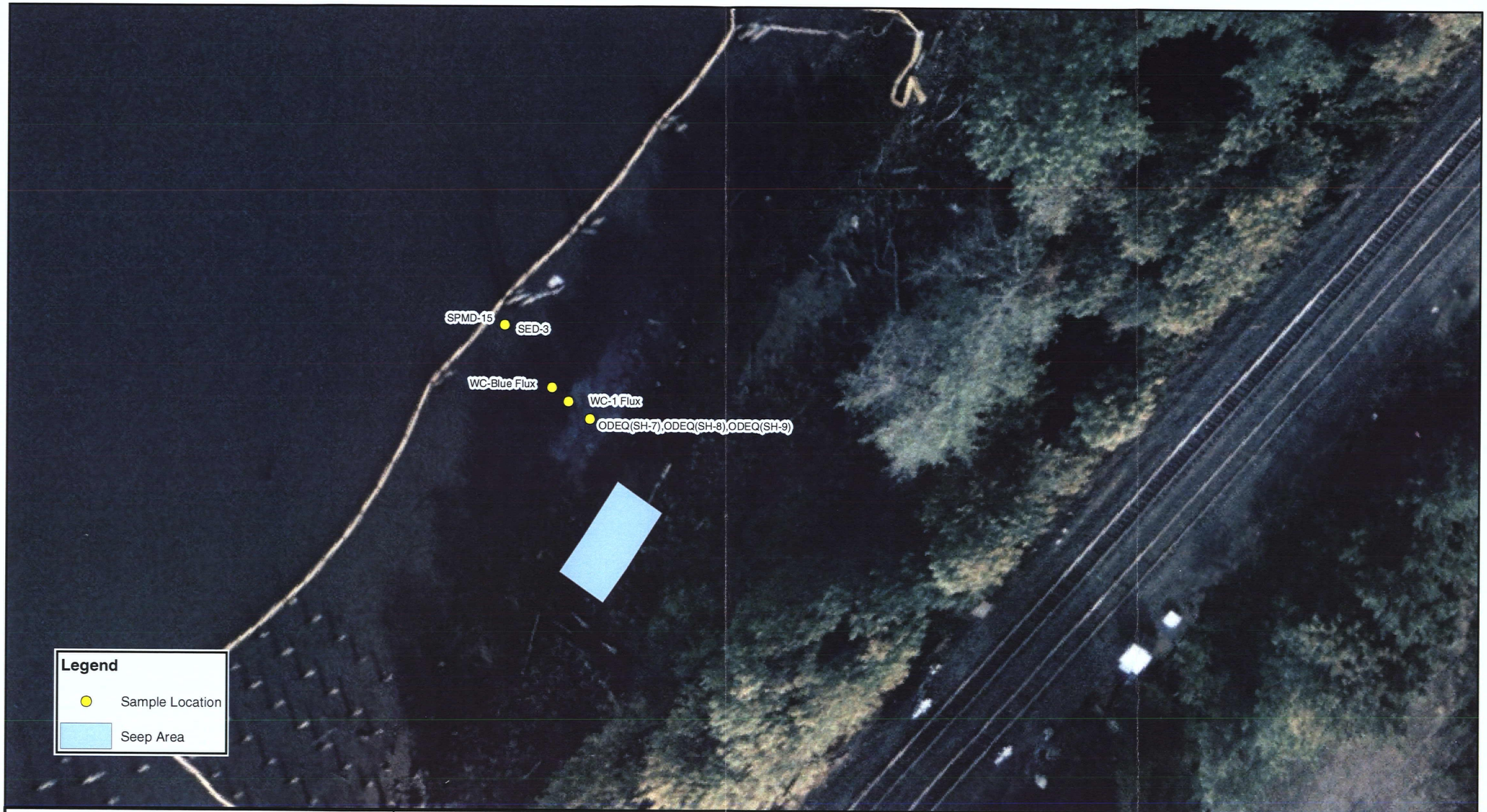
0 12.5 25 50 75 100
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2c
Former Waste Disposal Area

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01



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N W E S

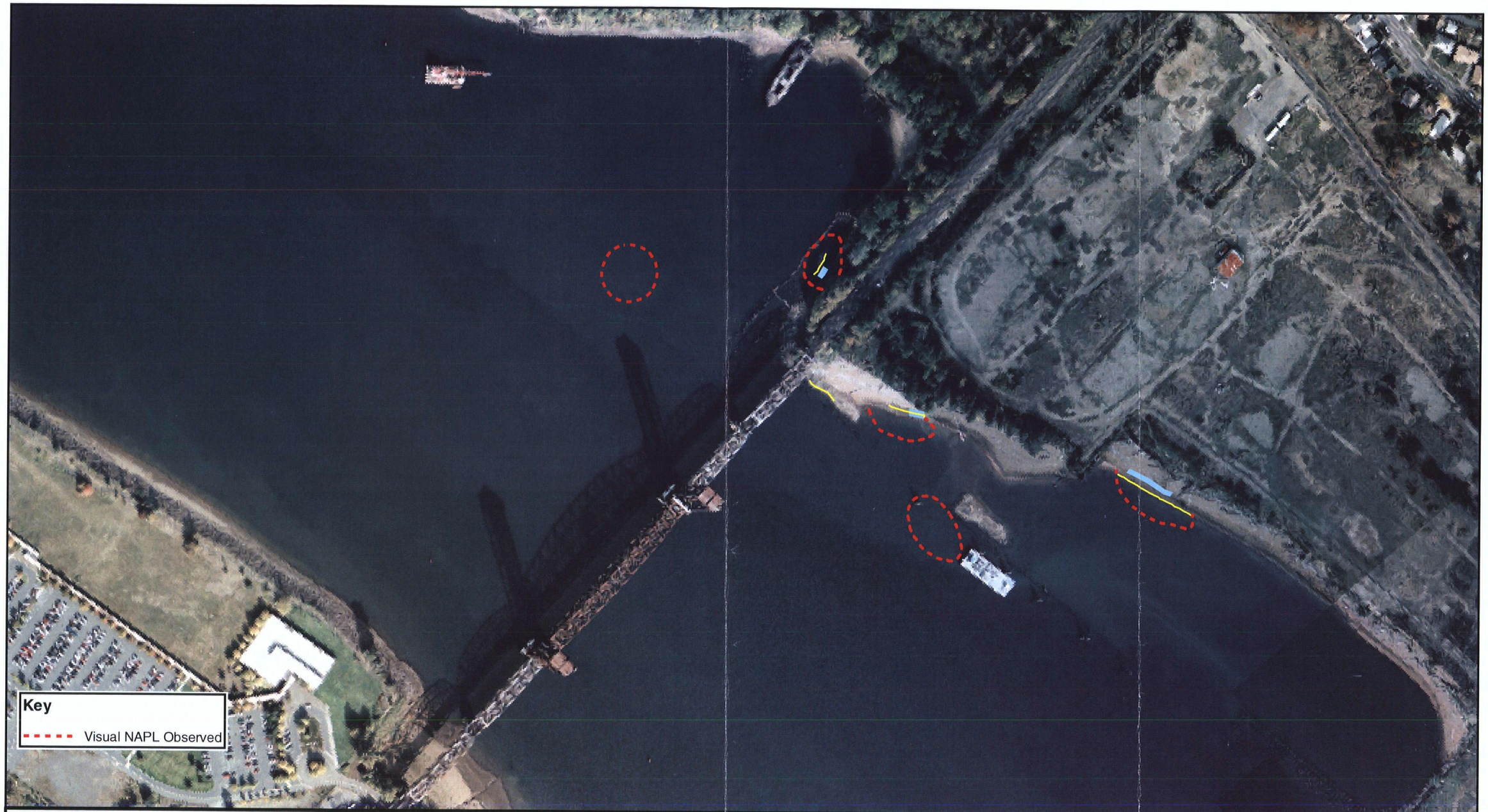
0 5 10 20 30 40 50
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2d
Willamette Cove Area

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01



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N W E S

0 60 120 240 360 480 600
Feet

Aerial Reference: EPA Region 10, 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2e
VISUAL NAPL OBSERVED DURING SAMPLING
SEPTEMBER 2002

Date:	Drawn by:	Job Number:
01/29/04	avh	001688.OY02.27.01

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N W E S

0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 3a
Surface Water Grab Sample Locations
September 2002 Sampling Event

Date:	Drawn by:	Job Number:
01/21/04	AVH	000749.OQ04.27.00

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N W E S

0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 3b
Surface Water SPMD Sample Locations
September 2002 Sampling Event

Date:	Drawn by:	Job number:
02/07/03	AVH	001688.OY02.27.01

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N W E S

0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 4
Pore Water Sample Locations
September 2002 Sampling Event

Date:	Drawn by:	Job number:
01/21/04	AVH	001281.OY02.27.01

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Seattle, Washington

N W E S
0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 5
Sediment Sample Locations
September 2002 Sampling Event

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01

Figure 6. Total carcinogenic polyaromatic hydrocarbon concentrations in sediment samples (SED-1 through SED-9, EPA (SH) 6)

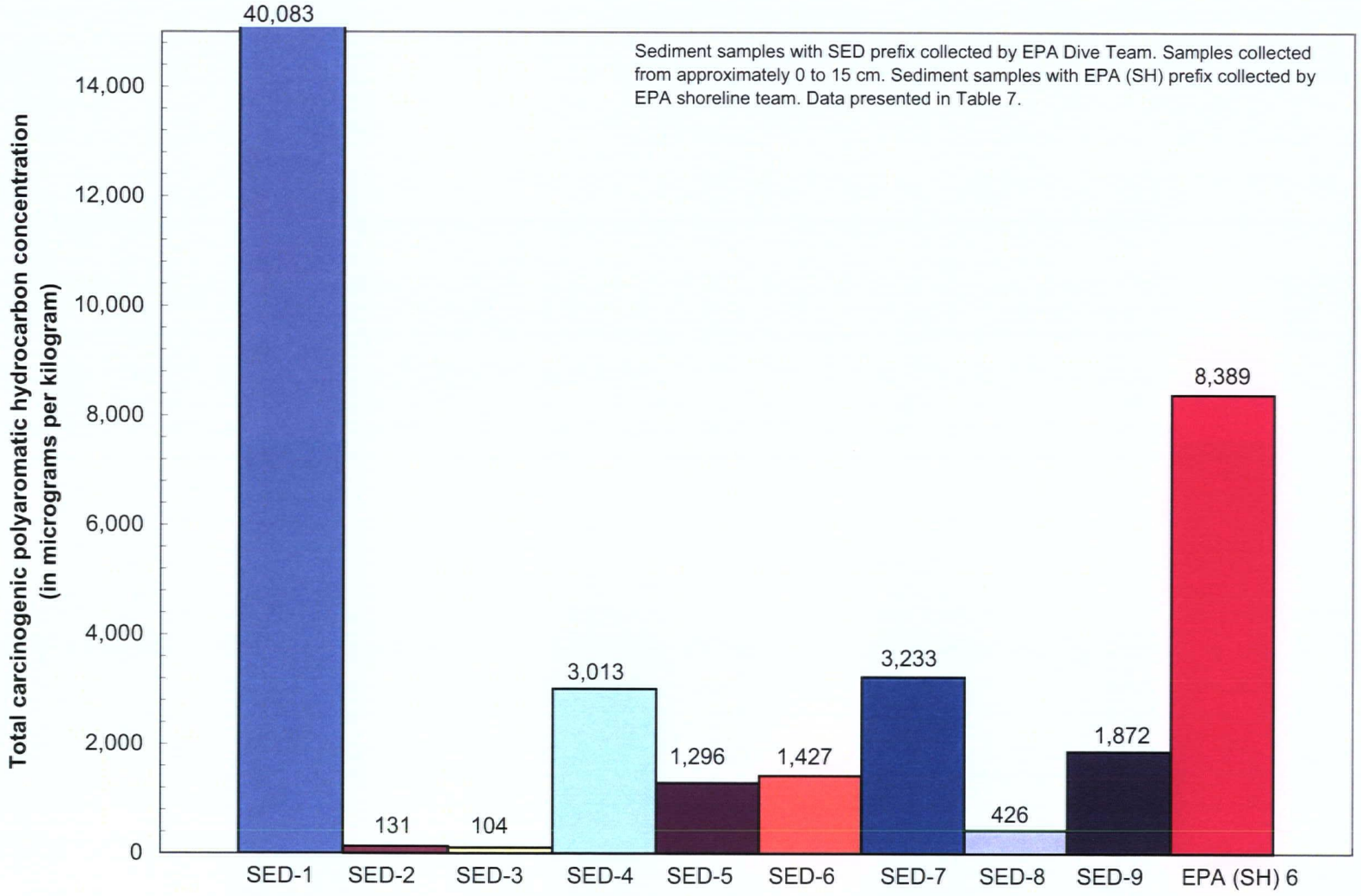


Figure 6a. Total polyaromatic hydrocarbon concentrations in sediment samples (SED-1 through SED-9, EPA (SH) 6)

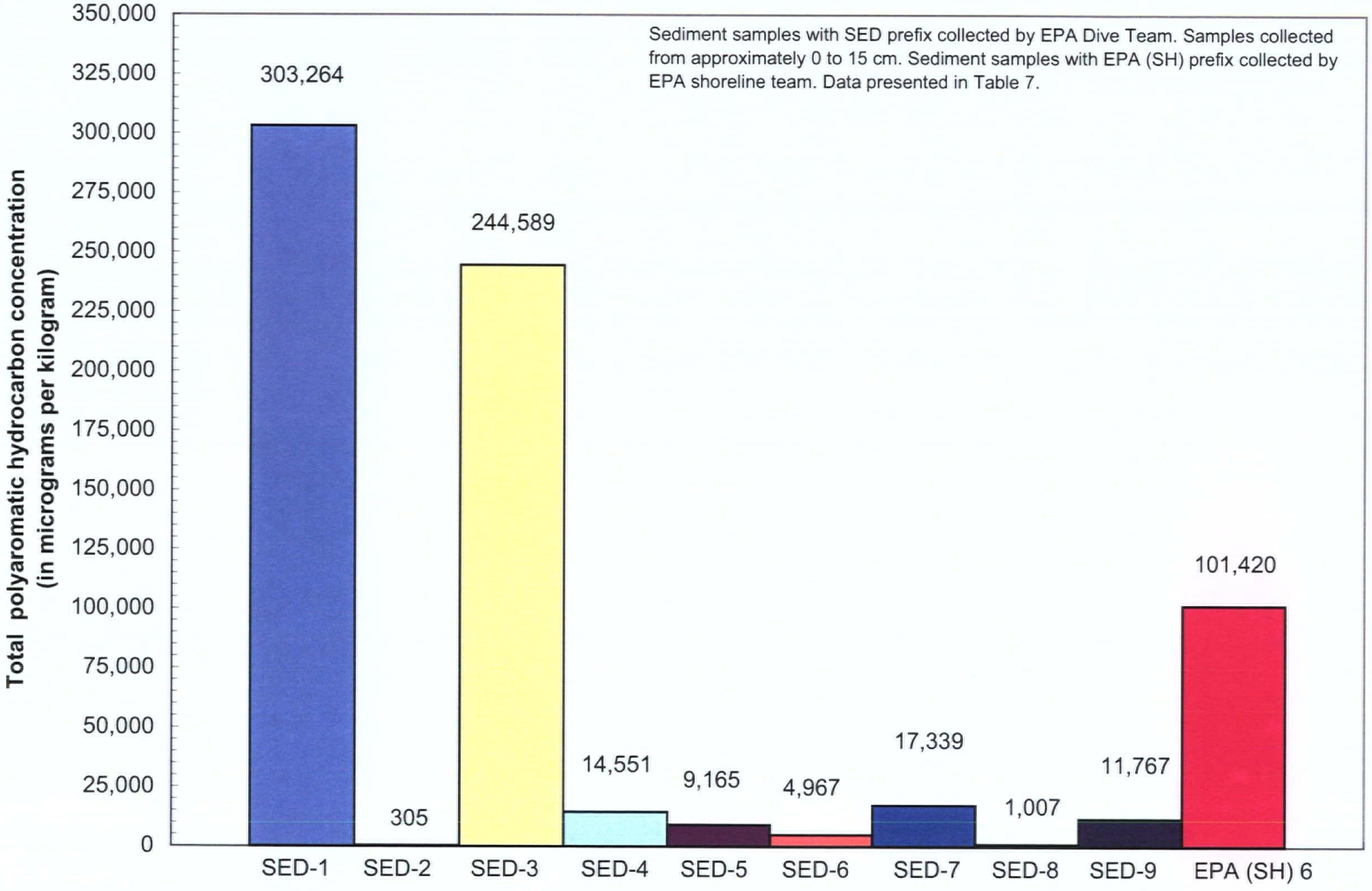


Figure 7a. Total polyaromatic hydrocarbon concentrations in sediment, pore water, and surface water from SED-3

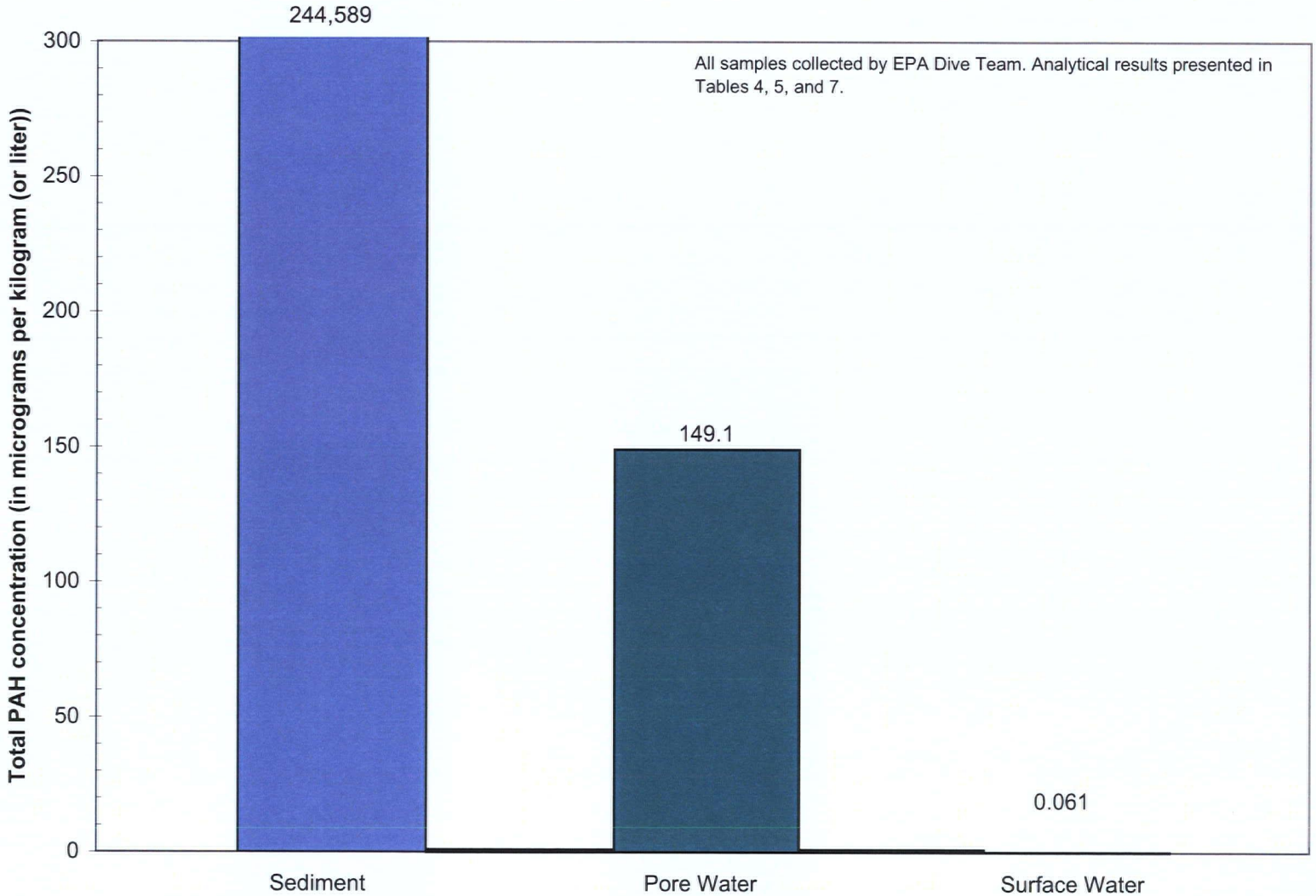


Figure 7b. Total polyaromatic hydrocarbon concentrations in sediment, pore water, and surface water samples from SED-4

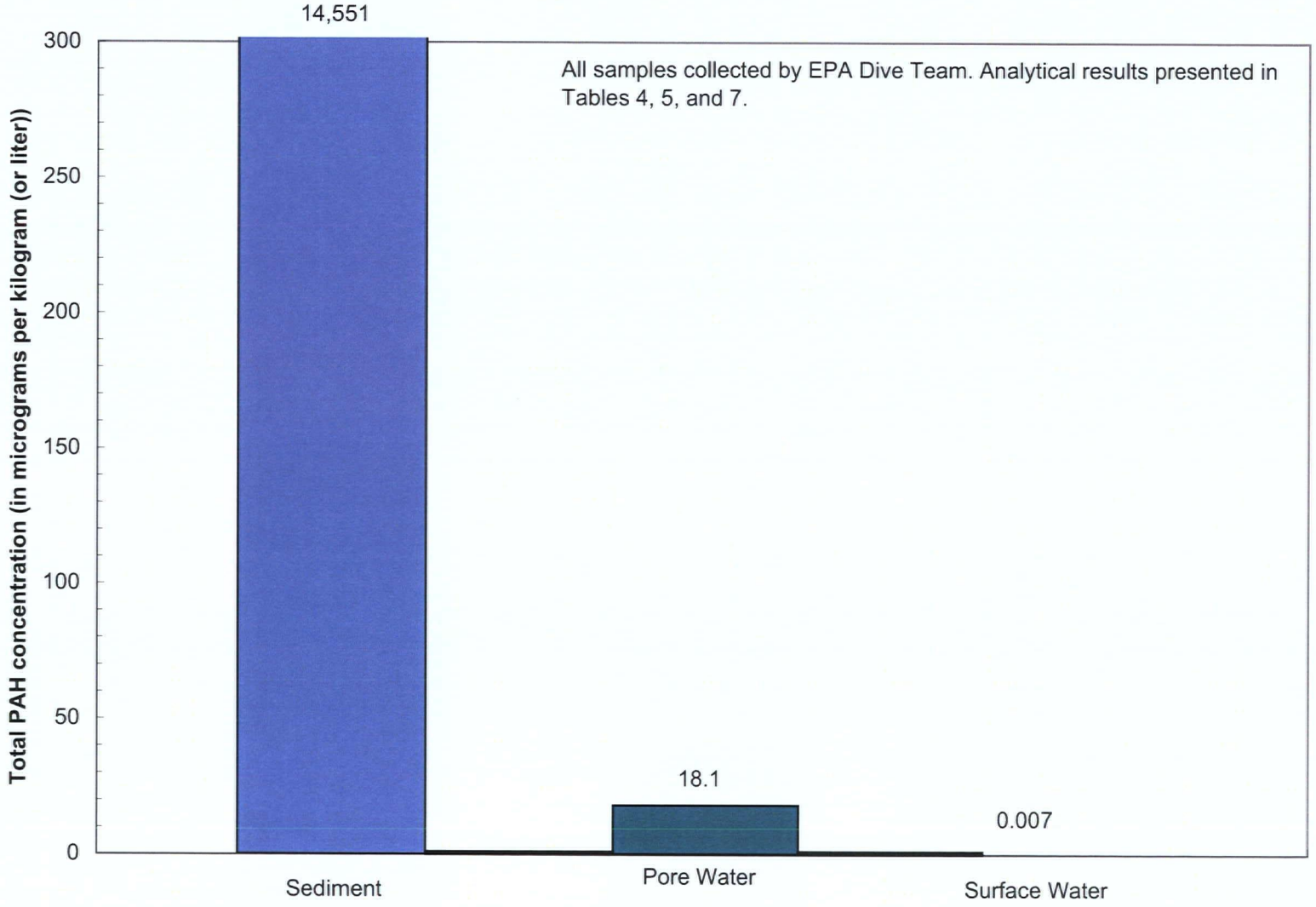


Figure 7c. Total polyaromatic hydrocarbons concentrations in sediment, pore water, and surface water samples from SED-5

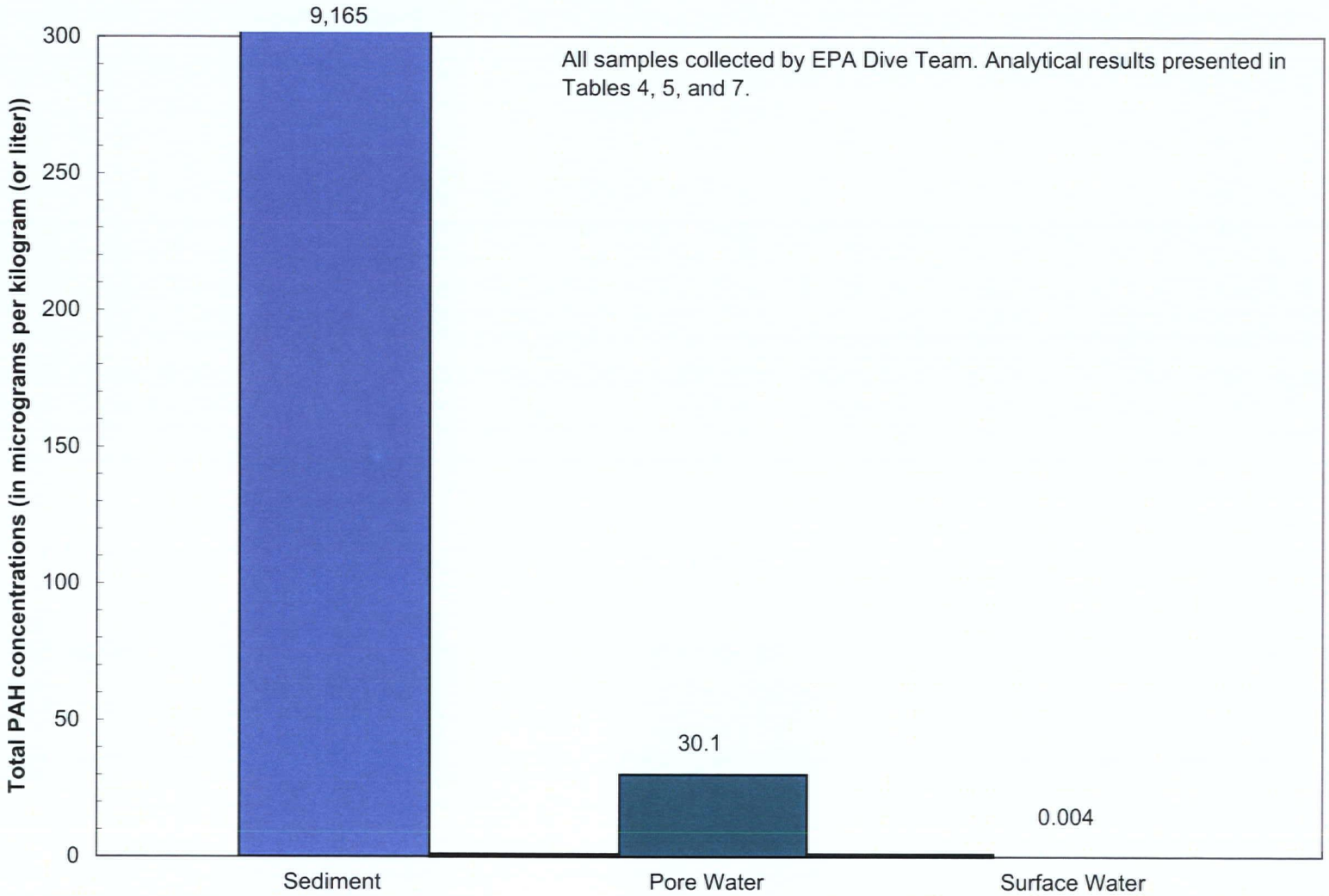
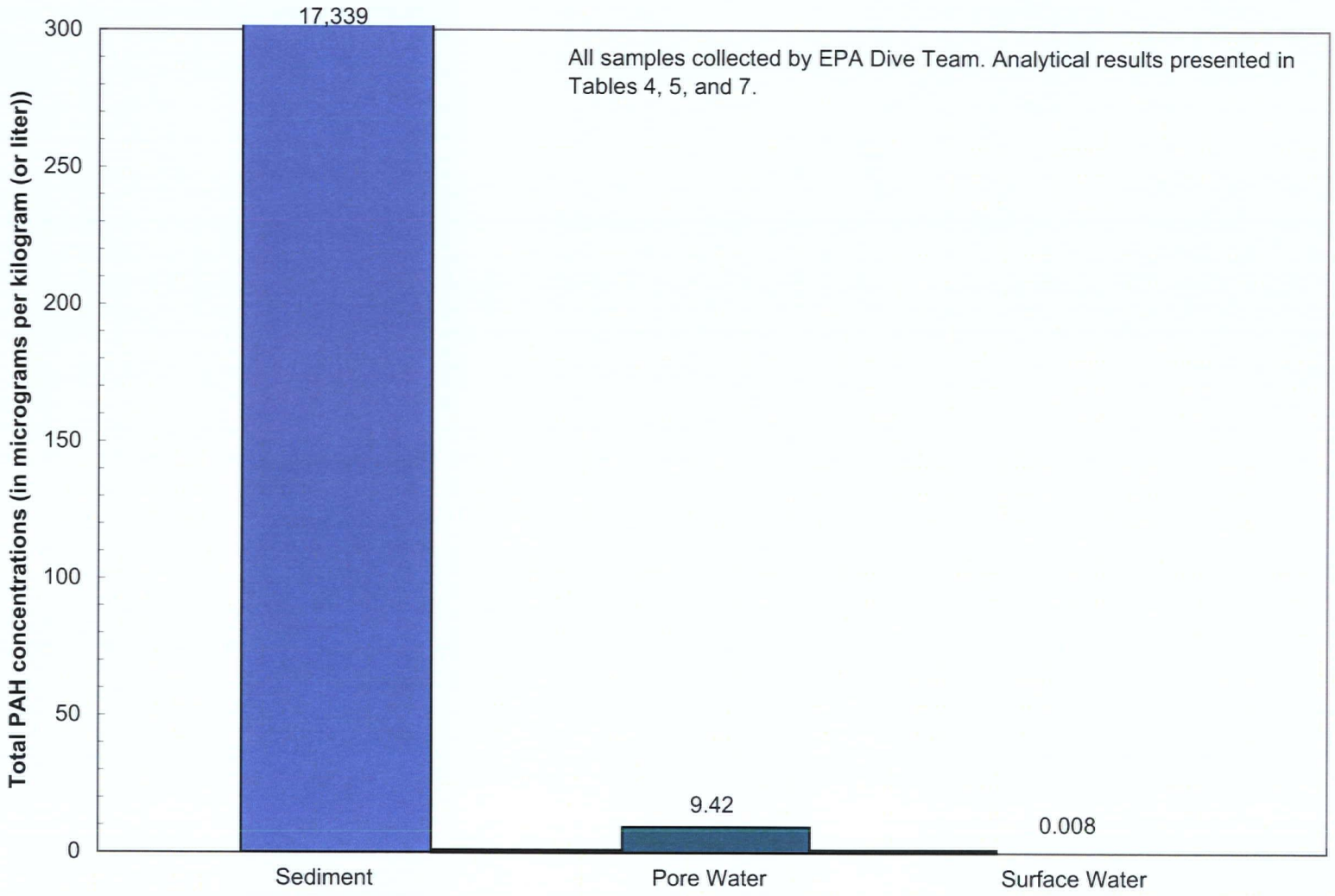


Figure 7d. Total polyaromatic hydrocarbon concentrations in sediment, pore water, and surface water samples from SED-7



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Seattle, Washington

N W E S

0 75 150 300 450 600
Feet

SPMD Sample Locations from OSU Report
Aerial Photo: EPA Region 10 - 2002

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 8
Groundwater Sample Locations (Deepest Samples)
September 2002 Sampling Event

Date:	Drawn by:	Job number:
01/21/04	AVH	001688.OY02.27.01

Figure 9a. Anthracene concentrations in groundwater with depth

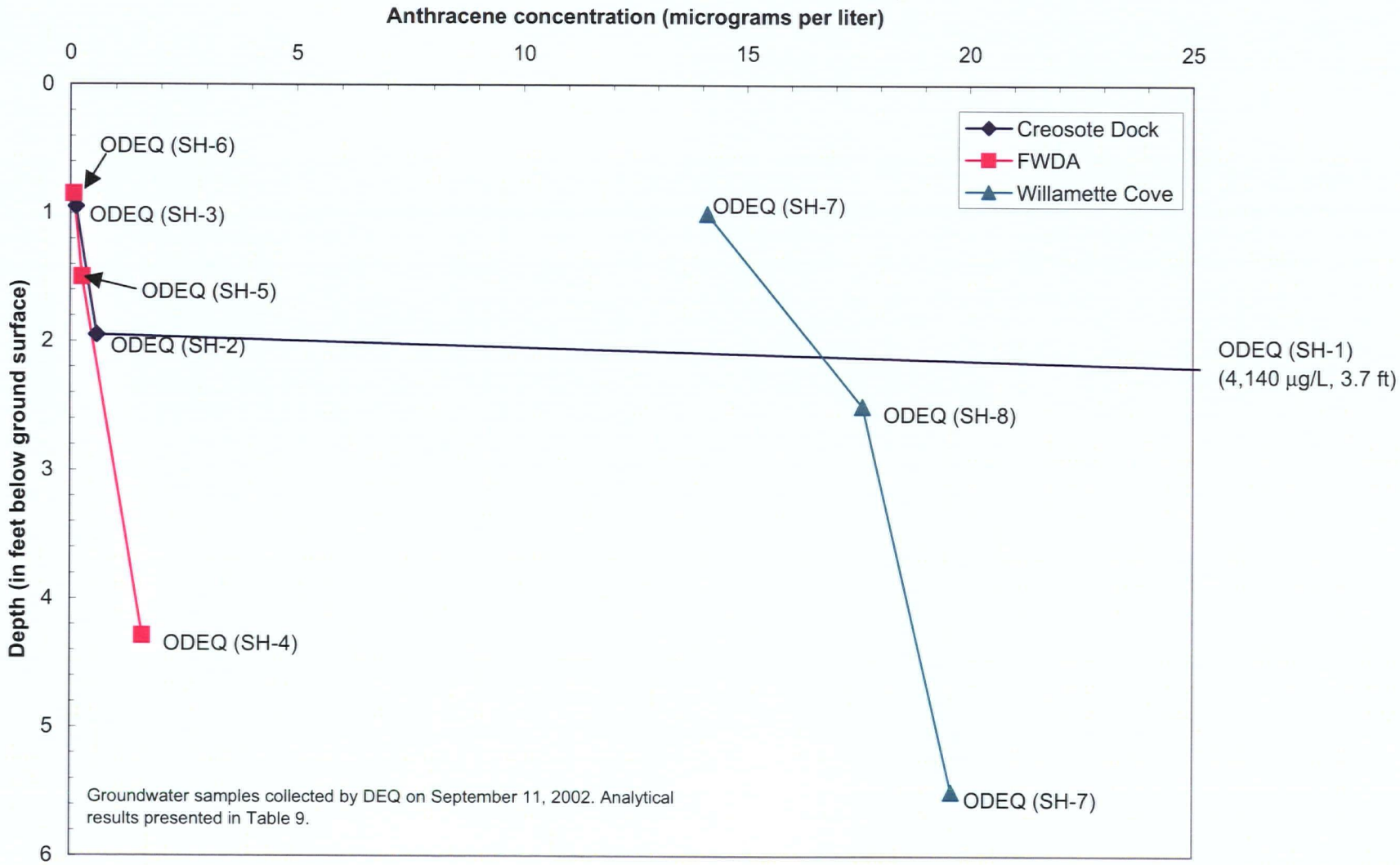


Figure 9b. Naphthalene concentrations in groundwater with depth

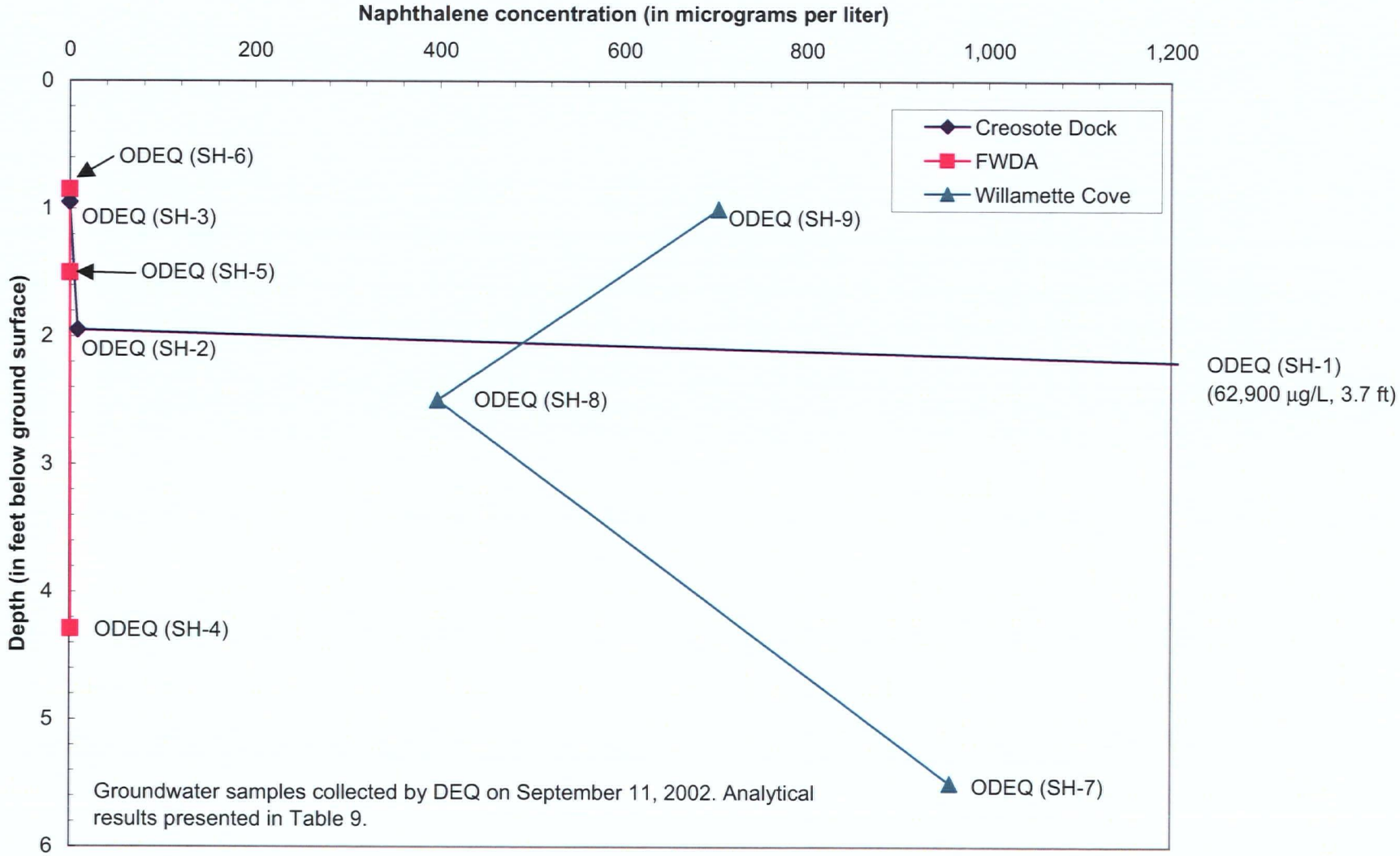


Figure 9c. Phenanthrene concentrations in groundwater with depth

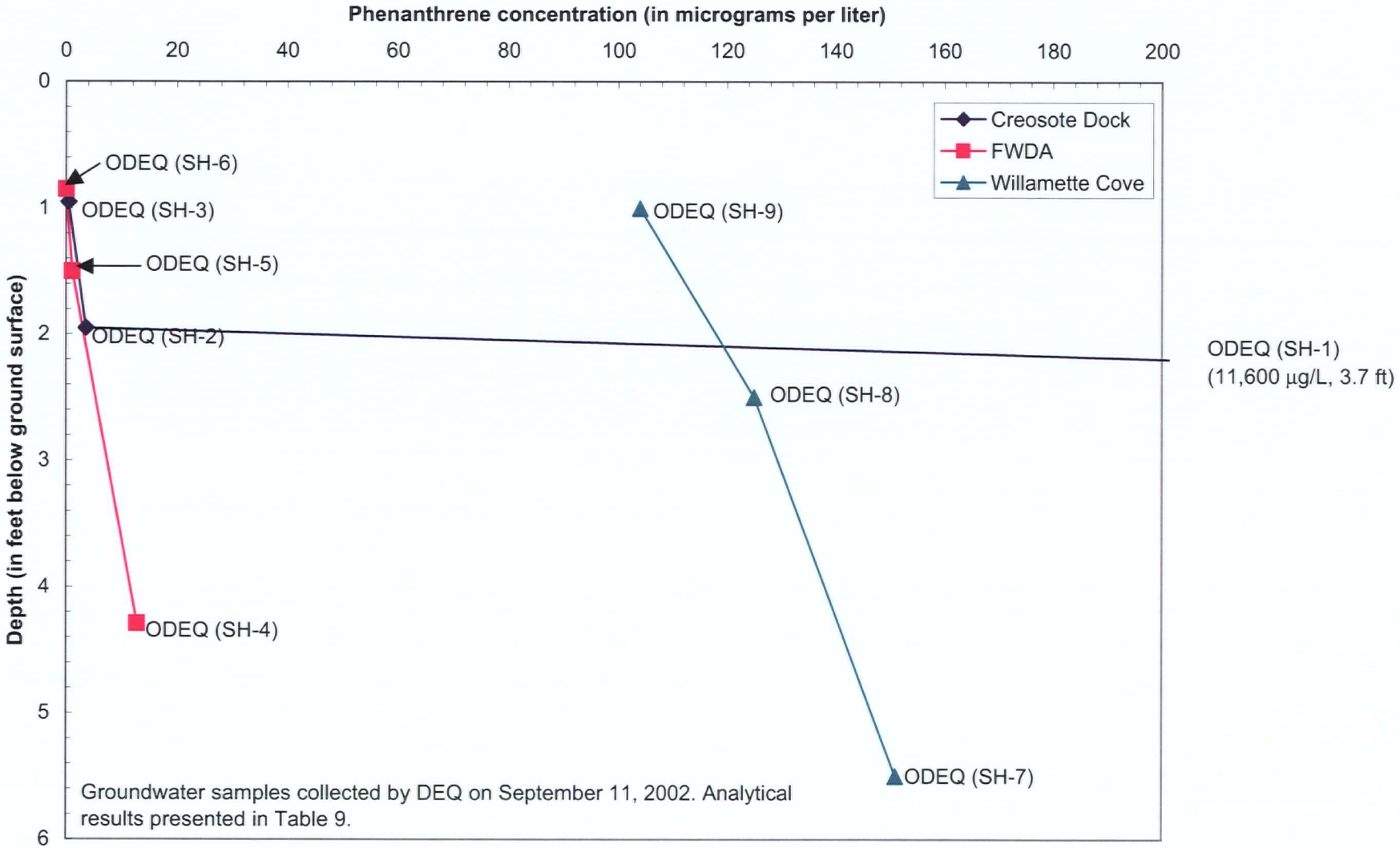
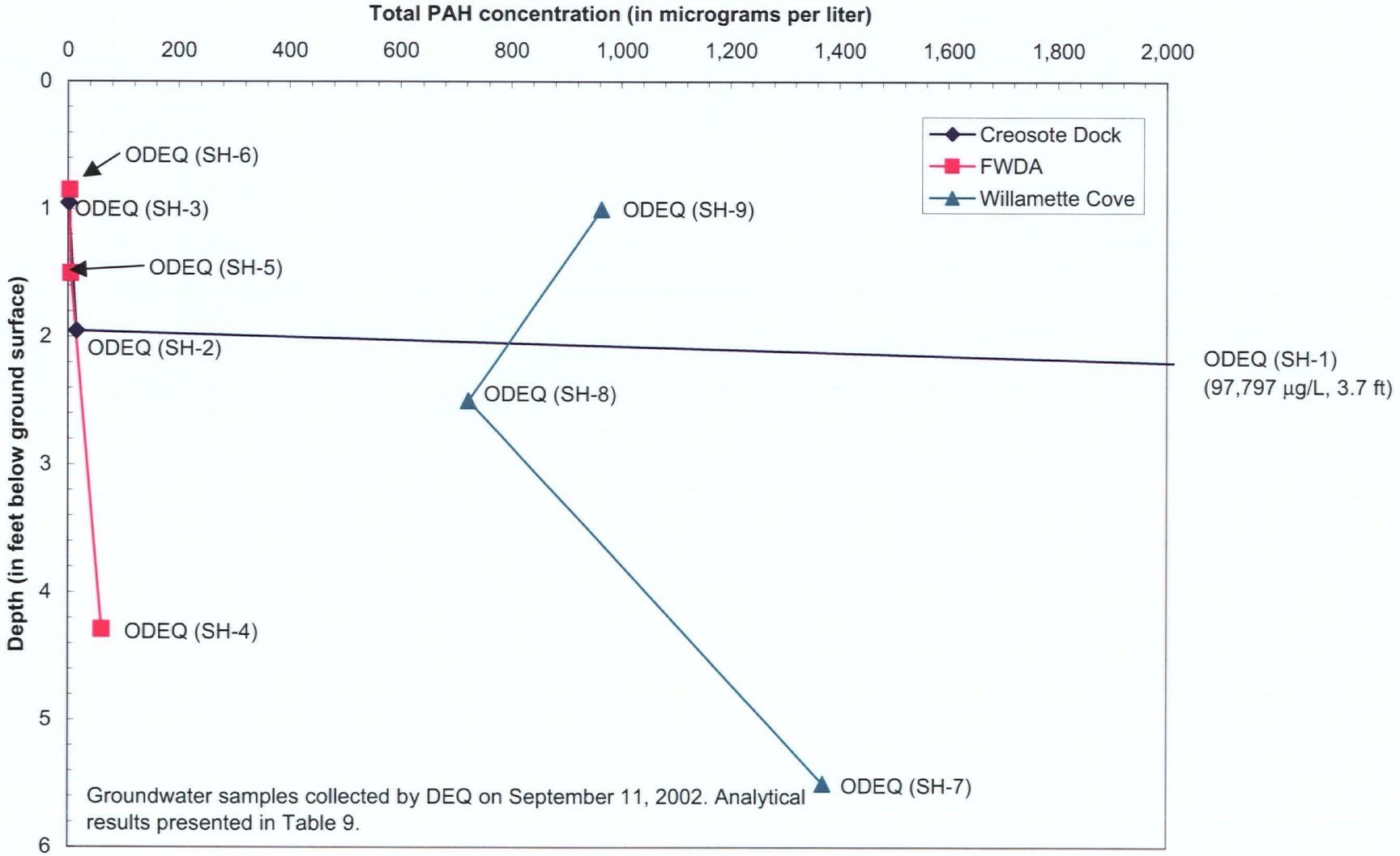
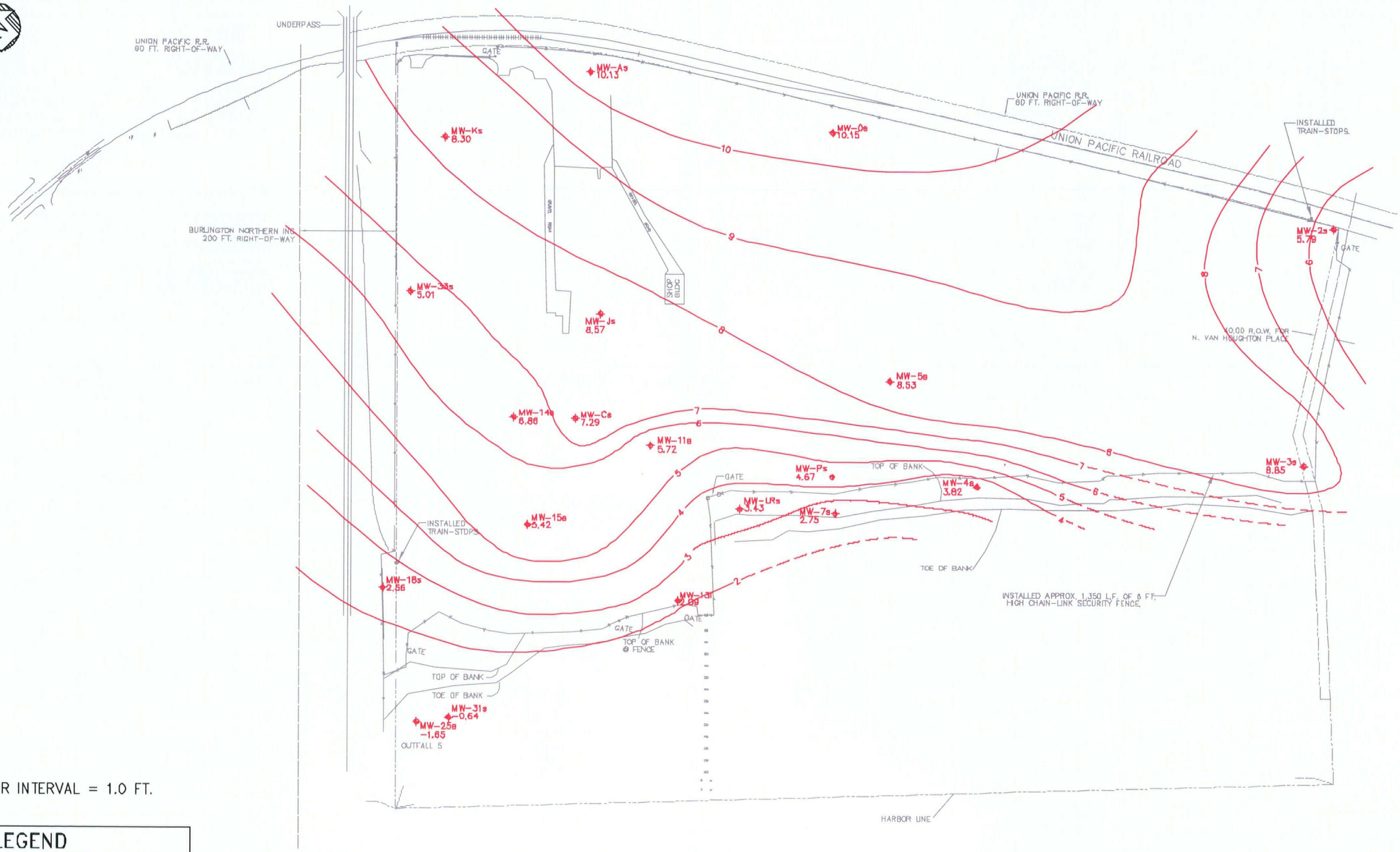


Figure 9d. Total polyaromatic hydrocarbon concentrations in groundwater with depth





CONTOUR INTERVAL = 1.0 FT.

LEGEND

- GAUGED WELL
- RAILROAD TRACKS
- PROPERTY LINE

SCALE IN FEET

0 200 400 600

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Portland, Oregon

PROJECT No: 000748.0004.27.00

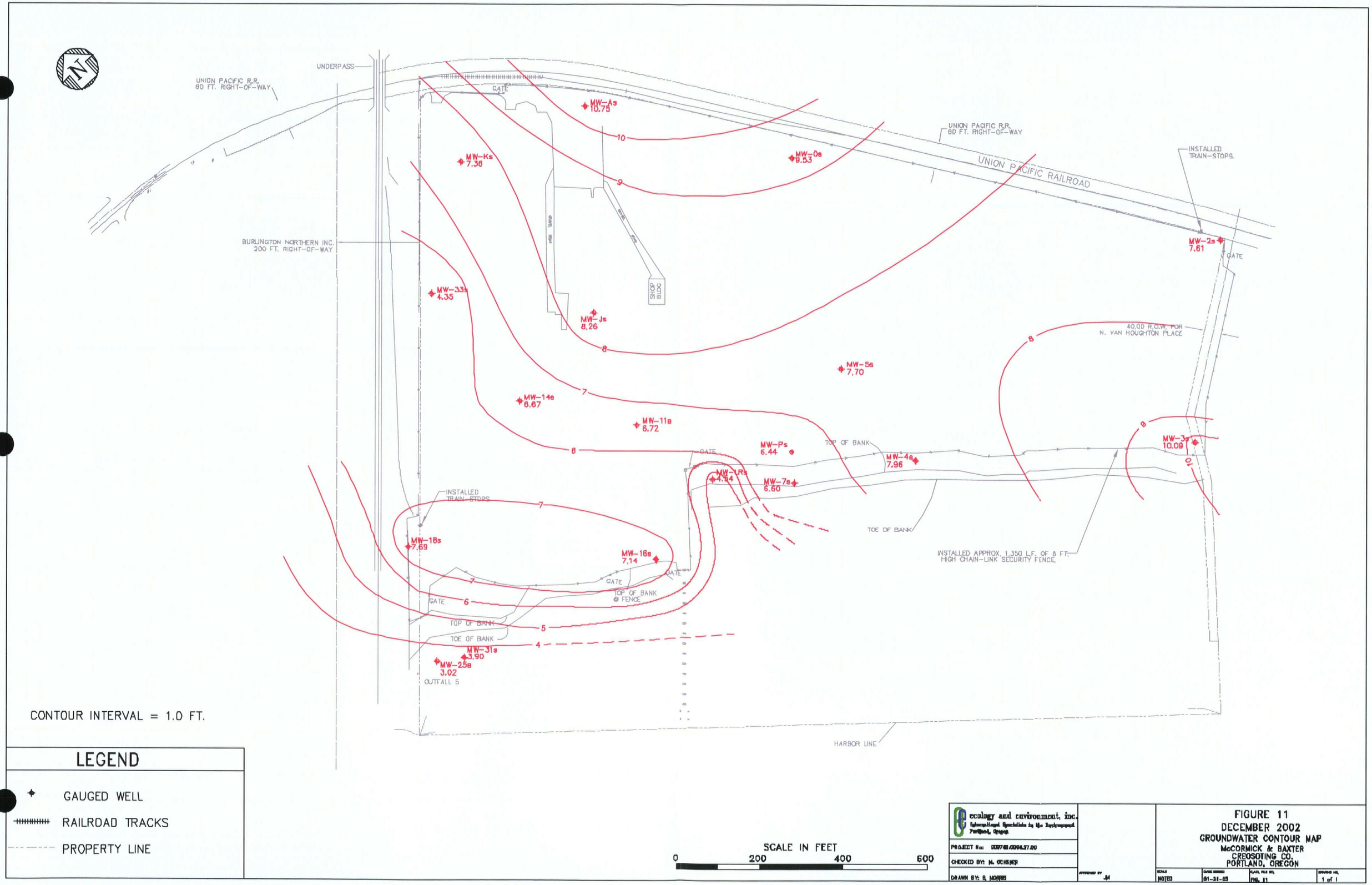
CHECKED BY: M. OCHSNER

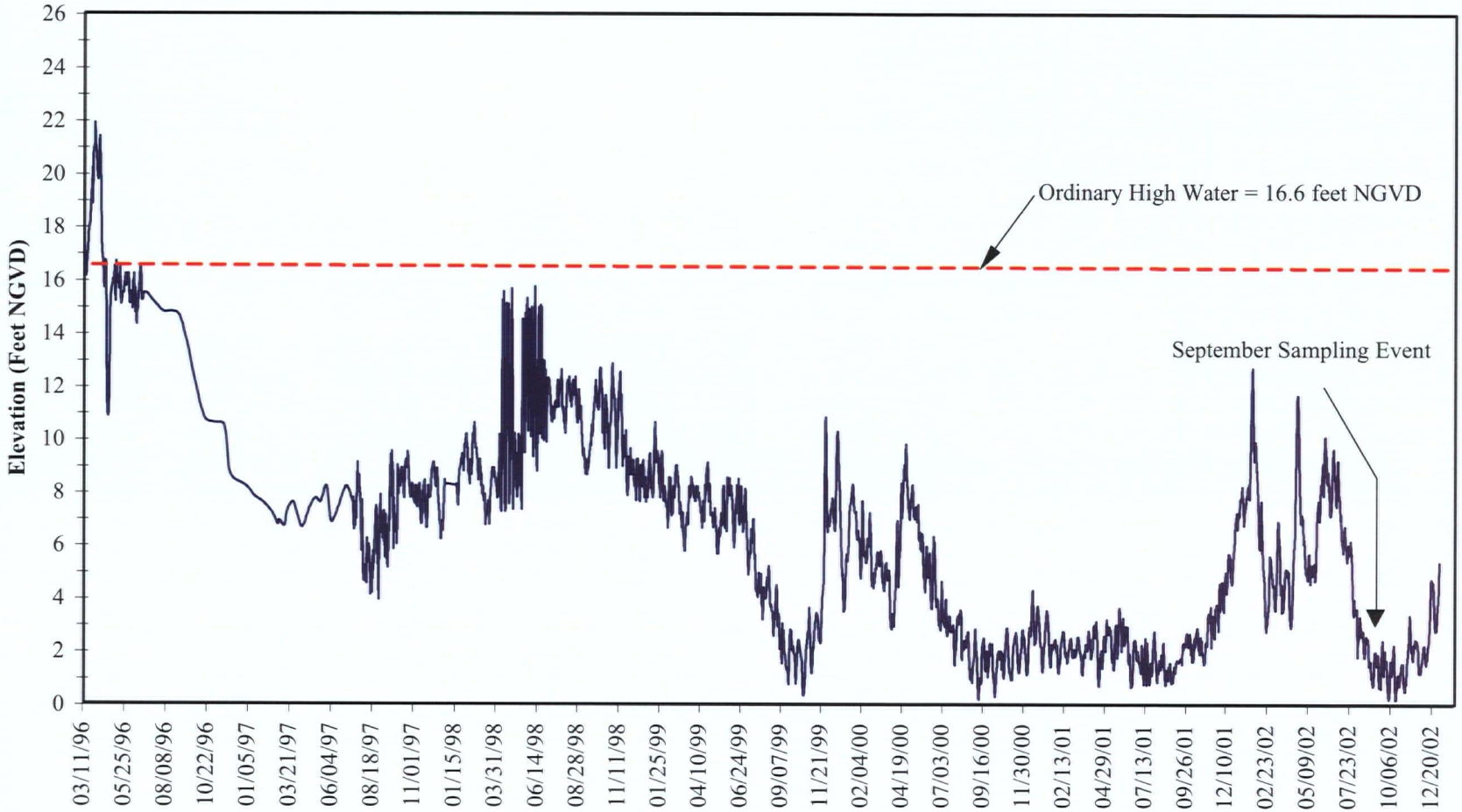
DRAWN BY: B. MORRIS

APPROVED BY: JM

FIGURE 10
SEPTEMBER 2002
GROUNDWATER CONTOUR MAP
McCORMICK & BAXTER CREOSOTING CO.
PORTLAND, OREGON

SCALE	DATE ISSUED	CAD FILE NO.	DRAWING NO.
NOTED	01-21-03	FIG. 10	1 of 1


UNDERPASS
UNION PACIFIC R.R.
80 FT. RIGHT-OF-WAY
GATE
MW-As
10.75
MW-Ks
7.36
MW-Os
9.53
UNION PACIFIC R.R.
80 FT. RIGHT-OF-WAY
UNION PACIFIC RAILROAD
INSTALLED
TRAIN-STOPS.
BURLINGTON NORTHERN INC.
200 FT. RIGHT-OF-WAY
MW-2s
7.61
GATE
SHOP
BLDG
MW-33s
4.35
MW-Js
8.26
40.00 R.O.W. FOR
N. VAN HOUGHTON PLACE
MW-5s
7.70
MW-14s
6.67
MW-11s
6.72
MW-Ps
6.44
TOP OF BANK
MW-4s
7.96
MW-3s
10.09
GATE
MW-1Rs
4.54
MW-7s
6.60
INSTALLED
TRAIN-STOPS
TOE OF BANK
MW-18s
7.69
MW-16s
7.14
INSTALLED APPROX. 1,350 L.F. OF 8 FT.
HIGH CHAIN-LINK SECURITY FENCE.
GATE
GATE
TOP OF BANK
@ FENCE
GATE
TOP OF BANK
TOE OF BANK
MW-31s
3.90
MW-25s
3.02
OUTFALL 5
HARBOR LINE
10
9
8
7
6
5
4
CONTOUR INTERVAL = 1.0 FT.
LEGEND
GAUGED WELL
RAILROAD TRACKS
PROPERTY LINE
SCALE IN FEET
0
200
400
600
ecology and environment, inc.
Environmental Specialists in the Environment
Portland, Oregon
PROJECT No: 000748.0004.27.00
CHECKED BY: M. OCHSNER
DRAWN BY: B. MORRIS
APPROVED BY JM
FIGURE 11
DECEMBER 2002
GROUNDWATER CONTOUR MAP
McCORMICK & BAXTER
CREOSOTING CO.
PORTLAND, OREGON
SCALE NOTED
DATE ISSUED 01-31-03
CAD FILE NO. FIG. 11
DRAWING NO. 1 of 1



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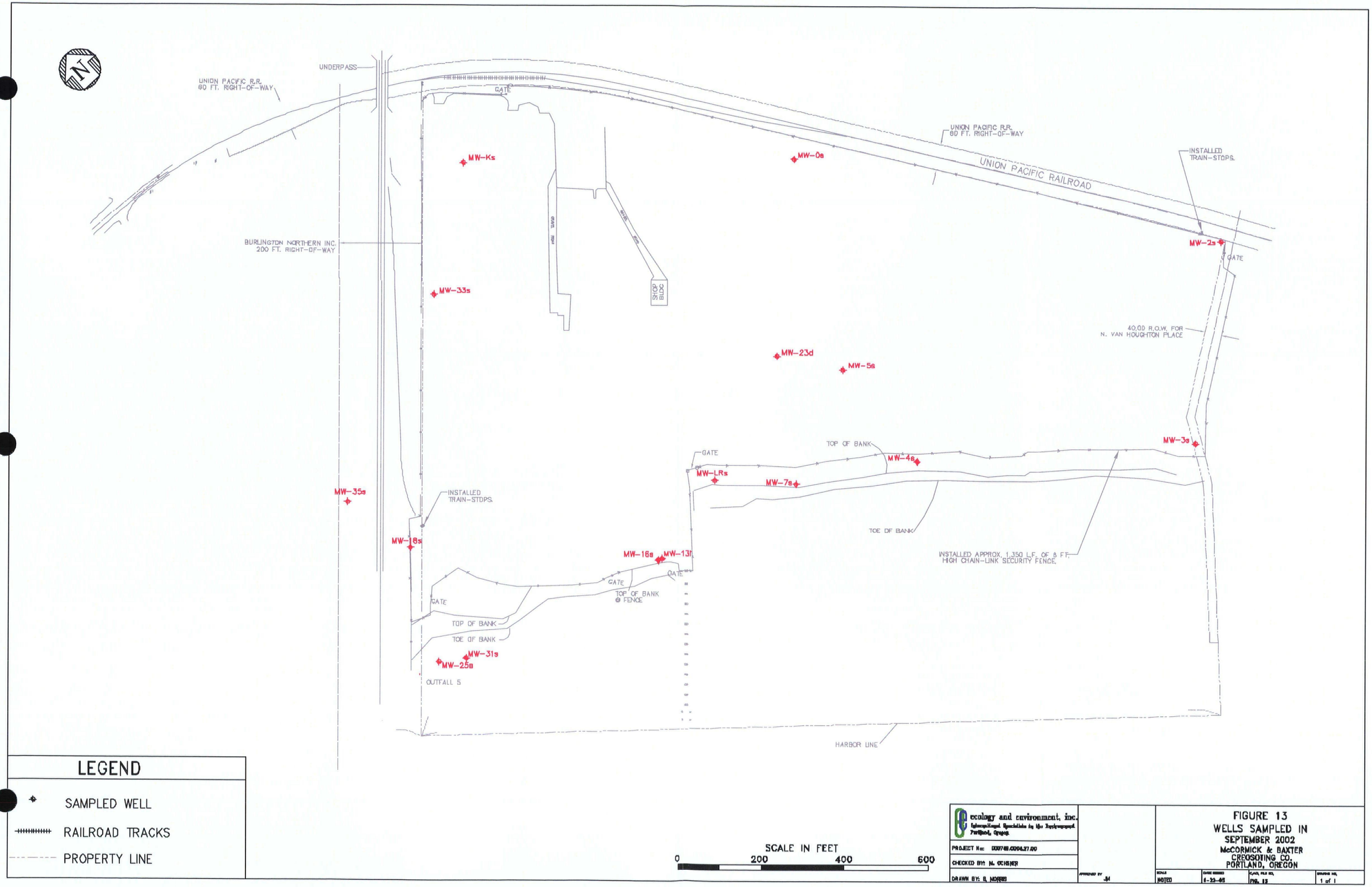
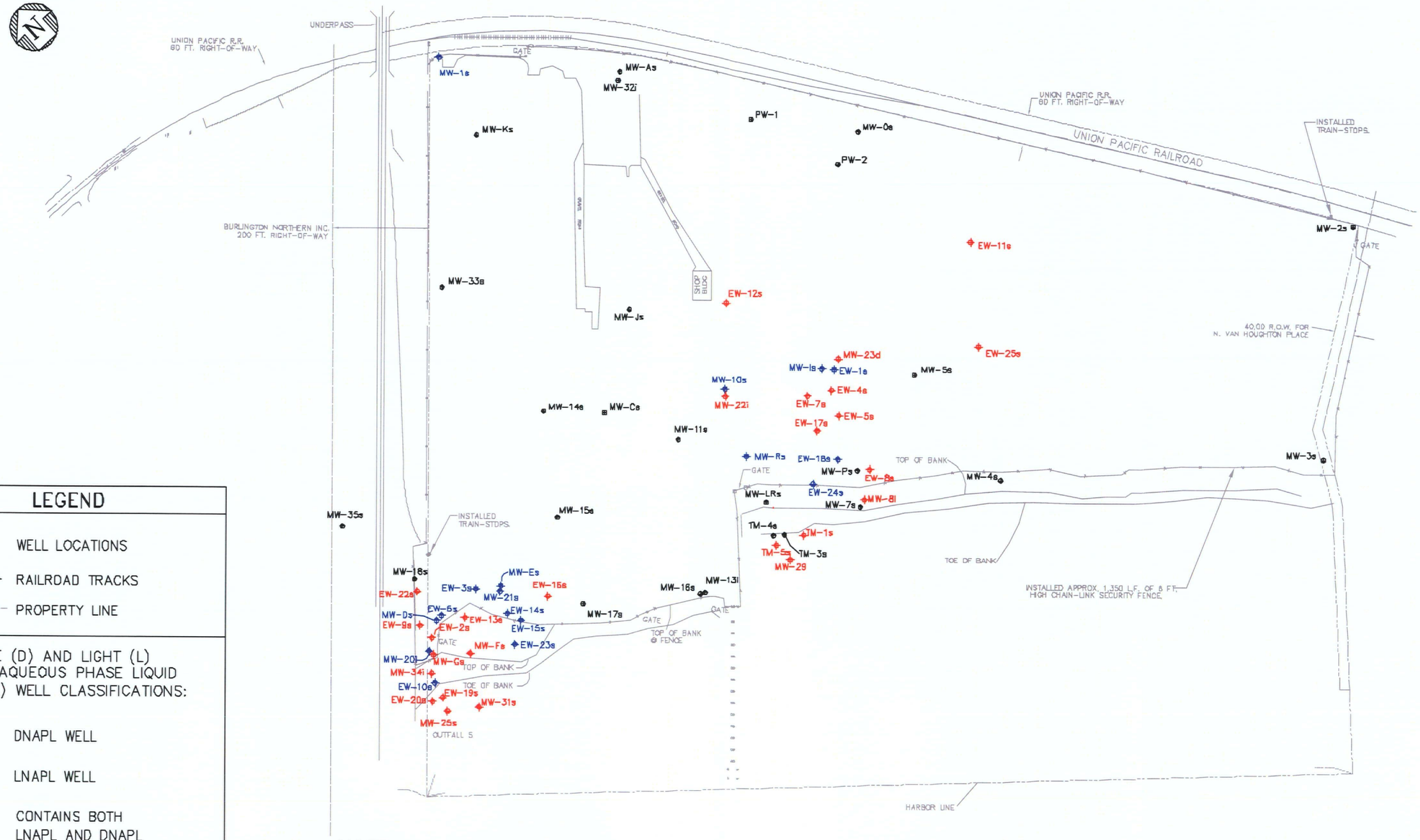
International Specialists in the Environment
Portland, Oregon

McCORMICK & BAXTER CREOSOTING COMPANY
Portland, Oregon

FIGURE 12
WILLAMETTE RIVER
DAILY ELEVATION DATA
JULY 1- DECEMBER 31, 2002
(See Appendix C for Sept. Sampling Event tide charts)


UNDERPASS
UNION PACIFIC R.R.
60 FT. RIGHT-OF-WAY
GATE
UNION PACIFIC R.R.
60 FT. RIGHT-OF-WAY
UNION PACIFIC RAILROAD
INSTALLED
TRAIN-STOPS.
MW-Ks
MW-0s
MW-2s
GATE
BURLINGTON NORTHERN INC.
200 FT. RIGHT-OF-WAY
MW-33s
SHOP
BLDG
40.00 R.O.W. FOR
N. VAN HOUGHTON PLACE
MW-23d
MW-5s
MW-3s
TOP OF BANK
GATE
MW-4s
MW-LRs
MW-7s
MW-35s
INSTALLED
TRAIN-STOPS.
TOE OF BANK
MW-18s
MW-16s
MW-13s
INSTALLED APPROX. 1,350 L.F. OF 8 FT.
HIGH CHAIN-LINK SECURITY FENCE.
GATE
GATE
TOP OF BANK
@ FENCE
GATE
TOP OF BANK
TOE OF BANK
MW-31s
MW-25s
OUTFALL 5
HARBOR LINE
LEGEND
SAMPLED WELL
RAILROAD TRACKS
PROPERTY LINE
SCALE IN FEET
0
200
400
600
ecology and environment, inc.
PROJECT No:
CHECKED BY: M. OCHSNER
DRAWN BY: B. MORRIS
APPROVED BY
JM
FIGURE 13
WELLS SAMPLED IN
SEPTEMBER 2002
McCORMICK & BAXTER
CREOSOTING CO.
PORTLAND, OREGON
NOTED
1 of 1



LEGEND

- WELL LOCATIONS
- RAILROAD TRACKS
- PROPERTY LINE

DENSE (D) AND LIGHT (L) NON-AQUEOUS PHASE LIQUID (NAPL) WELL CLASSIFICATIONS:

- DNAPL WELL
- LNAPL WELL
- CONTAINS BOTH LNAPL AND DNAPL
- CONTAINS NEITHER LNAPL OR DNAPL
- NOT MEASURED

NOTE:

DNAPL WAS NOT MEASURED IN ANY WELL DURING THE MONITORING PERIOD.

NAPL CLASSIFICATIONS ARE SHOWN FOR WELLS THAT ARE GAUGED DURING THE MONITORING PERIOD. ALL OTHER WELLS ARE GAUGED FOR GROUNDWATER LEVELS ONLY DURING THE MONITORING PERIOD.

SCALE IN FEET

0 200 400 600

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Interdisciplinary Specialists in the Environment
Portland, Oregon

PROJECT No: 000748.0004.27.00
CHECKED BY: M. OCHSNER
DRAWN BY: B. MORRIS
APPROVED BY: JM

FIGURE 14
NAPL WELL CLASSIFICATIONS
JULY - DECEMBER 31, 2002
McCORMICK & BAXTER CREOSOTING CO.
PORTLAND, OREGON

SCALE: NOTED | DATE: 8-22-02 | CAD FILE NO. FIG. 14 | DRAWING NO. 1 of 1

A Field Sampling Plans and OSU Analytical Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: MGREPOGR
OEA-095

September 2, 2002

MEMORANDUM

SUBJECT: QA Review of the McCormick and Baxter Site Groundwater and Sediment Sampling and Quality Assurance Sampling Plan (SQAP), Rev: September, 2002

FROM: Ginna Grepo-Grove, Chemist
Quality Assurance and Data Unit, OEA

TO: Rene Fuentes, Project Manager
Office of Environmental Assessment

CC: Chris Hall, RSCC, USEPA
Rod Struck, Project Manager, ODEQ

The QA review above referenced document has been completed. The SQAP was prepared in accordance with the Agency required EPA QA document G5/R5 format, "EPA Requirements for Quality Assurance Project Plans", Final: March, 2001" and the "EPA Region 10 Expanded Guidance for Preparing Quality Assurance Project Plans", Revision 1.0 dated 12/7/98.

In general, the reviewer found the SQAP to be complete and very well written. The QA Office is hereby granting approval of the SQAP. Sampling can commence as scheduled.

If you have any question regarding this review please contact me at (206) 553-1632.

Printed on Recycled Paper

FIELD SAMPLING PLAN

FOR

McCormick & Baxter
Portland, OR

Prepared By US EPA Region 10
1200 Sixth Ave.
Seattle, WA 98101

Date: 08/30/02
Revision: 4

APPROVAL OF FIELD PLAN

Project Manager: Rene Fuentes
USEPA, REU, OEA

Date: 9/3/02

ODEQ Project Manager: _____
Rod Struck, ODEQ

Date: _____

Quality Assurance: _____
Barry Towns, QAO, OEA

Date: 9/5/02

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3 APPENDICES

General location map for diver samples and shoreline samples.

MHE Push-Point Sampling Device Operators Manual– Abstract and Figure.

EPA REGION 10 DIVE PLAN

Analytical Detection Level Requirements Tables

2

PROJECT MANAGEMENT

Distribution List

Rene' Fuentes	Hydrogeologist
Martha Lentz	Hydrogeologist
Curt Black	Hydrogeologist
Rod Struck	ODEQ Project Manager
Joe Goulet	Ecologist/Dive Team coordinator
Bruce Duncan	Ecologist/Dive Team coordinator
Ginna Grepo-Grove	QA Chemist
Chris Hall	RSCC

Project/Task organization

Project Organization

Participants in this project at the McCormick Baxter Superfund Site include the EPA, ODEQ and Ecology and Environment (contractor to ODEQ).

The EPA Project Manager (EPA PM) for this project is Rene Fuentes. He is an EPA hydrogeologist from the Risk Evaluation Unit of the Environmental Assessment Office. He is the overall coordinator of the project and has the ultimate responsibility for decisions concerning project sampling needs, objectives, revisions, and schedules. The EPA PM is the primary point of contact for general project problem resolution and has the approving authority for the project. With the EPA QA Officer and the ODEQ PM, the EPA PM also reviews and approves the site-specific plan The PM also ensures that site-specific plans are implemented. The other EPA hydrogeologists which may provide oversight of field activities and implementation of the site-specific plans and subsequent amendments for this project and may also conduct field assessment activities with the PM will be Martha Lentz and Curt Black.

The EPA Divers Team is comprised of Joe Goulet and Bruce Duncan. The EPA divers will collect shoreline (water depth up to 3') ground water, surface water grab and sediment samples.

Oregon Department of Environmental Quality Project Manager is Rod Struck. He is the overall coordinator of the project on the ODEQ side. He provides the technical oversight to the ODEQ's contractor Ecology and Environment and has the ultimate responsibility for decisions concerning ODEQ's project sampling needs, objectives, revisions, and schedules. He is the primary point of contact for ODEQ regarding general project problem resolution and has the approving authority for the ODEQ part of the project. With the EPA QA Office and the EPA PM, he also reviews and approves site-specific plan and subsequent amendments for this project.

The EPA Region 10 QA Officer reviews site-specific sampling plans, subsequent revisions and amendments. The QA Officer or designee may also perform validation of data provided by EPA Region 10 Manchester Environmental Laboratory (MEL) and data provided by laboratories under subcontract to EPA or ODEQ as requested by the PM.

The EPA Region 10 Sample Control Coordinator (RSCC) coordinates sample analyses performed by MEL and the EPA Contract Laboratory Program (CLP), and provides samplers with regional sample numbers.

The Contractor Site Manager (SM) of Ecology and Environment is the overall coordinator and lead for field sampling efforts. The SM is responsible for producing and implementing the project plans and coordinating resources to complete tasks, and is the primary contact point for technical objectives, sampling and analytical procedures, and QA requirements. The SM is responsible for procuring and disseminating regional sample tracking numbers, project codes, and account codes prior to initiation of field activities.

Project Task

This project is a joint sampling effort between the EPA Region 10 and the Oregon Department of Environmental Quality (ODEQ). Sampling will be done concurrently (within a few days or weeks) by all the entities involved. Each agency (or it's contractors) will be responsible for laboratory analysis of the samples which they are collecting unless otherwise specified below, and the data will be jointly shared and ultimately all the quality assured data will be used by the McCormick & Baxter site managers to incorporate into the site data set. The entire plan is documented in here for the purpose of having a single plan that documents all the planned tasks, but only the EPA (or ODEQ samples collected for EPA) samples are included for the purpose of laboratory sampling requirements. ODEQ data collection and any related laboratory analysis in not covered in this plan.

Small shore team will attempt to obtain water samples for field analysis and laboratory analysis for Polycyclic Aromatic Hydrocarbons (PAH's), including Pentachlorophenol (PCP) and metals. Goal is to obtain pore water samples (defined for this plan as ground water from within the sediment matrix in the transition zone to surface water), sediment, and surface water samples from the shore areas (up to river depth of 3 feet) for comparison to concurrently collected (within a week or two) ground water samples from the upland site monitoring wells (collected by ODEQ's contractor) and in-water sediment and pore water samples collected by the EPA dive team. The water samples will have field analysis for field parameters (pH, electrical conductivity, and temperature) obtained during sample equipment purging and prior to sending for laboratory analysis.

Problem Definition/Background

Introduction.

The McCormick & Baxter (M&B) facility is located on the northern bank of the Willamette River, Portland, OR. M&B is a Superfund site which is contaminated with a number of wood treating, including chemicals, including PAH's, pentachlorophenol, and metals. Contamination has been detected in soil, Willamette River sediments and ground water. A number of remedial actions have been performed at the site.

The purpose of this sampling event is to evaluate the interface zone between the site ground water and the Willamette River (i.e., surface water) adjacent to the site. Samples will be collected adjacent (water depth <3 feet for the shore team) and within the river (EPA Dive Team) at the time of sampling. Sampling will be done to obtain water samples for chemical analysis, and for field

parameters which can be obtained at the time of sampling. The sampling will be conducted with manual field equipment on the shoreline (mudflats during low tides), and with geochemical parameter meters and field kits. The **sampling is scheduled to occur the first two weeks of September 2002** (diving portion on September 5 - 6, and the shoreline work September 10-12) which is expected to be a relatively low water level condition, and it will also occur at about the same time that the Oregon Department of Environmental Quality (ODEQ) performs monitoring well sampling at the site. In addition, sampling above the contaminated site sediments will be done by Dr. Kim Anderson, Oregon State University, using Semipermeable Membrane Devices (SPMDs) for surface water column sampling. The EPA divers will obtain sediment and sediment pore water samples co-located with the SPMDs locations for chemical analyses.

Purpose and Objectives.

Purpose: The purpose of this investigation is to obtain representative surface water, pore water, and sediment samples for use in evaluating site conditions under low river conditions prior to the installation of a fully enclosed barrier wall (anticipated completion Spring 2003) and placement of a sediment cap (anticipated completion Fall 2003). This data will be used with data being collected by ODEQ to evaluate the ground water to surface water interface and to assess potential impacts to Willamette River pore water and surface water in the area of the proposed sediment cap. The surface water data will supplement data being collected by Oregon State University (OSU), under contract to ODEQ, using semi-permeable membrane devices (SPMDs) and done under a separate sampling plan. The data will be used to aid in the design of a long-term monitoring program and to evaluate the protectiveness of the groundwater cleanup criteria defined in the site Record of Decision (ROD)

Objectives: The primary objectives of this field investigation are to collect pore water, surface water, and sediment data to:

* Assess potential water quality impacts to the Willamette River;
* Evaluate the extent of surface water impacts (i.e., mixing zone);
* Further the understanding of ground water - surface water interactions;
* Assess the relationship between bulk sediment chemistry and pore water chemistry;
* Provide data to aid in ODEQ's reevaluation of groundwater cleanup goals (i.e., test the site conceptual site model);
* Provide pore water data to allow ODEQ to evaluate the protectiveness of the proposed sediment cap; and
* Assess water quality at various points of compliance (i.e., pore water, surface water) and various sampling techniques for development of a long-term sediment cap monitoring plan.

Project/Task Description

The following samples will be collected by the EPA/ODEQ team as part of this investigation:

Surface Water

5 to 10 samples co-located with pore water samples (EPA Divers)

Sediment

Up to 10 sediment samples collected by EPA dive team. Samples will be co-located with pore water samples and surface water samples.

Sediment Pore Water

Up to 10 near-shore samples collected by EPA using mini-piezometers (e.g. MHE samplers) (EPA shore team).
Up to 10 samples collected by EPA Divers within proposed sediment cap footprint.
EPA will attempt to get relative pressure head gradients between the Willamette River and the pore water at each location using a manometer.

Ground Water

ODEQ will install four sets of nested mini-piezometers. Each nest will include piezometers installed to total depths of approximately 14-inches, 36-inches, and 72-inches below ground surface (bgs). (EPA will do analysis, see below)
ODEQ will monitor groundwater elevations to assess vertical gradients in the near shore area.
ODEQ will collect ground water/pore water samples from each piezometer for analyses by EPA's contract laboratory.
ODEQ will install up to four (4) flux chambers to quantify groundwater discharge in the seep areas.
ODEQ will install transducers to monitor water levels in a stilling well located in Willamette Cove and in a monitoring well located near the Willamette Cove Seep.

Sampling of the shoreline will occur along a transect between the M&B facility and the Willamette River, and in subtidal areas adjacent to the facility. The general location of the proposed samples are shown in the attached map of the site (Figure 1, not included in the electronic format).

TABLE 1

Sample Collection Description

Sample Collection Description	Pore water Shoreline. Plant to take up to 10 water samples along the shoreline/mudflats area. Divers. Subtidal seepage samples estimated between 5 and 10 samples depending on ability to get samples by divers. Sediments Divers. Subtidal sediment samples between 5 and 10 samples will be collected. These samples will be co-located with pore water samples. Surface water Divers. Surface water grab samples will be collected at each collocated sediment and pore water sampling location. Between 5 and 10 samples will be collected depending on ability to get samples by divers. Ground Water ODEQ. Samples will be collected from each piezometer. Up to twelve (12) samples will be collected for EPA analysis. QA/QC One duplicate, matrix spike duplicate with additional volume, and one blank sample will be collected per sampling day for each the shoreline, dive, and ODEQ sampling teams.
Completion of Sample Collection	Within three field days for each subset (shoreline and divers).
Completion of Sample Analysis	Within thirty days of receipt by lab, if possible.

5

Data Quality Objectives (DQOs) and Criteria for Measurement Data

Obtain transition zone ground water samples and obtain geochemical parameters to compare between locations sampled. The data will include field parameter data (pH, electrical conductivity, Dissolved Oxygen, Eh, and temperature), and each parameter will be within the accuracy of the instruments. Analytical samples will be for PAH's, pentachlorophenol, and priority pollutant metals. The measured parameters will be compared to those at the other sampling sites along the mudflats transect and the subtidal sampling transect data (EPA Region 10 Dive Plan, attached). The water quality samples will include one duplicate, matrix spike duplicate with additional volume, and one blank sample per sampling day for the shoreline team and the same for the dive team samples. Blank samples will be taken with the same sampling equipment and will be used to determine potential equipment cross-contamination.

Special Training Requirements/Certification

Divers are trained under the EPA Diver training certification. Shoreline personnel have 40 hour hazardous waste training and yearly 8 hour refresher.

Documentation and Records

Field notes, photographs of area and tools, locations of sampling points with either a measuring tape to a permanent fixture (pier piling) or with a GPS (Global Positioning System), or, for the subtidal samples, with the dive team AquaMap system for future resampling of those locations. Each water quality sample will have, in addition, the required field data sheet and laboratory request forms filled for that site. Samples will be kept under chain of custody and iced until delivered to the lab.

MEASUREMENT/DATA ACQUISITION

Sampling Process Design

Near-shore samples will be taken using the "MHE Push-Point Sampling Tool" (see attached description and Figure 2). Sampling tool is stainless steel with a small screened area near the tip, which is pushed into the subsurface to attempt to access the ground water within the ground water/surface water transition zone. The sample will be obtained using a peristaltic pump to get a sample up to the surface, where the samples will go directly into sampling jars. In addition, additional sample volume will be collected to do field analysis for selected parameters (as possible) which may indicate different water characteristics along the transect (pH, electrical conductivity, Dissolved Oxygen, Eh, and temperature). Sub-tidal samples will be collected using similar push probe tools (which include a small screened area attached to a sampling tube, a larger version mini-piezometer described above and made of flexible tubing, and analyzed for the same parameters as the shoreline samples. The sampling process involves inserting the tool into the ground two or three feet (as possible based on the location) and then purging the water inside until a clear (if possible) water with stable field parameters is obtained, and at that point filling the sampling bottles for the laboratory analyses.

Sampling Methods Requirements

Sampling will be adapted as necessary in the field to obtain water for analysis, but the basic method is as documented in the MHE Push-Point Sampling Device Operators Manual Ver. 1.02 dated 5/13/00 (see general description attached). The MHE sampler is basically a mini-well point, made of stainless steel, with machined cut small screened end. This tool is connected to sampling hose which goes into the peristaltic pump and empties into the sampling containers. This method is basically not much different than the method which has been used in the larger, permanently installed monitoring wells, but the equipment is portable, and very shallow (27 inches), designed to be used at the edge of surface water bodies.

The seepage meter techniques, which may also be used by ODEQ nearshore, have been adapted from the original work of David Lee and John Cherry (A Field Exercise on Groundwater Flow Using Seepage Meters and Mini-Piezometers, Journal of Geological Education, 1978, v.27, pp. 6-10), and will be followed with the following adjustments. Bags will not be partially filled before deployment since net flow rates are not being measured (the goals are to determine the water quantity that flows into the bags and to compare the analytes described above with surrounding surface and transition zone water).

Samples for visual product determination may be obtained by coring with a hand auger inside of a PVC pipe to determine whether there is vertical separation of the creosote which reaches the shoreline, and the locations will be selected in the field with ODEQ personnel.

Sample Requirements

The samples which will be collected include water, sediments, and product (visual description only) are listed in Table 1- Summary of Data Quality Objectives attached at the end of this plan.

Equipment Decontamination

The tools will be brushed cleaned prior to use with laboratory grade soap (Alconox) and rinsed with water. Methanol or acetone will be used to clean the equipment of any oily residue from the creosote contamination. Equipment will be rinsed with deionized water as a final rinse. Any equipment which can be used only once will not be reused for field sampling.

Sample Handling and Custody Requirements

Samples will be stored in coolers and kept under custody at all times. Field samples will be shipped to laboratory in coolers with ice and cooled to approximate 4° C. Each sample will be included in the field data sheets and given individual number to match the bottles and the field data sheets.

Analytical Method Requirements

Field tests for geochemistry indicator parameters, based on available field equipment.

APPENDIX

Table 3
Metals Reporting Limits for Water Samples

Instrument	ICP-AES	GFAAS	ICP-MS	ICP-MS
Method	200.7 6010	200.9	200.8	200.8 Mod (no HCL)
Elements				
Aluminum	20		6.3	5
Antimony	45		1	0.5
Arsenic	45	1.5	0.63	0.1
Barium	0.5		2.5	2
Beryllium	1		0.05	0.04
Bismuth				
Cadmium	2		0.13	0.1
Calcium	10			
Carbon				
Chromium	5		1.3	1
Cobalt	5		0.013	0.01
Copper	4		1.3	1
Iron	10			
Lead	25	1	0.13	0.1
Lithium				
Magnesium	20			
Manganese	1		0.13	0.1
Molybdenum	6		0.063	0.05
Nickel	10		0.38	0.3
Phosphorus				
Potassium	700			
Selenium	100	1.5	1.3	1
Silicon				
Silver	4		0.63	0.1
Sodium	20			
Strontium				
Sulfur				
Thallium	150	2	0.63	0.5
Titanium				
Vanadium	3		1	0.1
Zinc	4		2.5	2
Zirconium				

Reporting limits might be adjusted due to matrix effects, sample size, etc.

Table 4 PAH-SIM (Low Level) (Feb. 1998) Matrix: Water Method: 8270 modified for SIM analysis			
CAS Number	Analyte	Quatification Limits (µg/L)	Lab Generated Range for MS/MSD Recoveries
91-20-3	Naphthalene	0.04	50-150*
91-57-6	2-Methylnaphthalene	0.04	50-150*
90-12-0	1-Methylnaphthalene	0.04	50-150*
91-58-7	2-Chloronaphthalene	0.04	50-150*
208-96-8	Acenaphthylene	0.04	50-150*
83-32-9	Acenaphthene	0.04	50-150*
132-64-9	Dibenzofuran	0.04	50-150*
86-73-7	Fluorene	0.04	50-150*
85-01-8	Phenanthrene	0.04	50-150*
120-12-7	Anthracene	0.04	50-150*
206-44-0	Fluoranthene	0.04	50-150*
129-00-0	Pyrene	0.04	50-150*
483-65-8	Retene	0.04	50-150*
56-55-3	Benz(a)anthracene	0.04	50-150*
218-01-9	Chrysene	0.04	50-150*
205-99-2	Benzo(b)fluoranthene	0.04	50-150*
207-08-9	Benzo(k)fluoranthene	0.04	50-150*
50-32-8	Benzo(a)pyrene	0.04	50-150*
193-39-5	Ideno(1,2,3-cd)pyrene	0.04	50-150*
53-70-3	Dibenzo(a,h)anthracene	0.04	50-150*
191-24-2	Benzo(g,h,i)pyrene	0.04	50-150*

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Table 5 PHENOXY HERBICIDES FOR DRINKING WATER PROGRAM (Feb. 1998) Matrix: DRINKING WATER Method: EPA METHOD 515.1 using GC/ECD				
CAS Number	Analyte	Quantification Limits (µg/L)	Lab Generated Range for MS/MSD Recoveries	Lab Generated Range for RPD Btwn MS/MSD
94-75-7	2,4-D	0.005	75-87	50*
93-76-5	Silvex	0.002	61-79	50*
87-86-5	PCP	0.004	112-148	50*
88-85-7	Dinoseb	0.008	44-70	50*
1918-00-9	Picloram	0.006	43-79	50*
75-99-0	Dalapon	0.066	0-39	50*

*Arbitrary values for recovery and RPD ranges that have yet to be determined by the Manchester Environmental Laboratory.

Quantification Limit: Defined as the lowest reliable point on the calibration curve. It is based on a one liter unsplit sample size that has been extracted and reduced to a two mL final extract volume of which a five uL aliquot is analyzed. This value can vary depending on the condition of the instrumentation at the time of caibration.

Range for MS/MSD Recoveries: This data was derived from a MDL study. The actual matrix spiking levels and recovery ranges may be different. Spiking levels for the MDL study ranged from 0.033 to 0.433µg/L. Actual spiking levels are usually from 2 to 5 times the QL. This column of dta is usually determined by averaging MS/MSD recoveries for a particular media and applying a two times the std. dev. to the mean to estabish a range. The normal spiking level is 4µg per sample size.

Range for RPD Between MS/MSD: Determined by averaging the absolute values of the RPDs from duplicate spikes and applying a two times the std. dev. to the mean to establish a range for the RPD.

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Table 5

PHENOXY HERBICIDES FOR DRINKING WATER PROGRAM (Feb. 1998)

Matrix: DRINKING WATER Method: EPA METHOD 515.1 using GC/ECD

CAS Number	Analyte	Quantification Limits (µg/L)	Lab Generated Range for MS/MSD Recoveries	Lab Generated Range for RPD Btwn MS/MSD
94-75-7	2,4-D	0.005	75-87	50*
93-76-5	Silvex	0.002	61-79	50*
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Range for RPD Between MS/MSD: Determined by averaging the absolute values of the RPDs from duplicate spikes and applying a two times the std. dev. to the mean to establish a range for the RPD.

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Table 1. Summary of Project's Data Quality Objectives

Analytical Group	Number of Samples[1]	# of QA Samples: Dup/MS/MSD	Matrix	EPA Method	Detection Limits	Accuracy	Precision (RPD)	Complete-ness	Preservation	Volume, Container	Holding Time (days)~
Laboratory Measurement											
Shoreline Groundwater Samples from MHE Samplers											
metal	10	1:20	Water	6020 /200.8	Per MEL PQL	75 - 125%	10%	100%	Cool 4°C	1L, P	6 months 28 days-Hg
PAH & PCP	10	1:20	Water	8270/SIM	0.04 ug/L	70 - 130%	30%	100%	Cool 4°C	1- L amber glass	14 days extract 40 days analysis
Shoreline Groundwater Samples from ODEQ Mini-Piezometers (4 locations at 3 depths each)											
metal	12	1:20	Water	6020 /200.8	Per MEL PQL	75 - 125%	0.25	100%	Cool 4°C	1L, P	6 months 28 days-Hg
PAH & PCP	12	1:20	Water	8270/SIM	0.04 ug/L	70 - 130%	30%	100%	Cool 4°C	1- L amber glass	14 days extract 40 days analysis
Surface Water - EPA Divers											
metal	6	1:20	Water	6020 /200.8	Per MEL PQL	75 - 125%	0.25	100%	Cool 4°C	1L, P	6 months 28 days-Hg
PAH & PCP	6	1:20	Water	8270/SIM	0.04 ug/L	70 - 130%	30%	100%	Cool 4°C	1- L amber glass	14 days extract 40 days analysis
TSS	6	1:20	Water	I-3765	2 mg/L	-	25%	100%	Cool, 4C	250 ml P,G	7 days
Sediment Samples - EPA Divers											
metal	10	1:20	Sediment	6020 /200.8	Per MEL PQL	75 - 125%	0.25	100%	Freeze- 18C	8 OZ wide mouth	6 months 28 days-Hg
PAH & PCP	10	1:20	Sediment	8270/SIM	per MEL PQL	70 - 130%	30%	100%	Freeze -18C	8 -OZ wide mouth	14 days extract 40 days analysis

[1] - Maximum samples per round of sampling including field QA samples such as field duplicates and blanks. NOTE: Include one temperature blank cubitainer per ice chest during shipping.

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EPA REGION 10 DIVE PLAN

From: Rob Pedersen, Divemaster

Date of Request: August 28, 2002

Approval

To: **Jan Hastings**, Director, OEA _____

Keven McDermott, OEA _____

Project: Portland Harbor Superfund site.

Date of Dive: September 4-6, 2002

Location: Willamette River, Portland, OR.

Dive Team cell phone: 206-369-7420

Objectives: Sample subsurface (river bottom) pore water from six sites in the industrial area of the Willamette River (Portland Harbor) in the vicinity of McCormick and Baxter (M&B) Superfund site, in conjunction with sites slated for in-situ bioaccumulation sampling. Grab samples of water and sediment will also be collected to aid in site characterization. Results from these samples will be used to further investigators' understanding of groundwater - surface water interactions and provide data to aid in reevaluation of groundwater cleanup goals at M&B.

Observations: Divers will: extract pore-water samples from within sediment using the minipiezometers; collect grab samples; and obtain sediment samples.

Samples will be analyzed for: PAHs, PCP, metals (As, Cu, Cr, Zn), TSS (surface water only) as outlined in the Field Sampling Plan.

Pollution Sources: Storm (and possible sewer) drains. Possible seepage of PAHs and metals from contaminated sediment or uplands.

Decontamination Required: Refer to the decontamination SOP developed for Portland Harbor. Summary: Set-up decontamination zones in the stern area; freshwater rinse on swim-step; wipe off any creosote-like product using citris-based/biodegradable solution; if deemed necessary - soak regulators in disinfectant; dress-out divers on swim step and back of boat.

Potential Hazards: Boat traffic, low visibility, underwater hazards. Variable river flow (velocity and direction).

Maximum Expected Water Depth: Less than 40ft.

Maximum Expected Water Current: Less than 1 kt.

Diving Platform: EPA Monitor.

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Divemaster: Rob Pedersen

Divers: Cox'n: Dave Terpening, Doc Thompson

Divers: B Duncan, J Goulet, R Pedersen,
Newark, NJ ERT divers: Alan Humphrey, Dan Cook

Tender: divers

Proposed Schedule: Depart R10 office approximately 09:00 September 4th, survey study area and possible reconnaissance dive in P.M. Diver sampling on September 5th and 6th, returning to R10 office on P.M. the 6th.

TIDAL INFORMATION:

Based on Portland corrections for Astoria tides. Height is not shown due to the variation in river regulation.

4 September L 1350 H 1747 L 2311 -

5 September H 0500 L 1432 H 1830 -

6 September L 0230 H 1108 L 1300 H 1900

Source of EMERGENCY TRANSPORTATION: local ambulance service - dial 911.

Nearest MEDICAL Facility: Providence Portland Medical Center, 4805 N.E. Glisan, Portland, OR 97213. ER phone: 503-215-6000.

Nearest HYPERBARIC Facility: Providence Portland Medical Center, 4805 N.E. Glisan, Portland, OR 97213. Hyberbaric chamber phone: 503-215-6061.

Notes:

(1) **Emergency helicopter transport** is available through the **U.S. Coast Guard** (Channel 16 *or* *CG).

(2) **Primary Hyperbaric Chamber** is located at the **Providence Portland Medical Center** E.R. phone 215-6000, Chamber phone, 215-6061). **Alternative Hyperbaric Chambers** are the Virginia Mason Hospital (admission is through the Emergency Room on Spring Street at the corner of Terry and Spring streets; E.R. phone 583-6433, Chamber phone, 583-6543); U.S. Naval Torpedo Station (Keyport, (206) 396-2522/2563 or after hours (206) 396-2551/2553). Although chambers are on site at NOAA, victims of barotrauma will be transported to Virginia Mason.

(3) **Diver's Alert Network** provides 24-hr medical advice at telephone 1-919-684-8111, for other business during normal working hours use 1-919-684-2948.

(4) **Dive Shops:** Blue Planet, 833 N.E. Russle, Portland, OR 257-6659, Tue.-Fri. 1200-1900.

Horizon Water Sports, 8635 S.W. Canyon Rd., Portland, OR 297-8133, Mon.-Fri. 1000-1900.

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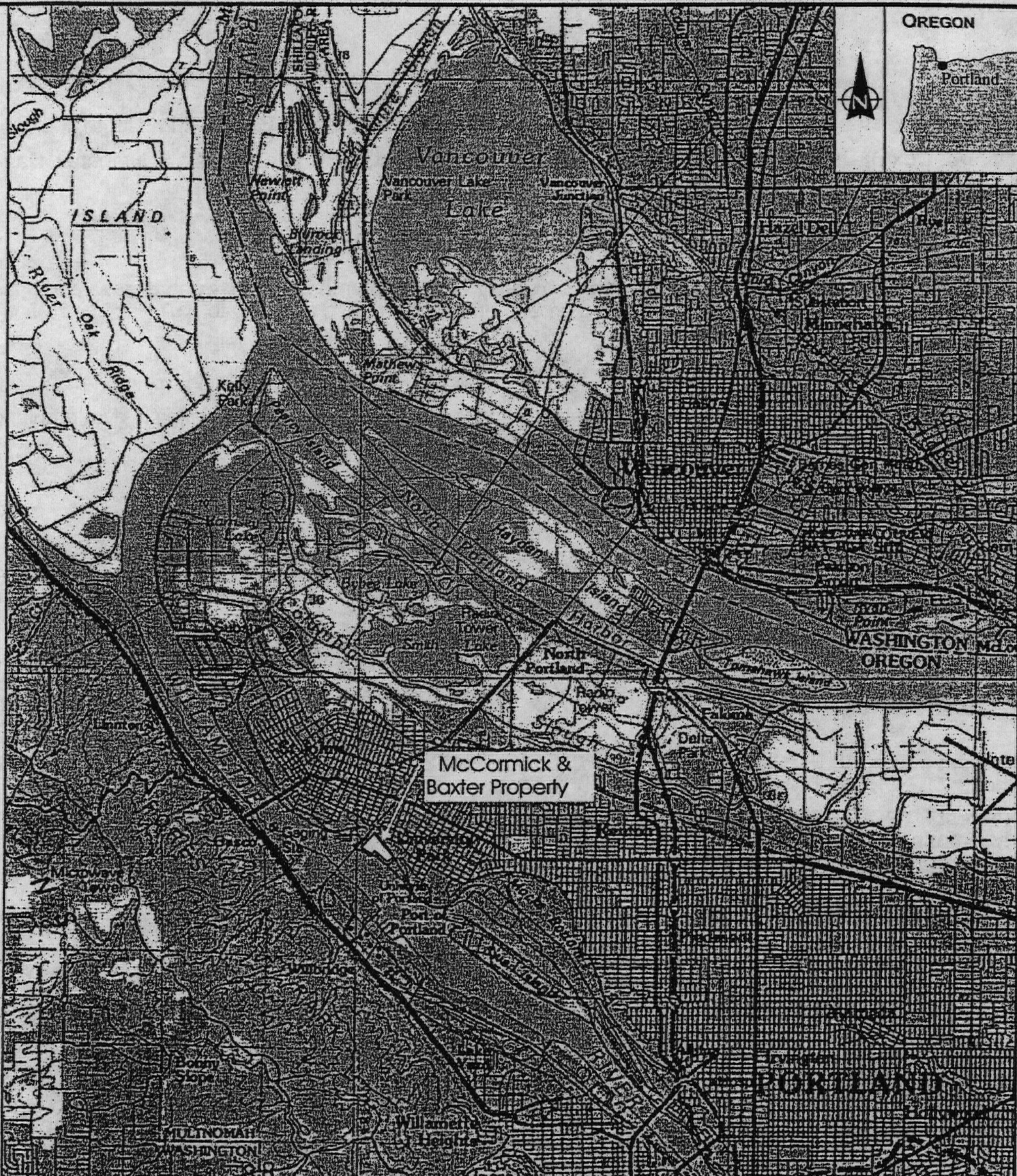

ecology and environment, inc.
International Specialists in the Environment
Portland, Oregon

McCORMICK & BAXTER
CREOSOTING CO.
Portland, Oregon

Figure 1

SITE LOCATION MAP

Date:
3-26-02

10:000749OB051302\fig 1

ecology and environment, inc.
International Specialists in the Environment
Portland, Oregon

Aerial Photographs from Spencer B. Gross, Inc. June 29, 2000

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure I-2
WATER QUALITY MONITORING LOCATIONS

Date:	Drawn by:	
5/9/02	AES	10:000749OB051302\fig i-2.cdr

MHE Push-Point sampling tools by Mark A.Henry May 13, 2000

A new tool and sampling methodology have been devised for collecting pore-water samples from beneath beaches and surface water bodies. The use of this technology enables a single investigator or small team to rapidly gather pore water samples at or near the interface between groundwater and receiving bodies of water. From a research perspective the information gained in analyzing these samples may be very helpful in understanding the geochemical nature of this transition zone and the biological processes at work.

This methodology has been used very successfully to locate the expression of contaminated groundwater venting into several lakes in Michigan. The technique involves the use of an MHE 27" push-point sampling device (PP27), 1/4"OD X 1/8"ID Tygon tubing, and 50 ml-100% polyethylene syringes or a peristaltic pump. The PP27 is a rigid 1/8" diameter stainless steel probe that is screened at one end and ported at the other to allow the collection of pore-water with a syringe or peristaltic pump. In this methods simplest form, the investigator would walk along a beach or in shallow water paralleling the beach, and at periodic intervals push (by hand) a decontaminated PP27 into the sand or sediments with a twisting motion until refusal (usually 6-18"). Then the screened zone is exposed and pore water samples are withdrawn at "low-flow sampling" collection rates using a disposable syringe connected by a length of Tygon tubing. Usually, only 30-50 ml of water withdrawal is necessary to "develop" this miniature "well" - this equates to ~ 20-35 volume exchanges through the PP27. Subsequently drawn water is usually non-turbid and suitable for dispensing directly into sample containers or instruments. A 3-dimensional sampling array is possible within the sediments and the water column. The PP27 is easily decontaminated in the field but if the investigator has several of the inexpensive sampling devices on-hand, sample collection along a transect can be a very rapid process. When 100% polyethylene syringes are employed, samples may be collected and stored temporarily within the syringe by placing the full, sealed syringe in a cooler. Once the sample collection has been completed, the investigator can process the samples in a controlled environment. As an added benefit, it is possible to use the sample-filled syringes for on-site headspace analysis of VOC's using a field GC - information that be used to direct an investigation in real-time. If the syringe is half-dispensed and refilled with air, resealed and agitated, the headspace in the syringe above a known volume of water can be quickly analyzed.

The Michigan Department of Environmental Quality (MDEQ) uses an enhanced variation of this method. As samples are being collected, some of the pore-water is immediately dispensed into field analytical equipment for measurement of "stabilization parameters" such as dissolved oxygen, pH, conductivity, redox, and temperature, or analytes such as dissolved iron, sulfide, etc. The MDEQ investigators were able identify and map the expression of a groundwater plume venting into Lake Michigan and several inland lakes using this methodology and/or these techniques and SCUBA gear. Furthermore, the MDEQ couples its sampling with locational information obtained using sub-meter accuracy global positioning system (GPS) equipment. Plotting the geochemical data onto an accurate GPS representation of the sampling locations and predominant local features produces a precise plume expression map. GPS technology allows investigators to reliably relocate previous sampling locations for additional study and accurately combine/compare data from multiple sampling events. Imagine the possibilities.

What follows is found in the MHE PP-27 sampler instruction manual. It is presented as additional information about the sampler and provide a few practical hints.

MHE PP27" Push-Point Sampling device (Patent Pending)
Operators Manual · Ver. 1.02 5/13/00

Introduction

The groundwater/surface water interface has been a research interest of mine for the past decade. This transitional zone is usually rich in biomass and may play a predominant role in the bioattenuation of

contaminated groundwater entering surface water bodies. Usually these biologic processes have limited effectiveness in attenuating highly contaminated groundwater, leaving a plume of parent contamination and metabolic byproducts that eventually expresses itself in receiving waters - usually classified as non-point sources of pollution because of the uncertainty of the discharge area. Part of the problem in the detection and study of these plumes is that there were no devices on the market for the rapid, discrete collection of pore water samples. Reliance on conventional technology and techniques to perform a detailed investigation required extensive effort and burdensome equipment.

Through several iterations, I have evolved a simple device for collecting pore water samples from beneath surface water bodies or the beach areas surrounding them. Pore-water sampling using the PP27 becomes a simple and efficient process, generating a wealth of information and very little waste. The effective working depth is up to 26" below land/sediment surface. If one collects groundwater samples in a transect perpendicular to groundwater flow in the suspected area of plume discharge to an open water body, their analysis yields information about the aerial extent of contaminant discharge to the water body. At this point, additional sampling can complement the initial data and provide the information necessary to map the plume expression in both magnitude and aerial distribution. This is becoming increasingly important to regulators as they decide the ecological impacts of discharging contaminant plumes.

Sampling at each location usually takes 5 minutes, allowing a small crew to collect dozens of samples in an afternoon. These samples can be analyzed in the field for real-time information useful in directing field investigations and research. The work that I have conducted at several contamination sites indicates that many groundwater plumes discharge in surface water bodies in 2-3' of water depth - accessible to investigators wearing hip boots or waders. Many plumes, especially Light Non-Aqueous Phase Liquid (LNAPL) plumes can be delineated by collection of samples in very shallow water or from under beaches. My initial experience has shown that Dense Non-Aqueous Phase Liquid (DNAPL) contaminant plumes express themselves in the shallow, near-shore water as well, even though the on-shore depth of the contaminant mass was deep in the aquifer.

Directions

Look at Figure 1.

As you can see, the PP27 device is a very simple, precisely machined tool consisting of a tubular body fashioned with a screened zone at one end and a sampling port at the other. The bore of the PP27 body is fitted with a guard-rod that gives structural support to the PP27 and prevents plugging and deformation of the screened zone during insertion into sediments. The PP27 is made of 316 stainless steel assuring compatibility with most sampling environments. The screened-zone consists of a series of interlaced machined slots which form a short screened-zone with approximately 20% open area.

Operation of the device is not difficult. One simply holds the device in a manner that squeezes the two handles towards each other to maintain the guard-rod fully inserted in the PP27 body during the insertion process (as shown in Figure 2). Holding the device in this manner, push the PP27 into the sediments or beach to the desired depth using a gentle twisting motion. When the desired depth is reached (or you hit refusal, usually at an aquitard) remove the guard-rod from the PP27 body without disturbing the position of the deployed sampler. Once the guard-rod has been removed from the PP27, it SHOULD NOT be reinserted into the device until the bore of the PP27 has been thoroughly cleansed of all sand, silt, etc.

Attach a syringe or (peristaltic) pump to the PP27 sample-port (see Figure 3) and withdraw water at a low-flow sampling rate (50-200 ml/min.). Once non-turbid aliquots have been withdrawn, representative samples can be collected for on-site and off-site analysis.

Figure 1

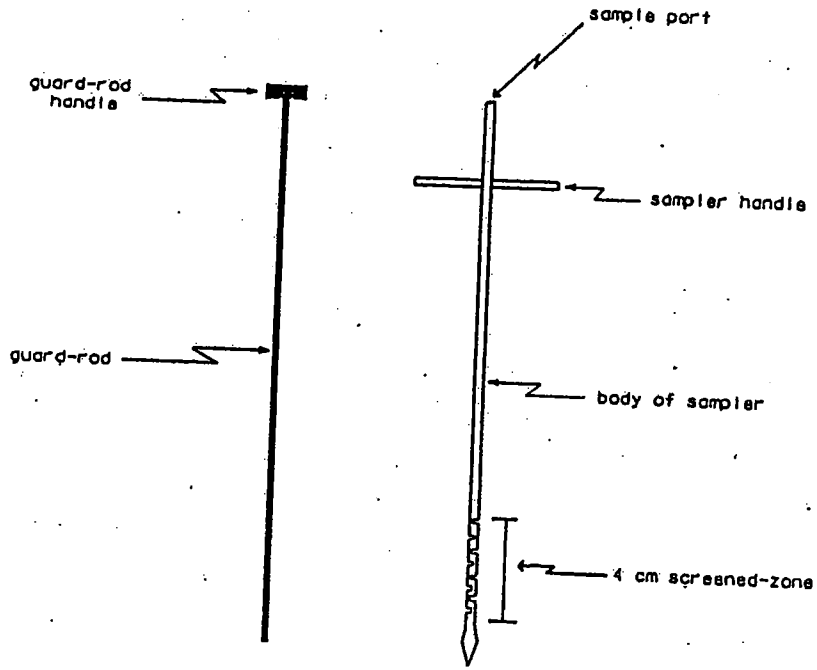

Fig. 1a
disassembled sampler

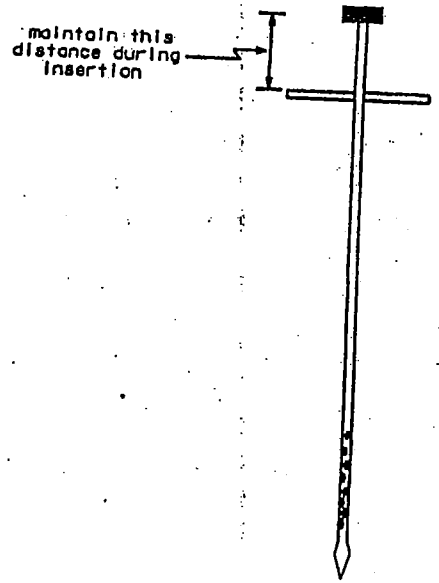

Fig. 1b
assembled sampler

A Field Exercise on Groundwater Flow Using Seepage Meters and Mini-piezometers*

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Abstract

Basic principles of physical hydrogeology and the nature of the hydrologic interactions between groundwater and surface water can be convincingly demonstrated in the field using two inexpensive and easily-constructed devices known as the miniature piezometer and the seepage meter. These instruments have been successfully used during a hydrogeology field course at the University of Waterloo and have been adopted as a routine teaching aid. Seepage meters and miniature piezometers are inserted in the sediment of shallow areas in lakes, estuaries, or streams. In a matter of a few hours, the devices can be installed, monitored, and removed. Information on the direction and rate of groundwater flow can be obtained. Hydraulic conductivity can be measured using several types of tests. Samples of the groundwater can be collected and, with field measurements of parameters such as specific conductance, dissolved oxygen, pH, and chloride, comparisons between groundwater and surface water quality can be made. Student investigations can include the identification of groundwater inflow or outflow areas in lakes, streams, or estuaries, measurement of the spatial and temporal viarations in seepage flux through bottom sediments, and identification of zones of subsurface pollutant migration into surface waters. A day of equipment preparation and a preliminary site visit are prerequisites to the student field activities. Materials for a seepage meter and a miniature piezometer can be acquired for less than 25 dollars.

Key Words: education, hydrogeology, groundwater, limnology, hydrology, water quality, contaminant, seepage, field exercise, lake, stream, estuary.

Introduction

This paper describes the use of two simple inexpensive devices that enable students to measure the flow of groundwater and to demonstrate for themselves some of the basic principles of hydrogeology. A half-day field trip to a shallow body of surface water, preferably with a sandy bottom, makes it possible for students to acquire data that can serve as an impressive indication of the dynamic nature of groundwater flow in a natural setting. The methods are rapid and direct and provide information that cannot otherwise be obtained even if expensive drilling equipment is available. The exercise involves the use of seepage meters to measure groundwater flow rates and the use of manually-installed miniature piezometers to measure hydraulic head (groundwater potential) and hydraulic conductivity. These methods have been used during field experiments in a groundwater hydrology course at the University of Waterloo and as a means of investigating groundwater-flow conditions in lake- and streambeds. The devices are also being used in current research projects, including thesis studies by undergraduate and graduate students.

The basic elements of groundwater flow are related through the Darcy equation,

$$Q = A \frac{dh}{dl} K.$$

Q is the flux of groundwater (volume/unit time), A is the area through which flow occurs, dh/dl is the hydraulic gradient (the change in hydraulic head over a distance along the line of flow (unitless)) and K is the hydraulic conductivity of the material (usually expressed as cm/s). Hydraulic head is a measure of the energy per unit weight of the groundwater. Textbooks on hydrogeology such as Todd (1959), Davis and De Weist (1966) and Domenico (1972) present more detailed discussions of the Darcy equation and its significance in groundwater studies.

Figure 1 shows schematic illustrations of groundwater flow near lakes, in lake bottoms, and in stream bottoms. The flow systems are represented by isopotential lines (contour lines of hydraulic head) and arrows showing the direction of groundwater flow. In lake bottoms and streambeds groundwater flow is upward, downward, or horizontal but is rarely non-existent. The direction and rate of flow is dependant on the physiography, texture and stratigraphy of the subsurface materials. Locally, the flow in streambeds and lake bottoms can vary dramatically, thus providing a variety of observational conditions within a single study area.

The two devices described below provide information on the flow net and on the flux and velocity of water moving along the flow lines at and near the interface. The seepage meter and the minipiezometer also provide a means of sampling the water that is either leaving or entering the groundwater zone beneath the lake or stream. This can often serve to demonstrate the influence

*This work was sponsored in part by a research agreement with Environment Canada.

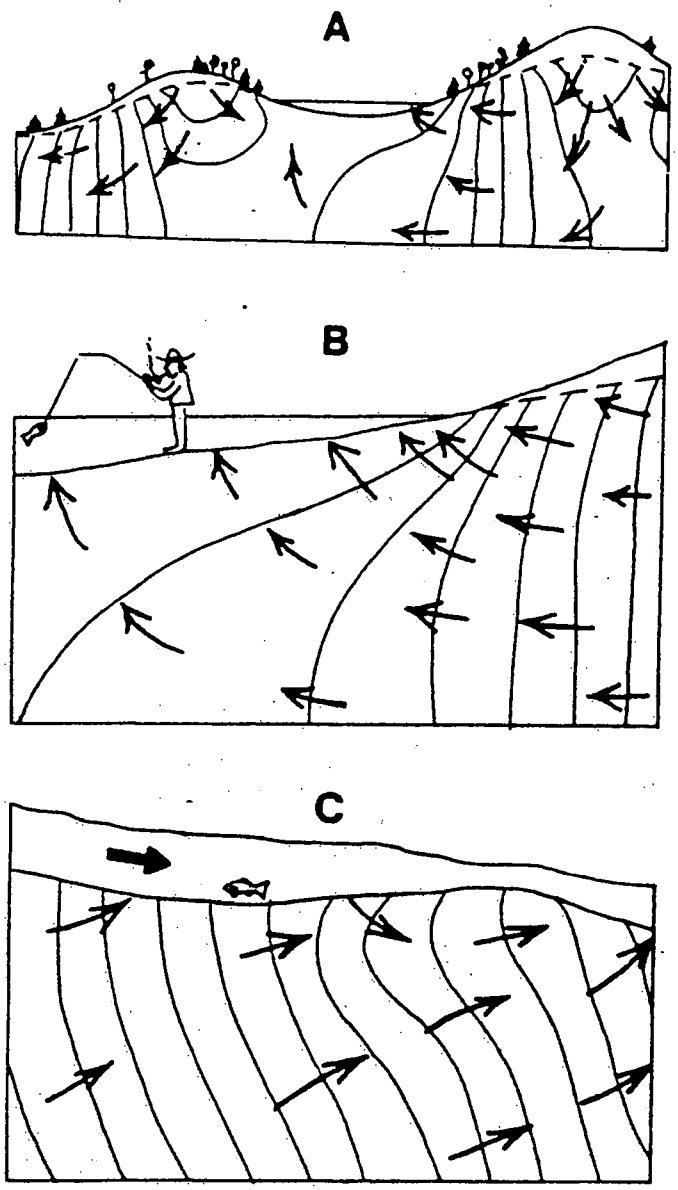

Fig. 1. — Idealized sections showing groundwater flow near bodies of surface water. A, topographic highs are recharge zones and the topographic lows (often occupied by lakes or streams) are discharge zones; B, pattern of groundwater discharge into a lake or estuary; C, longitudinal section of a streambed indicating flow into the sediment where the streambed is concave. (A modified from Winter, 1976; B modified from Lee, 1977; C modified from Vaux, 1968)

of groundwater on surface-water quality. In some cases it is possible to demonstrate that pollutants are fed to lakes or streams by groundwater seepage.

Miniature Piezometers

Piezometers are used to measure the hydraulic head in geologic materials that are saturated under positive pressure. They consist of pipes with slotted tips or well points on the end. Piezometers are normally installed in boreholes drilled by power auger, wash-boring, rotary drill or cable-tool equipment. Piezometers installed at depths between several meters and many tens of meters below ground surface have been used routinely by hydrogeologists and soil engineers for several decades. The miniature piezometer (mini-piezometer) is a similar device but is smaller in size and is installed manually.

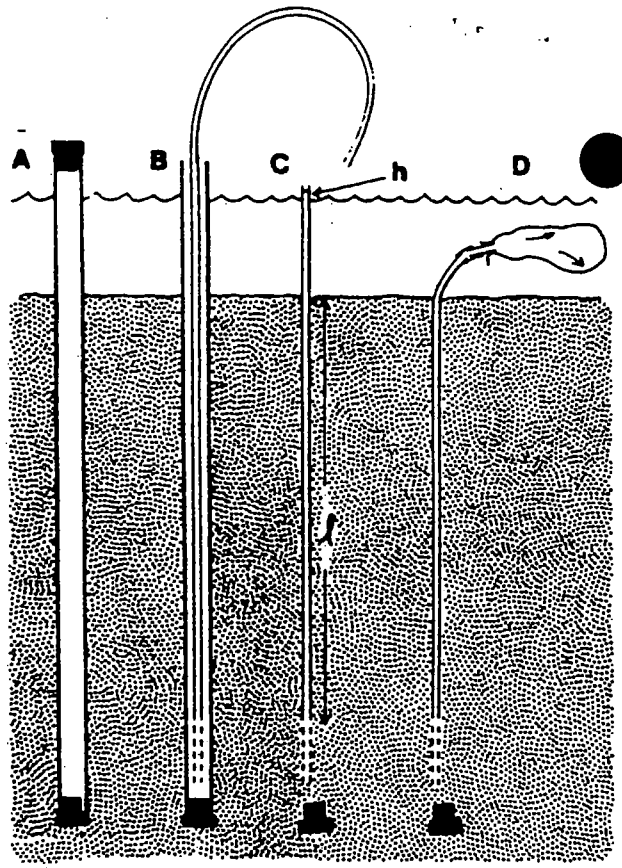

Fig. 2. — General features and method of installation of a mini-piezometer. A, casing driven into the sediment; B, plastic tube with screened tip inserted in the casing; C, plastic tube is a piezometer and indicates differential head (h) with respect to surface water; D, plastic bag attached to the piezometer collects sediment-porewater. (See text for details)

Figure 2 shows the general features and method of installation of the mini-piezometer. The piezometer consists of a 0.31 cm ID translucent polyethylene tube (approximately $0.12/m) with a perforated tip wrapped with 0.2 mm nylon mesh netting or fiberglass cloth. The netting protects the tip from influx of sediment. The piezometer is installed using a 1.7 cm ID steel pipe that is driven into the bed by hammer or vibrator. The casing pipe is loosely fitted with 1.4 cm (5/8 inch) lag bolts at each end. When the steel pipe is driven to the desired depth the plastic tube is inserted and held in place as the pipe is pulled out. The bottom lag bolt remains in the sediment near the piezometer tip. Raised above the water level, the translucent tube shows the head differential with respect to the surface water.

Small differences in hydraulic head relative to the surface water are measured using a manometer that overcomes the difficulties of observing head differences that are slightly above or below the level of the surface water. The principle of the apparatus is indicated in figure 3A which shows how the difference in head between the piezometer and the surface water may be elevated and measured accurately. The equipment needed to measure this differential head in mini-piezometers is shown in figure 3B. The meter stick is attached to a rod and installed vertically next to the piezometer. The apparatus is prepared for use by blowing water out of the tygon tube using a rubber suction bulb. The bulb is squeezed and released slowly allowing water to rise to a static level. The

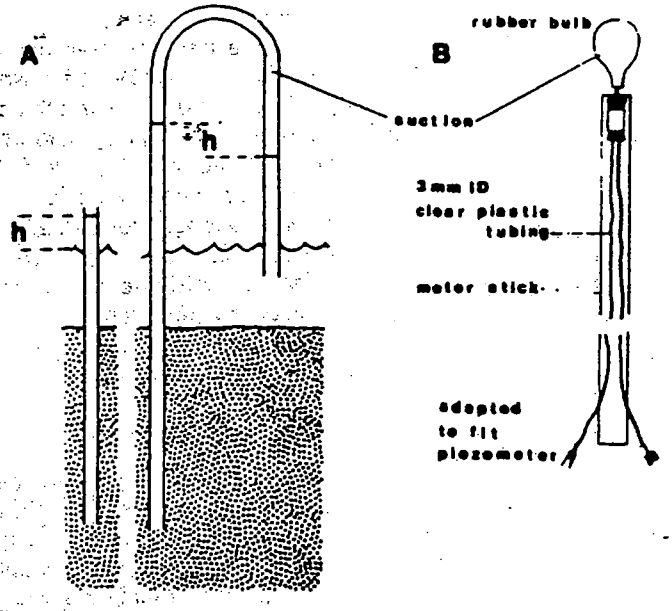

Fig. 3. — The manometer used to measure differential heads in minipiezometers. A, principle of operation; B, the field apparatus.

levels in the two tubes are compared to be sure no bubbles of air are causing different heads in the two tubes. One end of the tube is then attached to the piezometer tube and the other is left in the overlying water. When the water levels in the two tubes reach static levels, the differential head, Δh, is read on the meter stick. The vertical hydraulic gradient is $\Delta h/\Delta \ell$, where $\Delta \ell$ is the depth of the piezometer screen below the sediment-water interface.

To measure the hydraulic conductivity of the sediment adjacent to the piezometer tip, two types of tests can be conducted, a falling head test and a constant head test. For the falling head test the piezometer tube is extended vertically above the surface-water level and then filled with water to a condition of overflow. The overflow condition is discontinued at a time that is recorded as t initial. The rate at which the water level in the tube declines is then recorded. This can be facilitated by taking stop-watch readings of times at which the water level passes marked intervals on the tube. If the hydraulic conductivity is very high, the rate of water-level fall will be very rapid. Increased accuracy can be obtained if the fall distance is lengthened by extending the tube a couple meters above the surface-water level or by feeding water to the piezometer from a larger diameter reservoir with marked intervals. A constant head test can be performed by placing a known volume of water in a plastic bag attached to the submerged tube. The hydraulic head in the submerged bag is the level of the stream or lake level. The change in volume of water in the bag over a recorded time interval is measured. Example results and calculation procedures are summarized in Table 1. The derivations of the equations used in this analysis were first presented by Hvorslev (1951) and have been summarized by Lambe and Whitman (1969). The constant head and falling head formulas are based on significantly different assumptions. Comparison of hydraulic conductivities determined by these two methods can be an interesting endeavor.

Where the hydraulic gradient is downward, groundwater from the piezometer can be collected using

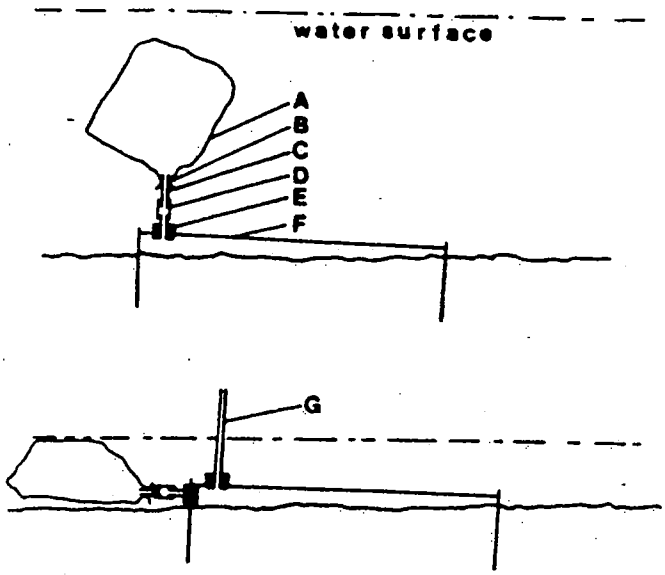

Fig. 4 — Full section view of seepage meter showing proper placement in the sediment. A, 4 liter, 0.017 mm membrane plastic Baggies Alligator bag (open end was heat sealed); B, rubber-band wrap; C, 0.64 cm inside diameter, 6 cm long, polyethylene tube; D, 0.79 cm inside diameter, 4.5 cm long, amber-latex tube; F, 15 cm x 57 cm diameter epoxy-coated cylinder (end-section of a steel drum); G, 0.64 cm inside diameter, polyethylene tube long enough to reach above the surface water. E, No. 5½ one-hole rubber stopper with polyethylene tube.

a suction bulb or hand-operated vacuum pump connected to a bottle. Where the gradient is upward samples can be obtained by simply letting water discharge from the piezometer tube. Where the gradient is weak or the material poorly conductive, the screened area of the piezometer tip must be increased and suction must be applied to obtain water samples.

Seepage Meters

Seepage flux between the groundwater and the overlying surface water can be measured directly by covering an area of sediment with an open-bottomed container and then measuring the time and change of water volume in a bag connected to the container (Lee 1977). Two of these devices, known as seepage meters (Fig. 4), can be made by cutting 15-cm-long, end-sections from a 0.208 m^3 (55 gallon) metal drum. Seepage meters can detect flux as low as 0.001 cm^3/m^2 s (about 0.1 mm/day) if the bag is left connected for a day or longer. In water over 20 cm deep, a single tube through the top of the seepage meter serves both as a vent for any gas released from the sediment and as a connection for the measuring bag. In shallow water an additional outlet tube on the side of the seepage meter permits the bag to be submerged as it must be to maintain the same piezometric head in the seepage meter and in the surface water.

In use, the seepage meter is pushed slowly into the sediment and tilted slightly so that the vent will function properly (Fig. 4). Unless the sediment surface is soft or irregular, it is often unnecessary to push the seepage meter more than 8 cm into the sediment to obtain an adequate seal. The stopper with tube is then twisted into cylinder hole. Where flow is upward, it is unnecessary to

Table 1. Sample field data and calculations.

Piezometer observations

Piezometer number: P1 Depth of screen below sediment: 1 m

Time	Δh,mm	Gradient Δh/ℓ	Elapsed time, min	Volume change, cm³
1630	35	.035	—	—
1650	33	.033	—	—
1739	36	.036	—	—
1705-1723	—	—	18	+12

Hydraulic conductivity calculation: Assuming a case G screen (Hvorslev 1951),

$$K_h = \frac{q \ln [(mL/D)+(1+(mL/D)^2)^{.5}]}{2\pi L H_c}$$

, where

D = diameter, intake, sample (cm)
L = length, intake, sample (cm)
H_c = constant piezometric head (cm)
q = flow of water (cm³/s)
t = time (s)
m = transformation ratio, $(K_h/K_v)^{.5}$ assumed to equal 1*
ln = 2.3 $\log_{10}$.

Therefore K_h =

$$\frac{(12\ cm^3/1080\ s)\ LN\ [(10\ cm/.31\ cm) + (1+(10\ cm/.31\ cm)^2)^{.5}]}{2\pi(10\ cm)(3.5\ cm)}$$

$= 2.1 \times 10^{-4}$ cm/s

Seepage meter observations

Seepage meter number: SM 1
Depth of water: 0.2m
Sediment type: sand and organic matter

Time	Volume change, cm³	Elapsed time, min	Seepage flux, μm/s	Hydraulic conductivity, cm/s
1630-1648	+126	18	+.450	1.3×10^{-3}
1650-1736	+355	46	+.496	1.5×10^{-3}
1739-1752	+ 94	13	+.465	1.2×10^{-3}

Seepage flux calculation:

$$Q, \mu m/s = \frac{(\text{volume change, cm}^3)\ 0.0643}{(\text{elapsed time, min})}$$

$$= \frac{(126)\ 0.0643}{18} = 0.450\ \mu m/s$$

Hydraulic conductivity calculation:
From the Darcy equation K = v/S, where
v = Darcy velocity
S = hydraulic gradient, Δh/Δℓ
K = hydraulic conductivity

$$\text{Therefore } K = \frac{0.450\ \mu m/s}{0.035} = 1.3 \times 10^{-3}\ cm/s$$

* The effect of this assumption is small (e.g. if m = 10, K_h = 2.7×10^{-4} cm/s; if m = 1000, K_h = 3.9×10^{-4} cm/s.

add a known volume of water to the measuring bag before connecting it to the seepage meter.

The Darcy velocity, v, (volume per unit area per unit time) is calculated from the relation 0.0643V ÷ t = v, where V is the volume of water (cm³) entering or leaving the bag, and t is the elapsed time (min). The Darcy velocity is expressed as micrometers per second (1 μm/s = 8 cm/day). The factor 0.0643 converts units of time, volume, and area covered by a seepage meter (0.255 m²) to equivalent units of velocity (μm/s) or seepage flux (cm³/m² s). The average linear interstitial velocity is equal to the Darcy velocity divided by the porosity of the sediment. For most sandy sediments, porosities are in the range of 0.3 to 0.4 (expressed as a fraction).

Student Activities

Students from the University of Waterloo used these techniques to investigate the migration of tritium-contaminated groundwater to a small lake and stream in an experimental watershed at the Chalk River Nuclear Laboratories in eastern Ontario. To minimize the number of pieces of equipment required, this exercise was combined with stream-flow metering so the students could rotate from one activity to the other. Each student installed a piezometer and a seepage meter and measured piezometric head during seepage-measurement intervals ranging from 10 to 45 minutes. Because of the difficulty of removing deeper casings by hand, most students elected to emplace their piezometer 0.6 to 1 m into the sediment. Each student conducted a constant head test to determine the hydraulic conductivity of material near the piezometer screen, and then removed the seepage meter so that subsequent students could install the equipment themselves.

The study sites met the following selection criteria:
Wave height less than 0.3 m;
Current speed less than 0.2 m/s;
Firm sand with very little gravel and cobble; and
Water depth 0.1 to 0.6 m.

Preliminary measurements were made to be sure the students could install the equipment and find seepage rates high enough to complete the exercise in 2 to 3 hours. Because seepage rates are generally highest near the shore, as illustrated in figure 1B, and because shoreline areas were accessible by wading, students worked within 10 m of the shoreline.

Data collected by one student and some sample calculations are shown in Table 1. Piezometric head and seepage rate generally decreased with distance from the lakeshore but seepage rates were quite variable in the streambed. Current effects probably accounted for the variability of replicate seepage measurements in the stream. Streambed heterogeneity probably caused variability between points. No zones of downward seepage were found in either the lake or the stream.

Direct measurements of seepage flux, made by the students, showed that groundwater flowed into the lake along the northern shore. A pore-water constituent (in this case tritiated water) indicated that this seepage water is contaminated by tritium, contained in waste waters pumped into disposal pits located about 800 m north of the lakeshore. The use of seepage meters and mini-piezometers thus enabled the students within a very short time to draw conclusions with regard to the occurrence and source of contaminants entering the lake. Analysis of water from mini-piezometers in the nearby streambed

showed no tritium contamination despite the presence of considerable tritium in the stream itself.

The dynamic nature of the groundwater regime was demonstrated in a visibly impressive manner by filling of the measuring bag attached to the seepage meter. All but 2 of 14 piezometers functioned properly as indicated by raising and lowering the piezometer tube and watching the water level fall or rise to a static level and by the constant-head response tests. Failure to obtain responsive piezometers was due to lifting of the piezometer tube while pulling the casing out of the sediment and consequent loss of the nylon-mesh screen.

We anticipate that a similar approach could be used by others to teach general principles of hydrogeology. This exercise could be included as a part of an introductory course in hydrogeology. It could also be used in hydrology, limnology, geomorphology or sedimentology courses. It could serve as a springboard for student projects designed to determine the importance of the groundwater component to the water budget of a lake or pond, to identify contaminant migration from groundwater to surface waters, to study the effects of seepage flux on sediment chemistry, or to study the role of groundwater in fluvial erosion and deposition. Because these topics have only recently begun to receive research attention, this work offers an opportunity and a freshness which is attractive to students.

Planning the Field Exercise

Sandy shores of gravel-quarry ponds, lakes, reservoirs, and estuaries are ideal sites for these exercises, but the importance of making preliminary measurements to identify suitable sites cannot be overemphasized. Seepage rates must be high enough so that volume changes of at least 50 cm^3 can occur in the measuring bag in 1-2 hours. The sediment should not contain rocks which will bend piezometer drive-casings. Strong wave action and currents interfere with accurate measurements of seepage, although piezometers would probably not be affected adversely. Mud bottoms may not have sufficient flow to permit flux measurement in 1-2 hours.

In estuaries, where tidal fluctuations induce seepage flux through sediment, it may be helpful to consult tide tables before planning a field exercise. At low tide, the highest rates of upward seepage and the strongest upward gradients occur (Lee 1977), and it is easier to install seepage meters at this time. Estimates of net seepage flux will require measurement through an entire tidal cycle.

In streams where surface-water velocity is low and especially in sandy areas, these methods can be used successfully. In other stream environments, however, it may be difficult to find suitable demonstration sites. Downward seepage in streams may be induced where permeability or depth of gravel increases in the direction of streamflow or where the longitudinal bed profile is concave (Vaux 1968). These factors, heterogeneity and current, make data from streambeds more difficult to interpret than comparable data from quieter waters.

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Seepage Workshop

October 23-24, 2000

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Preface: The following procedures for measuring seepage and using mini-piezometers are intended to supplement existing published procedures. They are based upon several years of experience in applying these techniques to natural and contaminated sites and upon the work of others as cited. The interfaces of groundwater and surface water provide exciting opportunities for study, but the collection and interpretation field measurements is often not as simple as we might initially imagine.

Procedure for Measuring Seepage

1. Before starting work, check out the seepage meter and remove edges that may be sharp enough to cut. To check for pin-holes, hold it up to the light. Use seepage meters that are circular or nearly so, because these can be more easily rotated into the sediment. Remove any stoppers.
2. Submerge the seepage meter, and place it on the sediment surface, open end down.
3. Grasp the rim, rotate back and forth while pressing the seepage meter gently downward into the sediment. The seepage meter will sink slowly into the sediment because the water inside will have to flow out of the open hole(s). Be patient as this takes 15 or 20 seconds.
4. Tilt the seepage meter so the cutting edge enters the sediment at a slight angle with the outlet side higher than the side opposite by 2 to 5 cm. This slight tilt minimizes the accumulation of gas within the cylinder because - in this orientation - gas, which moves from the seepage meter into the sediment, can escape into the overlying water, or into the measuring bag, rather than accumulating in the seepage meter. If gas accumulates and contacts the sediment surface, it can reduce the seepage at that location. If gas accumulates within the cylinder during the measurement period, it will increase the apparent seepage.
5. If an obstacle, such as a buried stick or stone, is encountered by the cutting edge of the seepage meter, remove it or try another location because this may interfere with the formation of a good seal.. (In some settings, such as rocky shores, it is not possible to make measurements everywhere you might like.)
6. Once situated in the sediment, press on the rim and hold for a few seconds. This improves the seal along the lower edge. Do not depress the center. Do not jump on the cylinder or press it downward using your feet, unless you report this procedure and are prepared to repair hydraulic blowouts around the periphery and unless you are completely oblivious to concerns about disturbing the sediment surface. In some situations the sediment surface is

comprised of low permeability material. If this material is loosened or disturbed the measurement may be biased.

7. Verify that the seepage meter top is at least a few centimeters above (i.e. does not contact) the sediment surface . Feel around the sides to check this out. Verify that the outlet/inlet hole is on the high side of the meter. If it is not on the high side, loosen the cylinder by grasping the rim and rocking it gently side to side. Then turn it so the hole is at the high side. If working in shallow water, you can check the depth of the rim with a meter stick. Where the bottom sediments are sloped, it may be best to put the high side on the side with the highest sediment. This may be nearer the shoreline.
8. "Feel" around the perimeter to verify that there is at least 6 cm of the cylinder wall in the sediment.
9. If the water is turbid, mark the location so the seepage meter will not be stepped on and so you can find it later.
10. If time permits, let it "equilibrate" for a few hours or days. This allows disturbed particles and, possibly, the seepage meter itself to settle. It also allows time for mobile organisms to escape, rather than plugging the tube in the stopper. Normally we proceed immediately to measure seepage but we remove the stopper until the next visit.
11. Turn the rubber stopper(s) into the hole(s) so that the device looks like one of the two figures in Lee and Cherry (1978). In shallow water, you may have to mount the measurement bag on the side and a vent tube on top.
12. Add a known amount of water, such as 1000mL. The volume of water that the standard plastic bags will fill on their own when placed in a basin of water is about 700 mL. This is what has been termed short-term anomalous flow (Shaw and Prepas, 1989). Where flow is fast enough, sediments resistant enough or the inflow volume great enough (>1500 mL) it may be possible to obtain satisfactory measurements of seepage without pre-filling the plastic bag. To omit the pre-filling step is to risk overestimating the seepage. Although the empty-bag technique may yield acceptable results, it must be evaluated. An evaluation of the bag effect may be performed, by making measurements of large and small volumes, ranging say 800 mL to less than 200 mL. If anomalously high flow rates occur with small volume flow measurements, then correct for this by determining the Darcy flow, $q = (V_2 - V_1) / A (t_2 - t_1)$ where V_2 and V_1 are volume changes during short and long periods of time t_2 and t_1, respectively, and A is the seepage meter area (Vanek, 1992).
13. Remove air from the bag by pulling it into the surface water body and then squeeze the rubber latex tube. If there are no waves or currents, a small amount of air, or gas in the bag, will do no harm.
14. Attach the bag to the outlet tube allowing about 3 mm of tubing overlap. If the overlap is too great, you may disturb the seepage meter (and the measurement) when removing the bag. The bag must be submerged at the connecting point. If not, flow will be impeded or prevented.
15. Record the time as this is the start of the seepage measurement.
16. Allow some time for natural flow to displace water into the measuring bag. The time to obtain a comfortable measurement of flow (say, 100mL to 1500mL), may range from 20 minutes to 24 hours. You may need to do a few trials to get an idea of flow rate.
17. When you approach the seepage meter be careful not to step on it. Gently remove the bag by squeezing the latex tube between the thumb and forefinger.
18. Record the volume of water in the bag and the time. A quick way to measure the volume is to weigh the bag, but few will have a portable weighing balance on hand. Typically, you will have to measure the volume with a plastic graduated cylinder. Leave the stopper on the seepage meter between measurements.
19. On occasion it will be necessary to check a) the stopper for algal and bacterial crud or plugging by aquatic organisms and b) the position and tilt of the seepage meter.

Procedure for Installing and Using Mini-piezometers

The following procedure is based on personal experience and the writings of others as cited. There is no standard design for piezometers. The intention here is to provide a straightforward procedure to introduce the use of piezometers in shallow surface waters. Measurements made with piezometers may be used to estimate the potential seepage flux and they may be used to obtain samples of pore-water for chemical or isotopic analyses. Mini-piezometers differ from portable piezometers in that they are intended to be left for a period of time at selected locations. This can provide time for repeated measurement of hydraulic gradient and for sample collection without the use of suction. They may be installed from a boat and they may even be installed as a nest or a set of multilevel screens. All can be installed manually, usually by one person, but sometimes requiring two people. A simple piezometer is described.

This mini-piezometer consists ¼ inch polyethylene tubing connected to a screen, in this case a screen that is 1 cm diameter by 10 cm long, at some known depth in the bed of a water body (or on land where the water table is not too far from the surface).

Installation

To prevent the entry of sediment, insert a short bolt (cap screw) into the lower end of a one or two meter-long section of ½ inch diameter pipe. Drive the pipe to the desired depth - usually 0.6 or 0.8 or 1.0 m. Prepare the piezometer screen and tubing by attaching the 1 cm diameter by 10 cm long screen into a length of ¼ inch polyethylene tubing. Lower the tube, screen first, into the pipe. (If you wish to use the same screen repeatedly, and cross contamination is not as issue, then secure the screen to the tube using a short piece of wire as a cotter pin.) When the screen is located at the lower end of the pipe, hold the tube in place while withdrawing the pipe, thus leaving the bolt in the ground. After raising the pipe about 20 cm, use it to dislodge material from the cavity and to tamp the sediment above the screen around the tubing to help settle the natural materials and improve the "seal." To say there is a seal maybe somewhat naïve.). Continue tamping as the pipe is withdrawn. Be sure to hold the tube in place until the screen is sufficiently packed so that it remains at the desired depth. Once you have withdrawn the pipe, pack the surface sediment with the heel of your boot. Compare the level of water in the tube with the surface water level. Is there movement of turbid water from the tube when the end is submerged? Record the water level difference between the piezometer screen and the surface water. Record the location of the screen relative to nearby objects and record the depth of the screen below the sediment water interface.

Development

Once the screen has been emplaced, decide whether to pump it and assist the collapse of material above the screen or to use it before it is "developed" by pumping. If pumping is done with a small rubber suction bulb until the groundwater is fairly clear, there is a risk that the subsequent sample of water may be more-or-less representative of surface water rather than groundwater. We use 240 mesh Nitex screen because it is a compromise that functions satisfactorily in many situations. Even in silty sands, it can sometimes be pumped free of fines and then it may be acceptable for pore-water sampling and measurement of hydraulic head. In finer grained sediments, where the Nitex would be too coarse, sintered polyethylene can be used as the filter material.

Gradient measurement

The hydraulic gradient between the sediment pores at the depth of the screen and the overlying surface water can be determined as follows:

1. Test for responsiveness. Remove bubbles from the tubing. Raise the tube and observe the response of the meniscus. If the meniscus is raised well above an equilibrium point, it should fall back to the same elevation. If the meniscus is lowered below the equilibrium elevation, it should rise. If this response in not observed, then the material has a permeability less than sand and try another type of screen, a finer mesh or a sintered polyethylene. Responsiveness and an equilibrium water level **above** the surface water indicates groundwater **discharge potential** but it does not necessarily prove that discharge of groundwater is occurring at that location. Similarly, responsiveness and an equilibrium water level **below** the surface water indicating groundwater **recharge potential** does not necessarily prove that recharge of groundwater is, in fact, occurring. It is possible there is a fine grained (low permeability) confining layer between the screen and the surface water body.
2. Measure the difference in water level between the surface water and the meniscus in the mini-piezometer tube. If the level is below the water body, you may need a manometer device. If the level is above, you may need a short length of tubing with the lower end plugged and a pinhole in it to dampen the effects of surface water waves. Use of the same diameter of tube reduces the errors of capillarity of difference diameters and materials. Record this head difference.

Sampling

Sampling can be performed in two ways, by pumping or, if there is an upward gradient, simply by attaching a seepage bag to the tube and allowing time for the natural gradient to push pore-water to the surface. Use of natural upward gradients can provide a sample without the risk of drawing surface water downward and into the screen. Such sampling may be inappropriate for some constituents of interest, in which case constituent-specific sampling procedures would be used.

If the natural gradient method is used and records are made for the volume change, the elapsed time and head differential before and after the volume measurement, then hydraulic conductivity of material near the screen can be determined (Lee and Cherry, 1978).

Ten Pitfalls of Field Measurements:

1. Failure to recognize that hydraulic conductivity can, and often does, vary by 3 orders of magnitude or more at a single site. This can result in the rejection of correct information or using too few data points and accepting incorrect conclusions.
2. Acting inattentively or carelessly and therefore making measurements that are inaccurate. If you are accustomed to measuring water levels, you should realize that hydraulic head is a rather insensitive parameter compared to groundwater flow rate. With seepage meters, we are attempting to measure flow directly without changing the flow rate Not an easy task.
3. Failure to tilt the seepage meter or to install it too deep in the sediments.
4. Lifting or disturbing the seepage meter during measurement or not having it completely settled in the sediment before starting a measurement.
5. Neglecting to remove gas bubbles from the mini-piezometer screen before making head measurements.
6. Pulling the measurement bag off the connector tube rather than gently squeezing it off.
7. Pushing down or stepping on the seepage meter.

8. When installing the mini-piezometer screen, making the mistake of pulling up on the casing without keeping the piezometer screen at the target depth. This can result in the screen being shallower than you think It can also result in fluidized sediment rushing into the annulus and preventing the plug from coming out. Or, pushing down too hard on the piezometer tube, causing the tubing to crimp.
9. Thinking that any one type of measurement is correct without supporting information. In other words, failure to compare different lines of evidence, such as an estimate of flux based on head differentials and the hydraulic conductivity values and compared with the direct measurement of flux.
10. You are not on the flow path you believe you are on.

Equipment List for Workshop

Equipment for Mini-Piezometers and Seepage Meters

75 nylon mesh piezometer screens, 10 cm effective length with a polyethylene support that is 13 cm of perforated 3/8" O.D. tubing. See details on construction below. The mesh is Nitex Nylon Fabric # 03-236-44 from Sefar Canada Inc. 921 Progress Avenue, Toronto, Ontario. Phone 877-667-6990 (Their source is in the State of Kansas)

7 medium to light-weight post pounders (slide hammers) or 2.5 lb hammers

10 1/2" iron pipes, 2 m long or 1.5 m long

2 hacksaws with sharp blades, vise grips and rat-tail file to fit 1/2" iron pipes

10 drive heads, these must fit loosely into the 1/2" pipe above (This optional piece of equipment must me manufactured in a machine shop.)

100 drive bolts, loose fitting but with head larger than pipe. Also called cap screws, ½" diameter, ¾ or 1" long, carbon steel (<$0.10 ea) or stainless steel (<$0.25ea).

150 m of 1/4" O. D. polyethylene tubing; this must fit tightly into the 1/4" I. D. mini-piezometer screens. We use ¼ OD 1/16" wall Imperial Eastman 44P natural color tubing. Available from scientific and plastic suppliers.

17 meter sticks (for head measurement)

17 rubber bulbs - these should fit snugly on 1/4" O.D. polyethylene tubing Available from scientific and plastic suppliers, Fisher Scientific # 14-070C or ...D

3 feet of Masterflex silicone peristaltic pump tubing (Masterflex # 96410-15) tubing to make connections between seepage bags and mini-piezometer. This is 3/8" O.D. and 3/16" ID tubing.

20 seepage meters. Two of these can be cut from one 55 gallon steel drum (clean or reconditioned), 18/20/18 gauge is fine. The *inside* wall height should be 5 inches - the outside wall, with rim, will be about 6". The small bung hole is about an inch in size (pipe nominal size, ¾ "). For the end w/o holes we cut two holes, one on side very near the inside end and the other at the same location but on the top or end. We drill a pilot hole with a steel bit and then use a 1.00 inch hole punch to cut the holes to fit No. 5 ½ rubber stoppers.

50 seepage meter bags fitted with polyethylene tubes (3/8" O.D., 1/4" I.D.). Originally we used 0.017mm thick Alligator Baggies, but no longer available. We use similar bags having 3.5 to 4 L volume. The end of the polyethylene tube that is fitted inside the bag is perforated with four 4 mm holes and is, of course, open on the end. The end of the polyethylene tube that is outside the bag is fitted with a 6-cm length of soft amber surgical latex rubber tubing, 0.64-cm-ID. This tubing is sold as 5/16" ID, amber rubber latex tubing in 12 foot lengths by Fisher # 14-178D.

80 small rubber bands for seepage bags

10 18" long pieces of 3/8" O.D., 1/4" I.D. polyethylene tubing for air vents

8 polypropylene graduated cylinders, 1000mL, Fisher #08-570-21G 4/$85 case.

36 rubber stoppers, No. 5½, one-hole to fit 3/8" tubing. If the fit is too tight, the stopper gets too fat to fit the seepage meter which is frustrating in the cold.

36 rubber stoppers, solid (no hole), No. 5½

NOTE: Remove all odd equipment in sizes that don't fit these specifications. Odds and ends in this package of teaching material confuses and frustrates.

18 pairs of hip waders, with about this size distribution (purchase these well before they are needed or fishermen may have reduced your local supply)

4	size 12
8	size 10
4	size 8
2	size 6

Dilution Gauging Exercise (if it were included in this workshop, which it is not)

1 conductivity bridge and a cell that fits scintillation vials

2 trays of plastic scintillation vials with caps

2 black marker, Sanford, fine-tip, waterproof

8 1 kg boxes of table salt (For each of 3 twenty liter carboys, mix 1 kg table salt in 20 L tapwater and allow to dissolve at room temperature at least overnight. (There is often a small amount of clay in table salt and this does not go into solution.)

3 5 gallon (20 L) polyethylene carboys with bottom spigots (we need 3 carboys with salt solution)

1 one-hole rubber stopper to fit these carboy tops (#13 fits small top cylindrical carboy, #15 fits the large top rectangular carboy). The hole must make an airtight seal on the stainless tubing below and on the top of carboy.

This stopper must be equipped with a stiff, 60 cm long straight 1/2" I.D. stainless tube such that about 50 cm of tubing will extend to the bottom of the carboy when the stopper is in the top. (Transport carboys to the field with the normal caps screwed tight)

1 2x8 plank 8 ft long to place across stream

1 field rugged thermometer

1 1 liter volumetric flask, polypropylene

1 250 ml (or so) squirt bottle

1 250 ml volumetric flask, polypropylene

1 1000 ml volumetric flask, polypropylene

2 10 ml volumetric pipette

Procedure and Material for Making Mini-Piezometer Screens-We like to have the dimensions and properties of the screens all about the same for a given job so that the data reveals variations in the natural geologic material and not the variations in the materials.

- Cut a rectangle of "240 mesh" nitex nylon cloth, 11 cm in one dimension, the other 1 cm longer than the desired final screen length. For our standard 10 cm long screen, cut an 11x11 cm piece. (For a 40 cm screen, cut an 11x41 cm piece.)
- Cut a piece of 3/8" tubing, 2 cm longer than the mesh, i.e. 13 cm for the 10 cm screen (43 cm for the 40 cm screen). Covering with the filter cloth is much easier if you remove the curl in the tubing before cutting the short lengths. The curl can be removed by funneling very hot water through lengths of tubing that are pulled straight and allowed to cool.
- Starting 1.5 cm from each end, punch pairs of evenly spaced holes in the tubing, 7 pairs per 10 cm of screen, i.e. 28 pairs for the 40 cm screen, 7 for the 10 cm screen. It is also suitable to achieve the same by carefully notching with a sharp pocketknife, cutting against a suitable board. If the filter cloth is in 3 layers around the screen, the effective area is governed more by the outside dimensions of the mesh than it is by the exact area of holes or notches in the support tubing.
- Using a glue gun and low temperature-melt hot glue, affix both corners and center of one of the mesh rectangles long side to the tubing, stretched fairly tight (glue the mid-parts of the edge too, esp. on longer screens).
- Roll the mesh loosely around the tubing, then tighten by rotating the tubing inside the roll.
- Glue the remaining long edge of the mesh down, rolled tight, roughly, along its whole length.
- Go over the edge again with the glue gun tip, re-heating and smoothing the glue.
- Glue the ends of the mesh down and smooth with the gun tip (needs very little glue).
- If tube is to be used with bolt tip, seal one end with hot glue.

Note: Our standard mini-piezometers are about 3.5 cm circumference, so available screen area (glue accounted for) is about 35 cm^2 per 10 cm of screen length.

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Considering Groundwater-Surface Water Interactions in Sediment Toxicity Assessment

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In the September 1999 issue of SETAC NEWS, Bruce Duncan described the importance of the transition zone between groundwater and surface water in the fate, transport and ecological effects of contaminated groundwater. In this article, the relationship between groundwater-surface water interactions and sediment toxicity is presented.

The environmental compartments in a stream system include surface water, sediments, biota, and the subsurface, flowing interstitial water that is either groundwater or advected surface water. The location within the streambed at which these subsurface flows interact is termed the groundwater-surface water transition zone (TZ). The biological and physicochemical conditions within the groundwater, surface water and water of the TZ are different, and hence may affect the partitioning (*e.g.*, bound or freely dissolved), mobility and bioavailability of sediment-associated contaminants. For example, changes in pH may affect the binding of metals whereas the rate and extent of microbial processing of sediment organic matter may affect the partitioning of persistent organic contaminants. Upwelling zones (where groundwater and interstitial water move up toward surface water) are generally anoxic with low pH. Anaerobic microbial processes dominate and may include reductions, denitrification, ammonification and methanogenesis. Dissolved organic carbon (DOC) is of low quality and species diversity is often quite low in upwelling zones. However, after scouring events, upwelling zones play an important role early in recolonization as point sources of nutrients that support microbial and algal populations at the base of community trophic structure. Downwelling zones (the downward movement of surface water into the streambed) are generally higher in oxygen content and pH. Aerobic microbial processes such as oxidation and nitrification are dominant. DOC quality, species diversity and productivity are high in downwelling habitats. The hydrological interface (*i.e.*, TZ) between upwelling groundwater and downwelling surface water within the streambed contains large gradients for a variety of physicochemical parameters (*e.g.*, temperature, dissolved oxygen, pH, and pE). Previous studies have shown that organic contaminant and metal concentrations can vary over several orders of magnitude in the TZ (Benner *et al.*, 1995).

The TZ serves many important ecosystem functions as outlined in Duncan (1999). Briefly, the TZ is a repository for the storage and retention of nutrients and through the growth of biofilms forms the base of aquatic food webs. Nutrient and contaminant biotransformations and conversions occur in the TZ and therefore this ecotone provides natural attenuation. Lastly, this zone acts as a refugium for benthos during disturbance events and stressful conditions and it becomes a source of organisms to recolonize areas following the scouring of the streambed during floods. However, the TZ is often overlooked or ignored in ecological risk assessments.

There are several scenarios in which data on groundwater-surface water interactions would be useful in evaluations of the fate and dynamics of sediment contaminants and the *in situ* exposure of biota. Upwelling groundwater can affect benthos and surface water biota if either or both the groundwater and sediments are contaminated. Aqueous phase chemicals (*e.g.*, freely dissolved, colloid-bound) in the upward flowing groundwater and/or the mobilization of sediment-bound contaminants by upwelling groundwater are the potential inputs to the surficial environs under these conditions. Downwelling surface water can affect benthic, hyporheic (TZ-associated) and phreatic (groundwater-associated) biota if either or both the surface water and sediments are contaminated. Under such conditions, the potential exists for

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the transport of sediment contaminants to deep layers within the streambed and the contamination of groundwater by the downward flowing contaminant load. We have observed this at sites contaminated by PCBs and chlorinated benzenes (Greenberg and Burton, 1999).

Mini-piezometers (Lee and Cherry, 1978) are useful tools because they allow for the detection of upwelling groundwater and downwelling surface water on a local scale (*i.e.*, cm to m). Additionally, these simple, inexpensive devices allow for samples of pore water to be withdrawn from desired depths within the streambed for chemical profiling. Mini-piezometers are comprised of lengths of 1/8" ID plastic tubing that is perforated and screened with 300 µm mesh along the bottom 5 cm. A nest is a group of mini-piezometers of different lengths attached to a 1-m dowel rod that will sample at desired levels beneath the sediment surface (*e.g.*, 10, 25, 50, 75, and 100 cm). Once piezometers are installed, they can be left in place indefinitely for repeated sampling and measurements. To detect areas of upwelling and downwelling, transects of nested mini-piezometers are installed in the riffle and pool areas of *in situ* test sites. Hydraulic heads (in cm) are determined by measuring the heights of water columns drawn simultaneously from the inserted mini-piezometer and overlying surface water into a manometer (Winter *et al.*, 1988). Relative to surface water, a positive or negative hydraulic head indicates an upwelling or downwelling zone, respectively.

The hydrologic data from mini-piezometer pore water samples and hydraulic head measurements have improved our ability to interpret often complex exposure-effects relationships that result from *in situ* toxicity tests. We have found that contaminant concentrations in samples of sediments and pore water are not always predictive of *in situ* chamber (actual) exposure levels and observed effects in the test species. For example, in an *in situ* study of three sites in a stream system with similar levels of sediment contamination by chlorinated benzenes, one site was downwelling at all mini-piezometer nest locations and two sites had no net hydraulic pressure differences. Total chlorinated benzenes in water samples taken from the piezometer nests ranged from 100-1300 ug/l at all sites. The highest concentrations generally occurred in piezometers installed 30 cm or deeper into the streambed. Concentrations of total chlorinated benzenes in water samples taken from the chambers used during 4-d *in situ* exposures of *Ceriodaphnia dubia*, *Hyalella azteca* and *Chironomus tentans* to surficial sediments were near 100 ug/l at the two no-exchange sites, whereas the level was only 3 ug/l at the downwelling site. Survival of all three test species was significantly higher at the downwelling site (>80%) than at the no-exchange sites (<20%). For *C. dubia* and *H. azteca*, survival between the downwelling and reference sites was not significantly different. Our conclusion was that the downward flow of surface water through the sediments might have removed bioavailable contaminants in the surficial sediments to deeper zones within the streambed (Greenberg and Burton, 1999). However, this condition places TZ species and groundwater resources at risk.

Sediment chemists, toxicologists and risk managers have primarily focused their research efforts and the development of sediment quality guidelines on the effects of contaminants to benthic and water column organisms associated with the surficial sediments (0-10 cm depth). Implicit in this approach is that the historic contamination buried beneath the top sediment bed layer is biologically unavailable and hence poses little to no ecological risk. However, deeper sediments (ca. 10-100 cm depth), and more specifically sediments within the TZ, serve important ecosystem functions and therefore may be sensitive to chemical perturbation. Vertical transport of dissolved or colloid-bound contaminants within the sediment interstices can potentially exert deleterious effects in the surficial sediments, surface water or groundwater, or it can exacerbate pre-existing degraded conditions. Equilibrium conditions may not exist at upwelling or downwelling zones and thus sediment quality guidelines may not apply to these localized areas. Therefore, ecosystem integrity can be more effectively evaluated if the scientific and regulatory community adopts a holistic approach to stream health that includes focusing on the TZ. At the present time, we have begun to incorporate this added hydrologic perspective in our *in situ* sediment toxicity research program through the use of mini-piezometers. Continuing this line of research by developing assessment tools capable of measuring biological effects within the TZ is the next step in establishing comprehensive assessments of the stream ecosystem.

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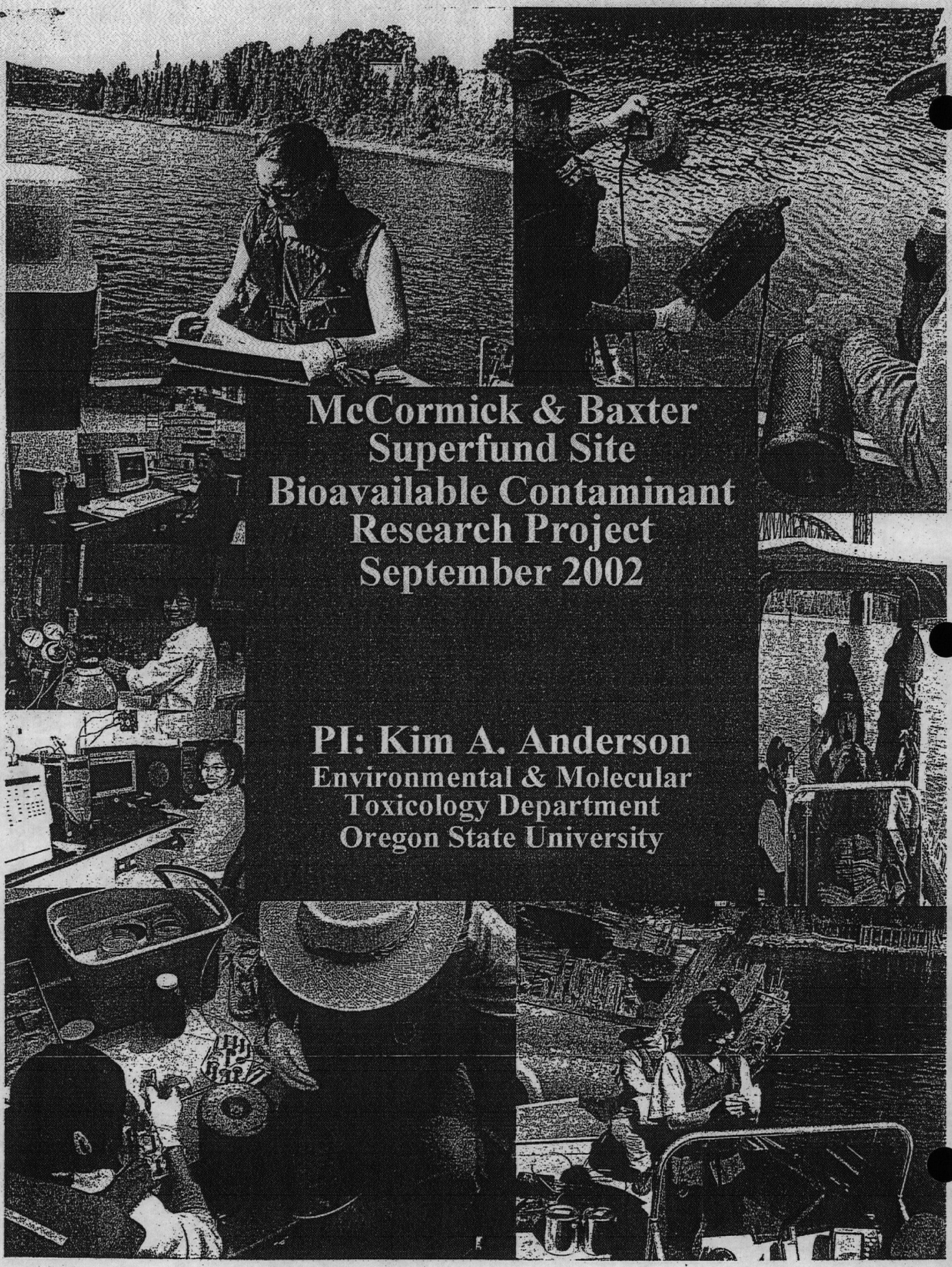

McCormick & Baxter Superfund Site Bioavailable Contaminant Research Project September 2002

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ANALYTICAL REPORT

OREGON STATE UNIVERSITY

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FSES Bench Sheet 3000
FSES Bench Sheet 4000

OREGON STATE UNIVERSITY

SUBMISSION INFORMATION

Client:	**Oregon DEQ**	**FSES Case #:**	E02-04
Address:		**Client Case #:**	NA
		Date Received:	9/12/02 and 9/26/02
		Sample Type(s):	Water, PSD
		Report Status:	Final
		Samples Delivery By:	Collected by FSES staff
		Condition Sample(s) Received:	cold
		Submitter:	FSES staff
		Report Date:	11/22/02

Background:

Developing an objective assessment of the hazard that contaminants pose to humans and the environment depends on an intimate understanding of its bioavailability. Bioavailability, defined as the extent to which the contaminant is taken up by an organism upon exposure, depends on the species/form of the contaminant or metal complex and/or how easily it can be transformed to a more or less bioavailable form.

Metals

Speciation in water

In natural waters, only a fraction of the metals are present as the "free" aquo ion (e.g. Cu^{2+}); rather, most metals are adsorbed to suspended particles or complexed with various ligands[1]. For example, binding of copper to fulvic and humic acids and to other organic compounds can be very strong, so that a large proportion of dissolved copper is often organically complexed[4,2,3]. Speciation, the identification and quantification of a metal in its various oxidation states, inorganic forms and organometallic complexes, is afforded through several techniques.

Detection and quantification

Electrochemical techniques, especially anodic stripping voltammetry (ASV), have been widely used to measure the "electrochemically labile" fraction of metals in water samples, with the assumption that the electrochemically labile fraction is a good approximation of the bioavailable fraction of metals[4,5,6,7,8,9]. Grab samples were collected 1 foot off the river bottom, and analyzed by anodic stripping voltammetry (ASV). We used the "labile" metals measured by ASV to quantify free metal ion (the main bioavailable form).

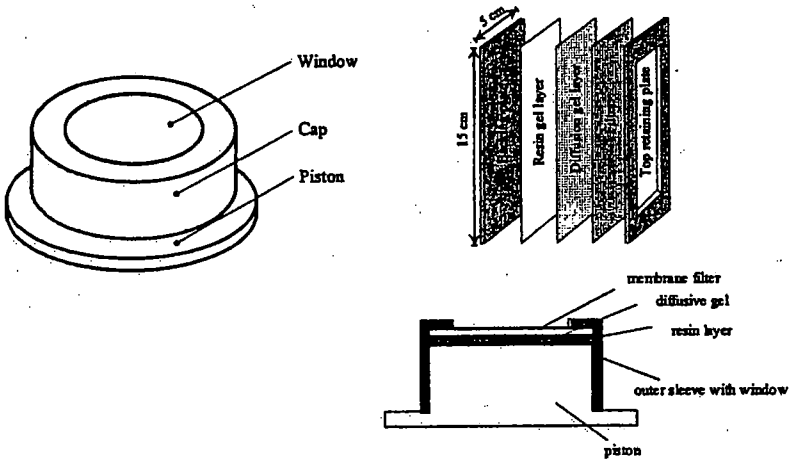
In-situ methods

Together with electrochemical methods, in-situ techniques are becoming more popular and are successfully used for speciation studies. In-situ methods avoid equilibrium problems and emphasis on in-situ types of technique is likely to increase. DGT (diffusion gel thinfilms) were used for quantitative determination of bioavailable (labile) metals in-situ. The theory and sampling regime for DGT probes have been reported[10,11]. DGT were developed for the quantitative determination of labile metals in-situ[10,11]. The simple procedure uses a layer of Chelex resin impregnated in a hydrogel to bind the metals. A diffusive layer of hydrogel and filter overlies the resin-layer. Ions have to diffuse through the filter and diffusive layer to reach the resin layer. It is the establishment of a constant concentration gradient in the diffusive layer that forms the basis for measuring metal

concentrations in solution quantitatively without the need for separate calibration. The DGT device is deployed for a known time and then the mass of metal on the resin layer is measured after elution with acid by, for example, AAS (atomic absorption spectrometry), ICPAES (ICP atomic emission spectrometry), ICP-MS or ASV. Providing the temperature is known, the concentration in solution can be calculated.

When deployed in water DGT measures labile species. Above a low threshold value, the measurement is independent of solution flow. DGT has been deployed in-situ in rivers, lakes, estuaries and the deep sea[10,11]. Its built-in pre-concentration gives it good sensitivity and avoids contamination problems. For these solution applications, a small plastic molding is used to house the gel layers and filter, see figures below[10].

Figures: DGT construction and deployment



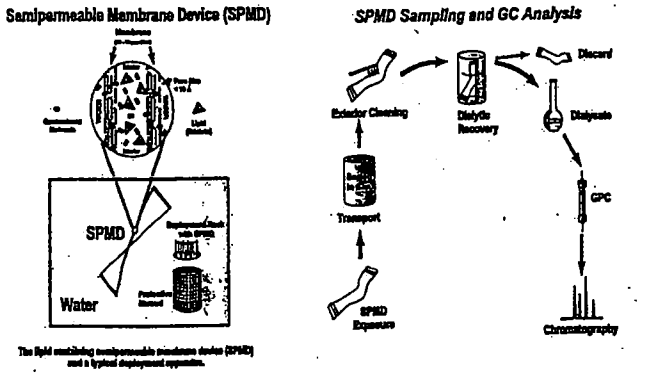
One set of DGT was deployed at each site, and the DGT were analyzed by ASV.

Organic Compounds

Bioavailable Organic speciation

Semi-permeable membrane devices (SPMD), also called passive sampling devices (**PSD**), were used for in-situ monitoring of aquatic bioavailable organic contaminants. PSD were selected since they sample only organic chemicals (lipophilic) in solution (dissolved)[12,13] while excluding those sorbed on organic matter or particles. Studies of PSD bioavailable organic compounds have been correlated directly with bivalves[14], mussels[15,16,17,18,19], catfish[20], clams[21], goldfish[22,23] and brown trout[24]. Furthermore, PSD sampling gives an integrated exposure over the entire sampling period that may better approximate actual exposure. The figure to the right[25] illustrates the construction, deployment configuration, extraction and analysis scheme. Final analysis for PAH (and PCP) utilized HPLC with DAD and FLU (diode array and fluorescence) detectors. Studies detailing the development and application of PSD (SPMD) for passive in-situ monitoring of aquatic bioavailable organic contaminants has been presented[13, 14] PSD have been used for **over a decade** and their use to determine bioavailable organic compounds is establish Studies detailing the development and application of PSD for passive in-situ monitoring of aquatic bioavailable organic contaminants has been presented[26,27]. PSD were selected since they sample only organic chemicals (lipophilic) in solution (dissolved) while excluding those sorbed on organic matter or particulates. The PSD[28] are used for contamination monitoring and toxicity assessment.

Figure: PSD construction, deployment, extraction & analysis scheme



Summary of Project Goals

Each speciation analysis (pesticides, metals and nutrients) typically requires a unique set of experimental extraction/digestions, equipment and instrumental conditions. Our approach utilized in-situ monitoring probes that ***by design measured*** bioavailable chemical species. We deployed PSD[28] for passive in-situ monitoring of aquatic bioavailable organic contaminants[29] and diffusion gradient thinfilms (DGT) for in-situ monitoring of bioavailable (labile)[30] elements[31] and collected grab samples and analyzed by ASV. These techniques allow us to better understand the fate, transport and levels of the bioavailable fraction of contaminants at a compromised sites.

RESULTS:

Field data:

PAHs, PCP, and Metal/Element Sampling with Passive Sampling Devices

Deployment and Sampling

Passive sampling devices including (PSD and Diffusive Gel Thinfilms (DGTs)) were deployed at McCormick and Baxter superfund site for 2 weeks (from Sep 12-26, 2002). Individual site conditions dictated how the samplers were deployed and grabbed. DGTs were attached to the SPMDs' cages. All cages were deployed 1 foot from the bottom of the river. Radio transmitters were used in the buoys for future retrieved. See appendix for a schematic of the deployment arrangement. When permanent structures (e.g. pilings) were present, the samplers were deployed by attaching to these structures with an I-bolt. Samplers 15, 13, 11, and 7 were all attached to permanent structures as follows:

- Site 15-attached to boom.
- Site 11-attached to first piling north of barge.
- Site 13-attached to first piling south of the bridge.
- Site 7-attached to angled piling at south end of sampling area.

See the aerial photo in the appendix for site locations and a table of GPS coordinates for the exact locations of each PSD sampling gear. Site 1, 2, and 3 were close to each other, and only single DGT was deployed at site 2. Samplers 4, 5, 9, and 12 were deployed further from shore than originally planned due to the shallow water that prohibited boat access. A minimum of 3-4 feet of water is required for deployment. Site 2 was setup as a field duplicate site, two SPMD cages were deployed (side-by-side) at this site.

Twenty water samples were grabbed on Sep 26, 2002 at the same sites as SPMDs and DGTs deployments. Water samples were grabbed at a depth of 1 foot above the river bottom. Water samples were collected in 250-ml HDPE bottles and preserved on ice at 4°C.

PSD retrieval was performed on September 26, 2002. All samplers were successfully retrieved except for site 13, which was not found (presumably lost/stolen). Samples were pre-cleaned at the site as described in the SAM. All organic samples were placed in pre-labeled amber jars and stored in a cooler with ice packs. The DGT were collected in pre-labeled ziplock bags and stored in a cooler with ice packs. Once samples were returned to the laboratory they were stored at –20C until analysis.

Table 1: Field conditions during deployment (09/12/02) and retrieval (09/26/02).

Site	Water Temp on deployment day	Water Temp on retrieval day	Approximated water depth (ft)	pH of water
1	20°C	18°C	30	7.25
2	20°C	18°C	35	7.57
3	20°C	18°C	40	7.25
4	20°C	18°C	26	5.55
5	20°C	18°C	4	7.18
6	20°C	18°C	4	6.91
7	20°C	18°C	4	6.85
8	20°C	18°C	45	7.29
9	20°C	18°C	4	7.20
10	20°C	18°C	4	7.22
11	21°C	18°C	30	7.19
12	20°C	18°C	11	7.29
13	21°C	18°C	31	6.91
14	20°C	17.5°C	44	7.30
15	21°C	18°C	6	7.21
16	21°C	18°C	16	7.26
17	20°C	17°C	40	5.92
18	20°C	18°C	24	7.18
19	21°C	18°C	16	7.36
20	20°C	18°C	37	7.12

Analysis Results

DGTs and water grab samples were analyzed for 4 metals. DGTs were extracted and dialyzed with acid/buffer. The instrumental analysis was completed using anodic stripping voltammetry, which measures only the labile (the main bioavailable form) metals. Concentrations of metals analyzed from DGTs are the *average integrated* concentration in water over 2 weeks. Detection limits were determined routinely, depending on the metal and deployment times. Metal detection limits are listed in Tables 2 and 3. The standard analytical method used is given in appendix 1. The PAHs and PCP were extracted as described in the SAM (appendix). Method detection limits are determined routinely, they depend on analyte and deployment times. PAH and PCP method detection limits are given in Table 4. PAH abbreviations are given in the SAM, other abbreviations used are at the end of the report.

Quality Control

Metals:

To insure project quality, appropriate numbers of field and laboratory QC samples were tested. There were trip blanks, duplicates analysis, laboratory blanks and fortified samples were analyzed for both DGTs and water grab samples batches. For a sample set, the average QC spike recoveries were between 70 and 130%. The following is a QC summary including calibration curves with r^2 values as summarized below:

- The relative percent difference between field duplicates was ≤ 30%
- Water grab samples- Spike percent recovery average = 76 % .
- DGT samples –Spike percent recovery average = 121% .
- Cr, Cu, Zn and As(III) were not detected above the MDL in the trip blank
- Cr, Cu, Zn and As(III) were not detected above the MDL in the field blank
- Cr, Cu, Zn and As(III) were not detected above the MDL in the reagent blank
- Calibration curves using 3 standard had r^2 values as follows:
  - Arsenic (III) r^2 ≥ 0.980
  - Zinc r^2 ≥ 0.999
  - Chromium r^2 ≥ 0.989
  - Copper r^2 ≥ 0.981

The metals QC passed the data quality objectives as defined in our SAM.

Organic:

To insure field and batch quality control, appropriate numbers of field and laboratory QC samples were tested. Site 2 was duplicated with two SPMD cages. In addition, field blanks and trip blanks were used. In the laboratory reagent blanks and spikes were also included in the batches.

- The relative percent difference between field duplicates was ≤ 13%
- Spike percent recovery average = 76 %
- PAHs were not detected above the MDL in the trip SPMD blank
- PAHs were not detected above the MDL in the field SPMD blank
- PAHs were not detected above the MDL in the reagent blanks.

- Calibration curves using 4+ standard had r^2 values as follows:
  - PAHs r^2 ≥ 0.997

All positive PAH analytes were confirmed by both diode array detection and fluorescence emission. The analyte was compared with the full UV spectrum of known analytes (ca. 210 nm to 600 nm). Also the analytes were confirmed with fluorescence detection. 3-D data were evaluated for all positive PAHs. The QC passed the data quality objectives as defined in our SAM.

Detection Limits

Detection limits for DGT are a function of deployment times, the detection limits reported here represent the detection limits for this study (14 days). Also, lower detection limit for chromium is possible by adding a step to the anodic stripping voltammetry method, however, it was not required since nearly all samples were above detection limits. Metal detection limits are listed in Tables 2 and 3.

Detection limits for SPMD (PSD for organic analytes) are a function of deployment times, the detection limits reported here represent the detection limits for this study (14 days). PAH detection limits are listed in Table 4.

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Table 2: Bioavailable Metals by ASV, Grab Water Unfiltered

Results for McCormick and Baxter Project

Labile/Bioavailable Elements by Anodic Stripping Voltammetry

Site	Arsenic (III) DL = 0.005 ppm	Zinc DL= 0.005 ppm	Chromium DL = 0.4 ppm	Copper DL = 0.01 ppm
1	BDL	BDL	0.98	BDL
2	BDL	BDL	1.25	0.01
3	BDL	BDL	1.70	0.02
4	BDL	BDL	1.45	BDL
5	BDL	BDL	1.16	0.01
6	BDL	BDL	1.00	0.02
7	BDL	BDL	1.15	0.03
8	BDL	BDL	1.10	BDL
9	BDL	BDL	1.29	0.01
10	BDL	BDL	1.22	0.03
11	BDL	BDL	1.50	0.04
12	BDL	BDL	1.40	0.02
13	BDL	BDL	1.41	0.02
14	BDL	BDL	0.95	0.01
15	BDL	BDL	1.36	0.04
16	BDL	BDL	1.31	0.02
17	BDL	BDL	1.21	0.01
18	BDL	BDL	1.46	0.01
19	BDL	BDL	1.27	BDL
20	BDL	BDL	1.18	BDL

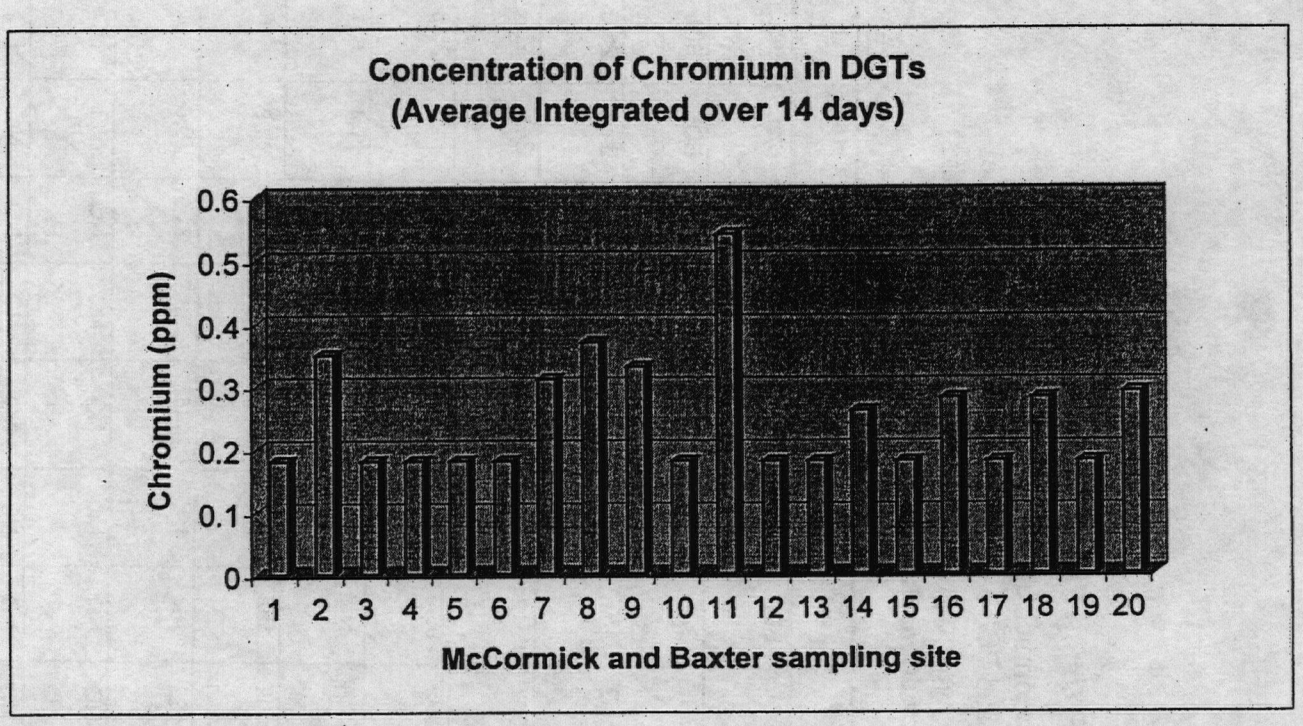
Table 3: Bioavailable Metals by ASV Using Passive Sampling Devices

Results for McCormick and Baxter Project
Dissolved/Bioavailable Elements by Anodic Stripping Voltammetry
in Diffusive Gel Thin Films (DGTs)
(concentration represents average integrated concentration over 2 weeks)

Site	Arsenic (III) DL = 0.002 ppm	Zinc DL = 0.002 ppm	Chromium DL = 0.2 ppm	Copper DL = 0.005 ppm
1	BDL	BDL	BDL	BDL
2	BDL	BDL	0.35	BDL
3	BDL	BDL	BDL	BDL
4	BDL	BDL	BDL	0.03
5	BDL	BDL	BDL	BDL
6	BDL	BDL	BDL	BDL
7	BDL	BDL	0.31	BDL
8	BDL	BDL	0.37	BDL
9	BDL	BDL	0.33	BDL
10	BDL	BDL	BDL	BDL
11	BDL	BDL	0.54	BDL
12	BDL	BDL	BDL	BDL
13	BDL	BDL	BDL	BDL
14	BDL	BDL	0.26	BDL
15	BDL	BDL	BDL	BDL
16	BDL	BDL	0.28	0.02
17	BDL	BDL	BDL	BDL
18	BDL	BDL	0.28	BDL
19	BDL	BDL	BDL	0.01
20	BDL	BDL	0.29	BDL

Figure : Bioavailable Chromium at McCormick & Baxter Superfund Site

September 2002



(Also see the Appendix for an aerial photograph overlay of labile bioavailable metals by ASV.)

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Table 4: PAHs and PCP Using Passive Sampling Devices

Results for McCormick and Baxter Project
Dissolved/Bioavailable PAHs and PCP by HPLC (DAD and Fluorescence)
(concentration represents average integrated concentration over 2 weeks)
PAH abbreviations are in the SAM

Units: ng/L	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20
Napth MDL=1.4ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Athyl MDL=2.1ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Athen MDL=0.14ng/L	15.5	12.2	10.2	33.34	35.5	42.5	5.5	6.29	35.4	49.6	34.1	63.1	23.8	67.1	31.3	21.5	11.	10.3	14.9
Flo MDL=1.3ng/L	143	113	95.2	362	382	447	105	112	382	512	369	638	274	675	343	253	156	150	192
Phen MDL=0.71ng/L	22.5	15.7	12.4	78.7	53.4	64.2	15.3	13.0	106	99.3	62.0	97.1	29	155	44.5	26.6	18	22.5	22.6
Anth MDL=0.39ng/L	4.1	3.16	2.8	15.7	11.6	13.7	3.3	2.5	22.4	21.8	14.5	21.6	3.8	35.1	11.4	6.5	4	5.1	5.3
Fran MDL=0.32ng/L	36.1	31.0	23.7	166	93.7	107	28.7	27.2	199	192	163	196	38.6	232	86.9	50	35	47.9	44.5
Pyr MDL=0.08ng/L	30.1	26.2	20.9	121	70	77.9	25	24.4	132	154	131	146	33	210	70.8	45.	31.4	38.6	40.2
Chrys MDL=0.94ng/L	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ
BaAnth	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ	NQ

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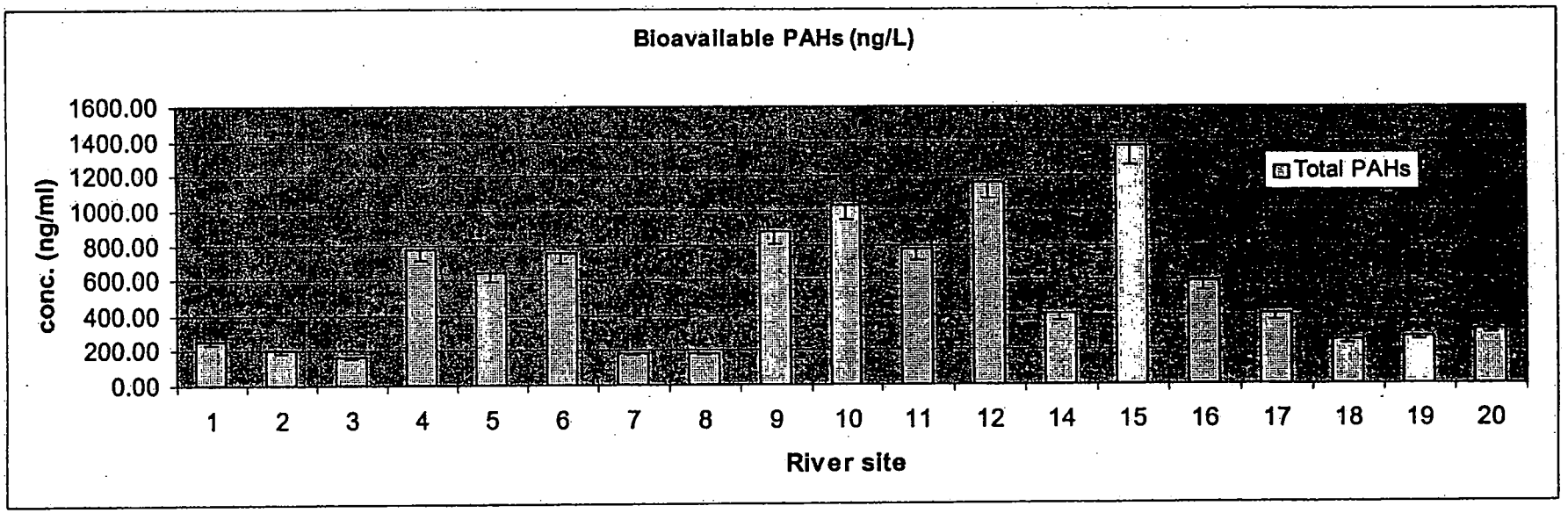
Units: ng/L	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20
MDL=0.36ng/L																			
BbFluo MDL=0.83ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
BkFluo MDL=0.15ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
BaPyr MDL=0.33ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
DahA MDL=7.0ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
BghiP MDL=14.9ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
I123cdP MDL=15.2ng/L	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total PAHs	252	201	165	778	647	753	184	186	877	1030	774	1160	403	1370	588	403	255	274	820
PCP	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Figure : Sum of Bioavailable PAHs tested from McCormick & Baxter Superfund Site September 2002.



(Also see appendix for a bar graph overlay on the aerial photograph of McCormick & Baxter.)

*Summary of Grab Unfiltered Water Samples (*Labile bioavailable form*):*

- For all study sites the grab waters were below MDL for both bioavailable zinc and bioavailable arsenic (III).
- Bioavailable chromium was detected at all sites. The highest concentration was at site 3 (1.70 ppm), follow by site 11 (1.50 ppm), and site 18 (1.46 ppm). The lowest concentration was at site 14 (0.95 ppm).
- Bioavailable copper was present at most sites, the highest concentration of copper was at site 15 (0.039 ppm), follow by site 11 (0.035 ppm), and site 10 (0.032 ppm).

*Summary of Passive Sampling Devices –DGTs (*Dissolved bioavailable form*)*

- For all study sties the DGTs samples were below MDL for both bioavailable zinc and bioavailable arsenic (III).
- Bioavailable chromium was detected at most study sites. The highest concentration of chromium was at site 11 (0.54 ppm). Other sites with high chromium include sites 7, 8, and 9.
- Bioavailable copper was detected at most study sites. The highest concentrations of copper were at sites 4, 15 and 19 (0.03 to 0.01 ppm).
- DGT concentrations represent an average concentration over the deployment time. (In this study the concentration represents an average concentration integrated over 14 days).

*Organic Compounds: Summary of Passive Sampling Devices (*bioavailable forms*)*

- Bioavailable pentachlorophenol (PCP) was below method detection limit at all sites.
- The bioavailable PAHs ranged nearly a factor of 10 among all sites, with a high of approximately 1400 ppt to a low of approximately 170 ppt.
- The highest bioavailable PAH concentrations where at sites 15, 12 and 10. High concentrations were also found at sites 4, 5, 6, 9, 11, and 16.
- The lowest concentrations were found at sites 1, 2, 3, 7, 8, 18, 19 and 20.
- Among the bioavailable PAHs tested, fluorene had the highest concentration at all sites.
- Other PAHs found in high concentrations were fluoranthene, pyrene, and phenanthene.
- The PAH profile was the same for all sites, the individual PAH rankings are as follows
    - 1. Fluorene
    - 2. Fluoranthene
    - 3. Pyrene
    - 4. Phenanthene
    - 5./6. Acenaphthene and Anthracene
    - 7./8. Chrysene and Benzo(a)Anthhracene
- The following PAHs were below method detection limits at all sites: napthalene, acenaphthylene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perlene and indo(1,2,3,c,d,)pyrene.
- The highest bioavailable PAH concentrations were at sites within the proposed sediment cap boundary.
- There are low but detectable bioavailable PAHs outside the cap boundary. At the time of sampling there was about 200-250 ppt bioavailable PAHs upriver of the McCormick & Baxter superfund site.
- Sites that were west of McCormick & Baxter (in deeper water towards the center of the Willamette river) had medium to low but detectable bioavailable PAH levels, the concentrations ranged from 200-400 ppt.
- Sites downriver of the McCormick & Baxter superfund site had low but detectable bioavailable PAH levels that ranged from 300-200 ppt.

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FSES Analytical Report: General Information

Units:

ppt = part per trillion

ppb= part per billion

ppm = part per million

ng/L = ppt

µg/Kg = ppb

µg/L = ppb

mg/L = ppm

Abbreviations:

NA= Not Applicable

MDL= Method Detection Limit

EDL= Estimated Detection Limit

BDL = Below Detection Limit

ND = None Detected

NQ = Not Quantitated (below DL)

Questions: If you have any additional questions, please call the Food Safety and Environmental Stewardship Laboratory Director at 541-737-8501.

DIRECTOR: Kim A. Anderson

Kim A. Anderson, Ph.D.

DATE 11-22-02

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APPENDIX 1

Includes:

GPS Site Coordinates

Aerial Photograph of McCormick & Baxter Superfund Proposed Sampling Locations

Aerial Photograph with Bioavailable PAH Concentration Bar Graph Overlay

Aerial Photograph with Bioavailable Metal Concentration Graph Overlay

FSES Standard Analytical Method 4002: Field Sampling using Passive Sampling Devices

FSES Field PSD Field Bench Sheets

FSES Standard Analytical Method 4003: Analysis of PAHs

FSES Standard Analytical Method 8001: Field Sampling using Passive Sampling Devices Inorganic

FSES Standard Analytical Method 8002: Metals in PSD by Anodic Stripping Voltammetry

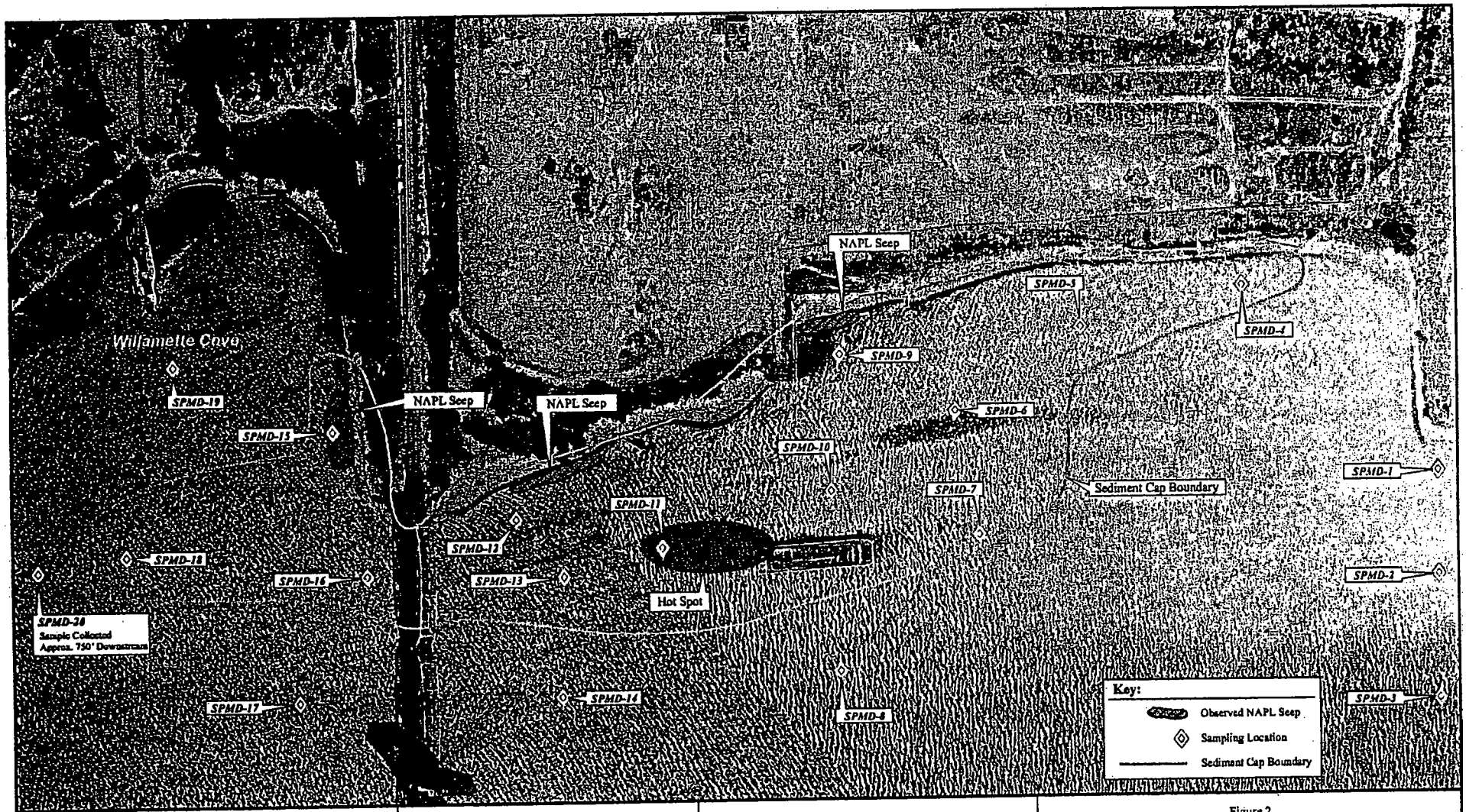
FSES Standard Analytical Method 8003: Arsenic (III) by Anodic Stripping Voltammetry

FSES Bench Sheet 3000

FSES Bench Sheet 4000

GPS Coordinates for
McCormick & Baxter Bioavailable Sampling Project
Samples collected on September 26, 2002

McCormick & Baxter, Portland Harbor Superfund Site, Location GPS Coordinates			
Location #	GPS N	GPS W	
1			
2			
3			
8	45° 34' 36" N	122° 44' 36" W	
14	45° 34' 39" W	122° 44' 42" W	
17	45° 34' 44" W	122° 44' 49" W	
20	45° 34' 37" W	122° 44' 54" W	
4	45° 34' 35" W	122° 44' 27" W	
5	45° 34' 36" W	122° 44' 27" W	
6	45° 34' 36" W	122° 44' 29" W	
7	45° 34' 33" W	122° 44' 27" W	
10	45° 34' 37" W	122° 44' 31" W	
11	45° 34' 38" W	122° 44' 36" W	
13	45° 34' 33" W	122° 44' 3?" W	
16	45° 34' 43" W	122° 44' 46" W	
18	45° 34' 47" W	122° 44' 46" W	
19	45° 34' 49" W	122° 44' 44" W	
15	45° 34' 46" W	122° 44' 43" W	
12	45° 34' 40" W	122° 44' 38" W	
9	45° 34' 37" W	122° 44' 31" W	



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Aerial Photographs from Spencer B. Gross, Inc. June 19, 2000

McCORMICK AND BAXTER
CREOSOTING COMPANY SITE
Portland, Oregon

Figure 2
SURFACE WATER SAMPLING LOCATIONS

Date:	Drawn by:	
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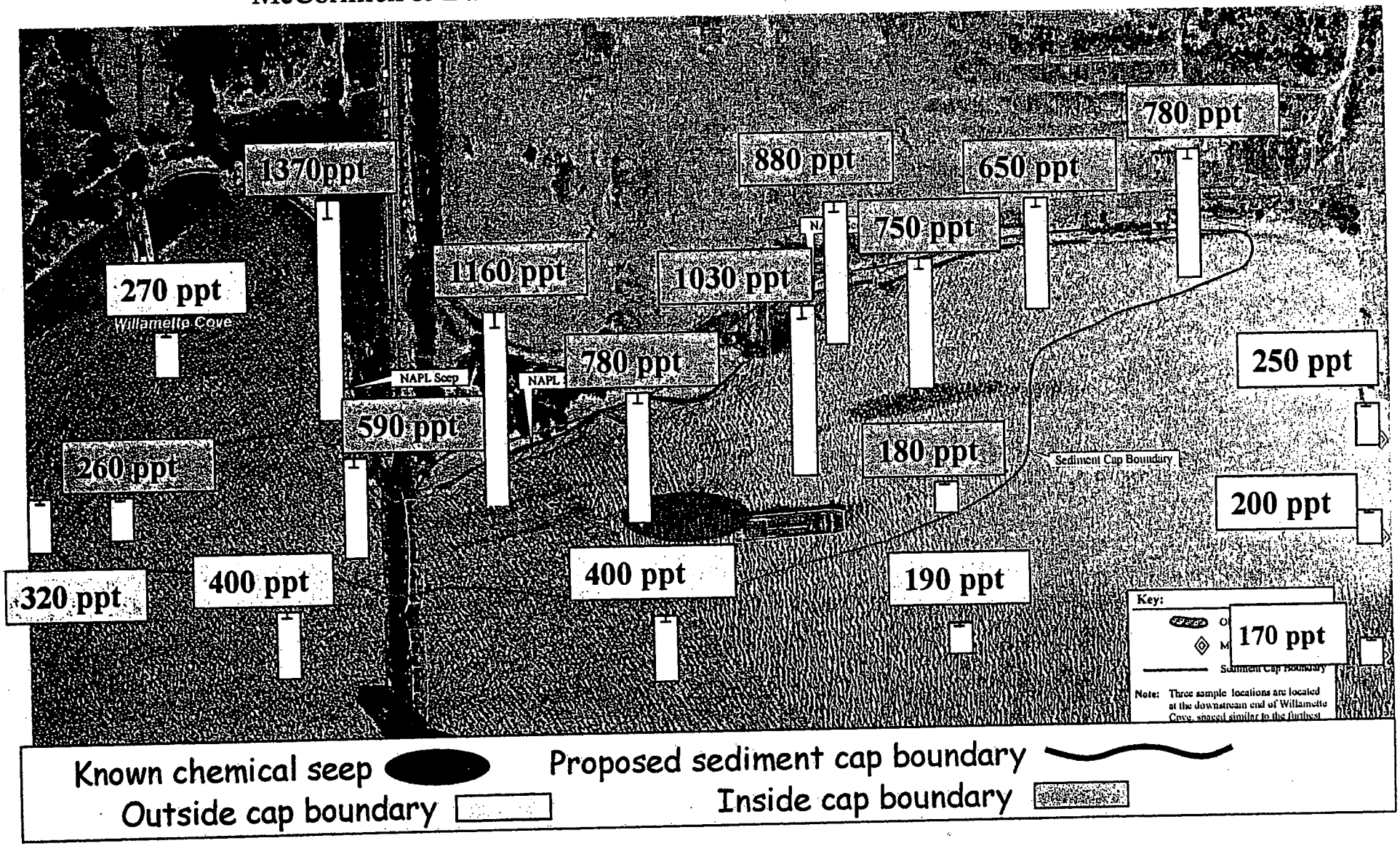
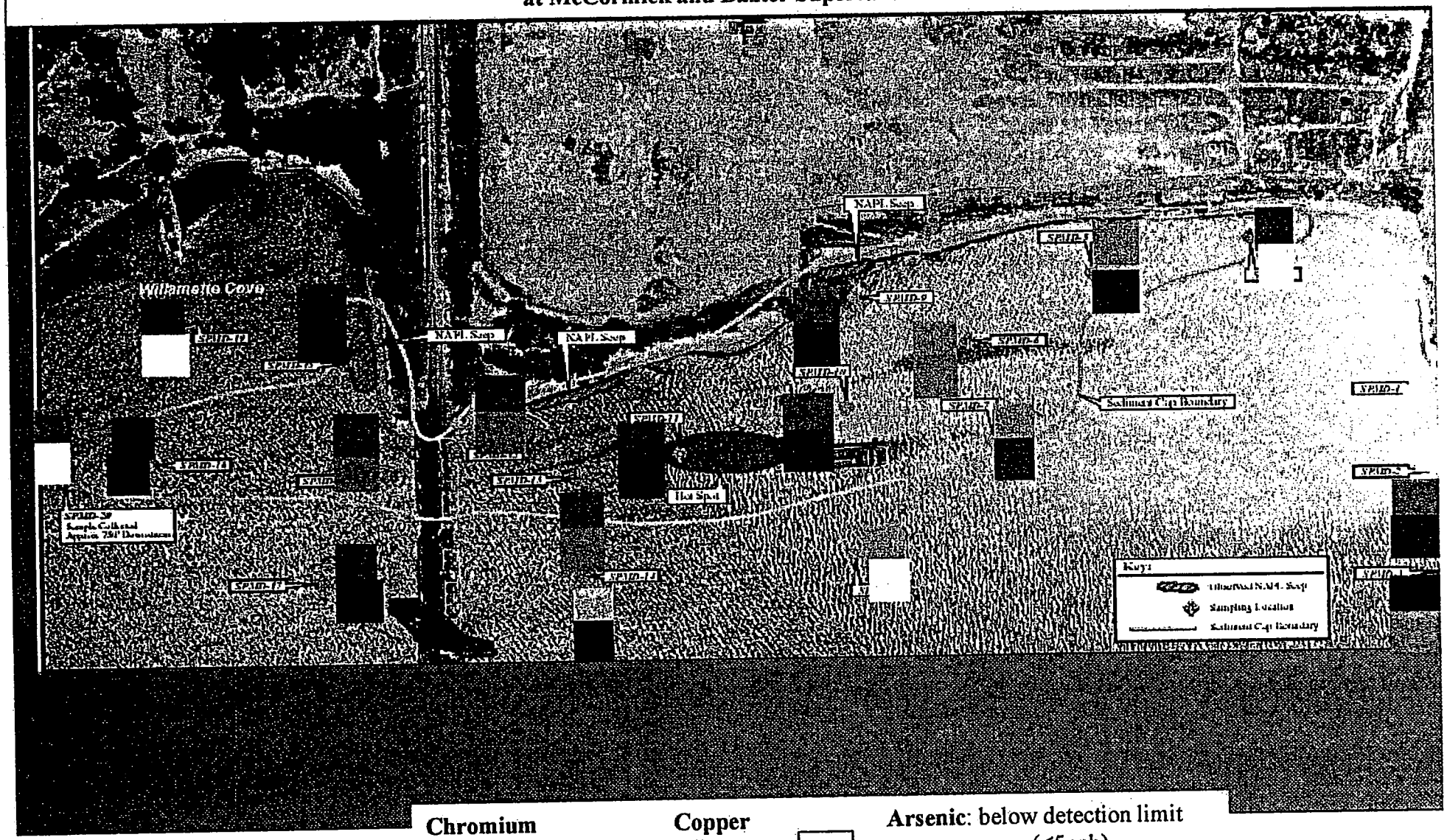
McCormick & Baxter: Total Bioavailable PAH September 2002



Bioavailable Concentration of Heavy Metals from Water Grab Samples using ASV at McCormick and Baxter Superfund Site



Chromium
- < 1.00ppm
- 1.00-1.20ppm
- 1.21-1.40ppm
- 1.41-1.60ppm
- 1.61-1.80ppm

Copper
- < 0.01ppm
- 0.01ppm
- 0.02ppm
- 0.03ppm
- 0.04ppm

Arsenic: below detection limit (<5ppb)

Zinc: below detection limit (<5 ppb)

Title: Field Sampling utilizing Inorganic Passive Sampling Devices.

Scope
This method describes the techniques used to collect field samples using inorganic Passive Sampling Devices like diffusion gel thinfilms (DGT) in water. The DGT technique requires that field samples are both deployed and retrieved. This SOP describes both the deployment and retrieval processes. This SOP describes the deployment gear arrangement. This SOP describes the clean-up of DGT after deployment.

Status
This document is considered current standard operating procedure of the Food Safety and Environmental Stewardship Laboratory when management approval is documented by signature below. This Standard Operating Procedure is effective on the date of approval signature and supersedes all previous versions.

Filepath: \\Loperb\OSU SOP's\Sam\2-Inorganics\D-Misc. Matrix\8001-field sampling DGT.doc

Approved	_____ Kim A. Anderson, Ph.D.	**Director** Title	_____ Date
Historical File	_____ Signature/Initials		_____ Date

I. Equipment and Apparatus
- **A.** Diffuison Gel Thinfilms (DGT).
- **B.** Nitrile gloves (or equivalent)
- **C.** Ziplock bags with appropriate label
- **D.** Buoys
- **E.** cables
- **F.** lock-down bolts,
- **G.** rope,
- **H.** anchors,
- **I.** radio transmitters
- **J.** Radio receiver and antenna

II. Reagents
- **A.** 18 MΩ•cm water, EASYpure UV, Barnstead in a squirt bottle.

III. Field Sample Deployment
- **A.** Deployment (see Figure)

1. DGT should be kept in a zip-lock bag or equivalent until ready for deployment.
2. Buoys, cables, and anchors should be assembled and ready for deployment prior to removing DGT from the ziplock bag.
3. On the cable gear the "U-bolt" should be set at the required depth for the specific project. Typically this is 1 foot from the anchor (river bottom) or 10 feet from the anchor (river bottom). The depth is dictated by the project DQOs. Record depth of cage deployment on the bench sheet or list for entire project.
4. Complete all hardware deployment preparations.
5. Attach DGT onto each protective mesh cage.
6. Submerge entire apparatus into river. See figure below for a cartoon schematic of deployment. Verify deployment is correct. If an underwater deployment technique is used ensure that buoys are at least 4 feet below the surface. If an above water deployment technique is used ensure that there is sufficient slack in the top buoy rope for changes in water depth (there should be 1-2 feet of slack). If the deployment is via attached structure (such as river piling), ensure connections are tight.
7. If radio transmitters are used (for sampler location), record the radio transmitter signal frequency for the site. Note: Not all sample locations require radio transmitters.
8. If the double anchor technique is used ensure that the anchors are as far apart as possible prior to dropping overboard. Note: Not all sampling sites require double anchor deployments.

IV. Field Sample Retrieval

A. Locate sampling gear and retrieve into the boat.
B. Remove the attached DGT from the cage/cable gear.
C. Wash DGT with water to remove any algae or sediment on the outside of the DGT.
D. Gently remove any algae or sediment that may be adhering to the outside of the DGT tubes.
E. Place DGT in appropriately labeled zip-lock bags
F. Place DGT in container with icepack to keep cool
G. Transport to laboratory, place in cold room until extraction

VII. Quality Control

Each field batch should consist of a trip blank.

VIII. Documentation Requirements

Bench sheet (or field laboratory book as appropriate to the project) sheet for deployment and retrieval. There are bench sheets for both deployment and retrieval. Depending on project data quality objectives (DQOs) a chain of custody form may be required. Check project DQOs and OSU SOP 2020 chain

of custody, and other SOP such as Sample Identification, sample storage, sample preservation may be required depending on DQOs.

D:\loperb\Forms and Labels\bench sheet\field DGT forms

IX. Safety and Health

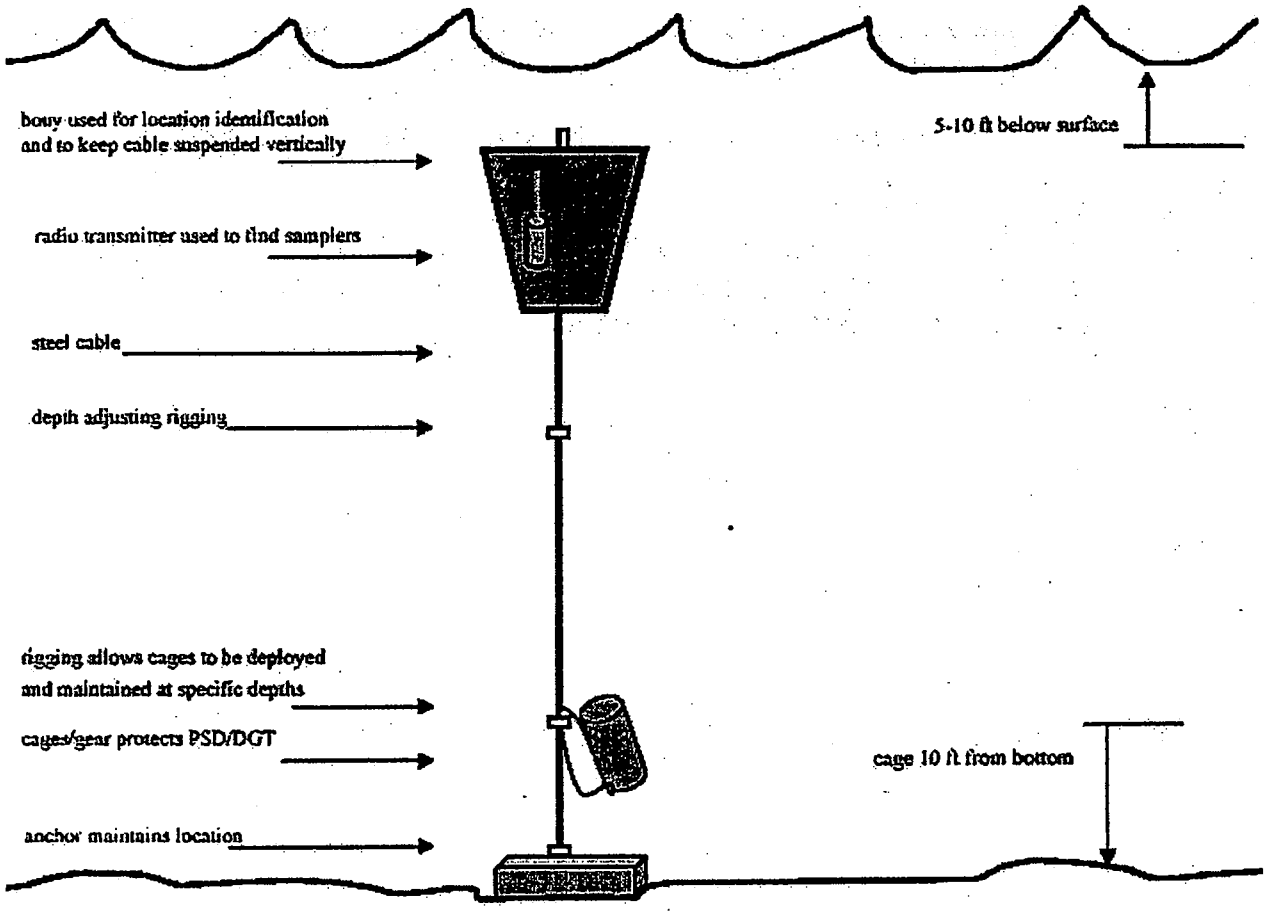
Please consult Material Safety Data Sheet (MSDS) information on pesticides and reagents. Personnel performing this method will observe all appropriate Oregon State University laboratory safety procedures.

X. References

XI. Validation

A. not applicable

Deployment Figure: Underwater deployment technique with radio transmitter and 10 ft from bottom deployment shown below.



Not drawn to scale

Anderson, K.A. schematic of PSD deployment setup & gear

Surface Sample Extraction Bench Sheet

Sample ID No.	QC Prep. Forts.	400 ml EA, Shake 60 min.	Decant, 200 ml EA, Shake 15 min.	Solvent Evap. Exch. to TMP	Florisil Column	Sol. Evap. Exch. to TMP	Adjust Samps to vol.	Vol. Calc.	GC Prep Vortex, Transfer to GC Vial	Comments
								Tar: Tot: Net:		
								Tar: Tot: Net:		
								Tar: Tot: Net:		
								Tar: Tot: Net:		
								Tar: Tot: Net:		
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								Tar: Tot: Net:		
								Tar: Tot: Net:		

Date:
Chemist:
Standard ID No.:
Balance ID:

Wt. of TMP at 22.5 C	
1/2 ml =	0.3449 g
1 ml =	0.6899 g
2 ml =	1.3797 g

Reagent	Co. & Lot No.
Acetone	
Hexane	
TMP	
Benzene	

Reviewed by: Date:

Title: Field Sampling utilizing Organic Passive Sampling Devices.

Scope
This method describes the techniques used to collect field samples using Passive Sampling Devices (PSD) in water. The PSD technique requires that field samples are both deployed and retrieved. This SOP describes both the deployment and retrieval processes. This SOP describes the deployment gear arrangement. This SOP describes the clean up of PSD after deployment.

Status
This document is considered current standard operating procedure of the Food Safety and Environmental Stewardship Laboratory when management approval is documented by signature below. This Standard Operating Procedure is effective on the date of approval signature and supersedes all previous versions.

Filepath: \\Loperb\OSU SOP's\Sam\1-Organics\D-Misc. Matrix\4002-field sampling PSD.doc

Approved	_____ Kim A. Anderson, Ph.D.	**Director** Title	_____ Date
Historical File	_____ Signature/Initials		_____ Date

I. **Equipment and Apparatus**
- A. Passive sampling devices (PSD).
- B. Nitrile gloves (or equivalent)
- C. 500 mL or 1L amber bottles with Teflon® lids (or equivalent)
- D. Buoys
- E. cables
- F. lock-down bolts,
- G. rope,
- H. anchors,
- I. radio transmitters
- J. Radio receiver and antenna
- K. Rinse jars wide mouth with lids, ca. 1 gallon

II. **Reagents**
- A. Acetone, Fisher Pesticide Grade.
- B. Isopropyl alcohol, Fisher Pesticide Grade.
- C. 1 N HCl, reagent grade
- D. 18 MΩ•cm water, EASYpure UV, Barnstead.

III. Field Sample Deployment

A. Deployment (see Figure)

1. PSD should be kept in airtight cans until ready for deployment.
2. Buoys, cables, and anchors should be assembled and ready for deployment prior to removing PSD from the storage can.
3. On the cable gear the "U-bolt" should be set at the required depth for the specific project. Typically this is 1 foot from the anchor (river bottom) or 10 feet from the anchor (river bottom). The depth is dictated by the project DQOs. Record depth of cage deployment on the bench sheet or list for entire project.
4. Complete all hardware deployment preparations.
5. Load 5 PSD spindles (spiders) (tubes have been previously loaded on spindles) into each protective mesh cage. Minimize the time PSD are in the air. For example, if the cabling becomes tangled lower the cage with the PSD in the river while untangling the cable. Do not touch the PSD with your hands. Nitrile gloves should be worn whenever there is a chance you could touch the PSD.
6. Submerge entire apparatus into river. See figure below for a cartoon schematic of deployment. Verify deployment is correct. If an underwater deployment technique is used ensure that buoys are at least 4 feet below the surface. If an above water deployment technique is used ensure that there is sufficient slack in the top buoy rope for changes in water depth (there should be 1-2 feet of slack). If the deployment is via attached structure (such as river piling), ensure connections are tight.
7. If radio transmitters are used (for sampler location), record the radio transmitter signal frequency for the site. Note: Not all sample locations require radio transmitters.
8. If the double anchor technique is used ensure that the anchors are as far apart as possible prior to dropping overboard. Note: Not all sampling sites require double anchor deployments.

IV. Field Sample Retrieval

A. Locate sampling gear and retrieve into the boat.
B. Remove PSD from the protective cage.
C. Fill wash-tub with river water from site location
D. Wear nitrile or equivalent gloves whenever touching the PSD.
E. Place PSD into the wash-tube; remove PSD from spindles (spiders).
F. Gently remove any algae or sediment that may be adhering to the outside of the PSD tubes.
G. Take PSD and place in 1N HCl, for ca. 30 seconds. Then place PSD in the water jar rinse by hand gently several times, about 5-10 seconds.
H. Take PSD and place in the acetone filled jar and gently rinse, about 5-10 seconds
I. Take PSD and place in the isopropanol filled jar and gently rinse, for about 5-10 seconds.
J. Place PSD in appropriately labeled amber 1L jar

K. Tighten lid.
L. Place amber jar in container with icepack to keep cool
M. Transport to laboratory, place in cold room until extraction

VII. Quality Control

Each field batch should consist of a trip blank, field blank and an field extraction blank.

VIII. Documentation Requirements

Bench sheet (or field laboratory book as appropriate to the project) sheet for deployment and retrieval. There are bench sheets for both deployment and retrieval. Depending on project data quality objectives (DQOs) a chain of custody form may be required. Check project DQOs and OSU SOP 2020 chain of custody, and other SOP such as Sample Identification, sample storage, sample preservation may be required depending on DQOs.

D:\loperb\Forms and Labels\bench sheet\field PSD forms

IX. Safety and Health

Please consult Material Safety Data Sheet (MSDS) information on pesticides and reagents. Personnel performing this method will observe all appropriate Oregon State University laboratory safety procedures.

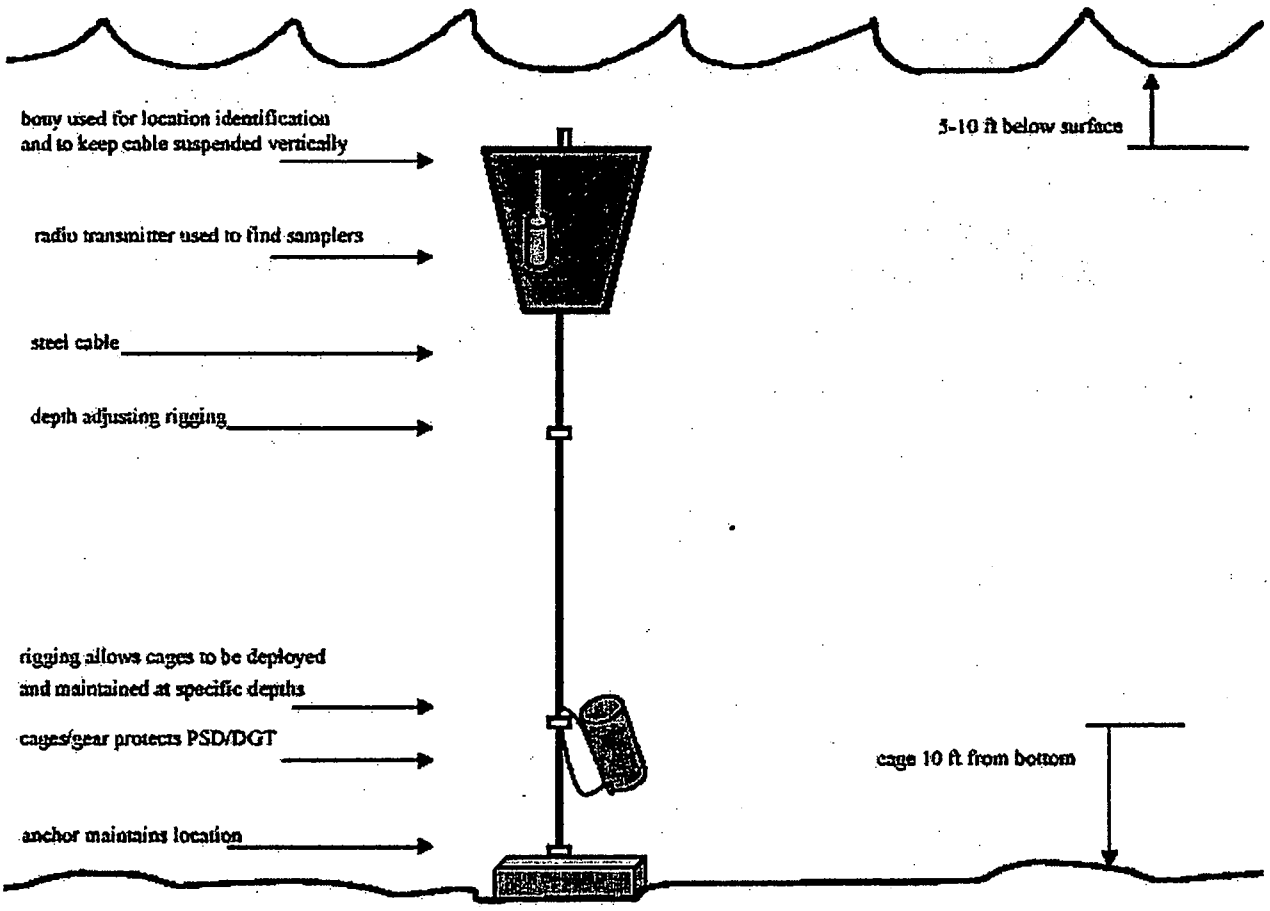
X. References

Anderson, K.A. & E. Johnson, "Bioavailable Organochlorine Pesticides in a Semi-Arid Region as Determined by GC-ECD" *J. AOAC INTERNATIONAL* 2001, 84, 5, 1371-1382.

XI. Validation

A. not applicable

Deployment Figure: Underwater deployment technique with radio transmitter and 10 ft from bottom deployment shown below.



Not drawn to scale

Anderson, K.A. schematic of PSD deployment setup & gear

Field Collec[illegible] Bench Sheet for Monitoring Environmental Contaminants by Using Passive S[illegible]ing Devices (PSDs)
Deployment method

Project Number	Project Name	Chemical analyses (specify):
Collecting agency (name, address, phone)	Deployment date: Expected retrieval date:	Collector name (print and sign)
Site Location (name and/or ID number)		Lat./Long. (optional)
Water body Name/Segment Number	Water body Type	☐ River ☐ Lake ☐ Estuary
Site description:		

Site name	Sample ID #	River depth (ft.)	Sampling level above bottom (ft.)	Complete all deployment hardware preparations	Load five spiders, each containing individual PSDs, into a protective mesh cage Note: the samplers must be open to the atmosphere for only as long as necessary and gloves must be on during this step	Attach a DGT (Diffusive Gel Thin film) to each PSD cage for metal sampling (optional)	Submerge completed deployment apparatus into the river	Initials Date Time	Note

Note: PSDs must be stored in the vapor -tight cans until deployed. If SPMDs (Semipermeable membrane devices) are used, they ideally should be maintained frozen until deployed

Field Quality Control

QC type	site		Check for completion
Field blank		Expose PSD field blank to the atmosphere for the same length of time as a sample PSD is exposed to the air.	
Trip Blank		Maintain PSDs in unopen can for duration of deployment	

Additional information/comments:

Field Collection Bench Sheet for Monitoring Environmental Contaminants by Using Passive Sampling Devices (PSDs)
PSD Retrieval method

Project Number	Project Name	Chemical analyses (specify):	
Collecting agency (name, address, phone)		Deployment date: Retrieval date: Deployment duration:	Collector name (print and sign)
Site Location (name and/or ID number)			Lat./Long. (optional)
Water body Name/Segment Number		Water body Type	☐ River ☐ Lake ☐ Estuary
Site description:			

Site name	Sample ID #	Retrieve cage and place DGT in labeled bag	(Gloves on!) Remove PSDs from spider, wash in river water to remove biofouling	Perform series of rinses: 1) 1N HCl (approx. 30 sec.) 2) 18 mOhm water 3) Acetone 4) Isopropanol	Place PSDs in airtight amber jar and store on ice for transport to lab	Initials	Notes

Field Quality Control

QC type	site		Check for completion
Field blank		Expose PSD field blank to the atmosphere for the same length of time that one sample PSD is exposed to air.	
Trip Blank		maintain PSDs in unopen can for duration of deployment	
Field Extraction		Perform series of rinses and place in amber jar in same manner as the samples.	

Additional information/comments:

C: bench sheet/ PSD bench sheet

Passive Sampling Device (PSD): Sample Dialysis and Extraction Bench Sheet for analysis of PCBs, OCs, and PAHs

Deployment dates:

Sample ID & Sample name	1st dialysis 400 or 250 ml Hex* Sit 18 hr.	Decant to 1000ml r.btm.flask	2nd dialysis 400 or 250ml Hex Sit 6 hr.	Combine both dialysates	Solvent Evap. to ca.1-2 ml	Transfer to cent. tube. Rinse rbf with 4-5 aliquots hexane	TurboVap to 0.3 ml	Transfer to GPC vial. Rinse with 3-4 aliquots hexane	GPC cleanup	Split into 2 portions 15 ml each	Notes

*400ml of Hexane is used for dialysis of 5 PSDs and for lab QC (spikes, reagent blank), 250ml of Hex is used for single SPMDs from field QC and lab SPMD control.

Reagent	Co. & Lot. No.
Hexane	
DCM	

c:bench sheets\Sample Extraction&Cleanup.xls

Portland Harbor Project (PAHs) : Solvent Exchange and HPLC analysis

Deployment dates:

Sample name	Sample ID	TurboVap	Transfer to cent.tube	TurboVap	Solvent Exchange: Acetonitrile			Transfer to amber vial	Adjust to 1ml 3-4 15 drop rinses	Run on HPLC	Note
					#1	#2	#3				

Reagent	Co. & Lot No.
DCM	
Acetonitrile	

C:sonde\bench sheet\PCBs&Ocs\Solvent Exchange PAHs.xls

Portland Harbor Project (OCs, PCBs) : Solvent Exchange and GC analysis

Deployment dates:

Sample ID	TurboVap	Transfer to cent.tube	TurboVap	Add GC ref.std PCB 82	Solvent exchange #1	Solvent exchange #2	Solvent exchange #3	Adjust vol to 1 ml	Date Initial	GC analysis	Date Initial	Note

PCB 82 ID	

Reagent	Co. & Lot No.
DCM	
Iso-octane	

C:sonde\bench sheet\PCBs&Ocs\Solvent Exchange.xls

Title: Determination of PAHs in Passive Sampling Devices (PSD)

Scope
This method describes the analysis of 16 polycyclic aromatic hydrocarbons in passive sampling devices. PAH are easily extracted from the PSD by dialysis with hexane. GPC is used for clean-up. The instrumental analysis is completed using HPLC with fluorescence and UV detection. Detection limits are determined routinely, but nominally are 1 ng/L depending on deployment times.

The samples should be kept cool after retrieval and should be stored at 4C as soon as possible.

Status
This document is considered current standard operating procedure of the Food Safety and Environmental Stewardship Laboratory when management approval is documented by signature below. This Standard Operating Procedure is effective on the date of approval signature and supersedes all previous versions.

Filepath: \\Loperb\OSU SOP's\Sam\1-Organics\D-Misc & Sampling\4003-PAHs in PSD.doc

Approved	Kim A. Anderson, Ph.D.	**Director** Title	Date
Historical File	Signature/Initials		Date

I. Equipment and Apparatus

- **A.** Amber Glass Jars, screw cap (1L), round bottom flask (RBF), centrifuge tubes.
- **B.** Mettler Balance, Model AG245 and Model PG5002-S (or equivalent)
- **C.** Adjustable Pipettor, Pipetman P-1000 & P-200 (or equivalent)
- **D.** Hewlett Packard 1100 HPLC system (or equivalent)
- **E.** Gel Permeation Chromatograph (Waters Corp. 515 pumps, 717 autosampler, 2487 UV detector, Fraction collector). GPC guard column: Envirogel™, 19 X 150 mm, and analytical column: Envirogel™ 19 X 300 mm (or equivalent).
- **F.** Rotovaps
- **G.** TurboVap®, Zymark LV evaporator (or equivalent).
- **H.** Chromatography vials, amber.

II. Reagents

- **A.** Hexane, Fisher S220-1, HPLC Grade.
- **B.** Methylene Chloride, HPLC pesticide residue grade.

C. Acetonitrile, Baker Resi-Analyzed, J.T. Baker, 9255-03.
D. 18 MΩ•cm water, EASYpure UV, Barnstead.

III. Standards

A. Primary Standards PAHs ChemService .
B. Standard Solutions
1. Analytical stock solutions of the primary standards are made in acetonitrile.
2. Standard dilutions for fortification shall be prepared at convenient levels that are comparable to estimated sample levels.
3. Standard dilutions for calibrations and check standards shall bracket sample concentrations.

IV. Instrument Operating Parameters

A. Column: Phenomenex, LUNA C18(2) 3μM, 150 x 3.0 mm
B. Temperature 30C
C. Mobile Phase:
1. Water(18 MΩ•cm).
2. Acentonitrile.
D. Flow Rate: 0.75 ml per minute.
E. Gradient:
The instrument is run with a constant flow rate of 0.75 mL/min and a timed gradient for the acetonitrile / water eluent system. The time program is operated at 40% acetonitrile for 10 min., gradually ramped up to 75% acetonitrile for 15 min., and then ramped up to 90% acetonitrile for 10 min.. The program is held at 90% acetonitrile for 3 min. and then returned to 40%.
F. Injector Program:
1. Draw 10 μL.
2. Inject.
G. Detector: The fluorescence detector excitation wavelength at 230 and emission wavelengths at 360, 410, and 460 nm; diode array detection signals at 254, 242, and 230 nm. (Only three compounds, fluorene, acenapthylene, and indeno(123cd)pyrene, were detected by diode array, the rest were detected with the fluorescence detector.)

V. Sample Preparation

A. PSD Dialysis
1. To amber jars containing PSD, add 400 mL hexane / 5 PSD tubes let stand 18 hours.
2. QC samples that contain fewer tubes (e.g. 1 tube), use 250 mL of hexane for both dialysis steps.
3. Decant hexane into RBF (round bottom flask)
4. Add 400 mL hexane /5 PSD tubes for second dialysis, let stand 6 hours.
5. Combine both dialyses into RBF, rinse RBF with hexane.

6. Evaporate solvent to 1-2 mL using the rotovap. Cover RBF with foil to minimize UV exposure.
7. Transfer to centrifuge tubes.
8. TurboVap® to 0.3 mL
9. Transfer to GPC Vials, rinse vials with hexane.

B. Clean-up
1. Place samples on GPC, run the PSD program.
2. GPC method name: [redacted]
3. Flow rate 5.0 mL per minute, CH_2Cl_2.
4. Collect fractions, 13 minutes through 20 minutes. Cover fraction collector with foil to minimize UV exposure,
5. If organochlorine contaminants are to be analyzed, split in to ½ (17.5 mL each). One half will be used for OC (see method 4004), the other half will be used for PAH (method 4003).
6. Turbvap® and solvent exchange to acetonitrile, adjust volume to 1 mL. Cover Turbovap viewing window with foil to minimize exposure to light.
7. Transfer to HPLC vials, adjust volume to 1.0 mL.

VI. Sample Analysis

A. Calibration standards are used to calibrate the system.
B. The samples are analyzed for 16-PAHs using the HPLC instrumentation and operating conditions listed in the "Instrument Operating Parameters" section.
C. HPLC method name [redacted]
D. Inject an appropriate aliquot of sample extract or standard into the HPLC.
E. Identify the analytes in the sample by comparing the retention time of the peaks in the sample chromatogram with those of the peaks in the standard.
F. If the response for a peak exceeds the working range of the system, dilute the extract with water and reanalyze.

VI. Calculations

A. Fortification levels:
[std. vol. (µL) X std. conc. (µg/µL)] / wt. of sample (g) = fortification level (µg/g).
B. Unknown sample levels:
1. External standards are used to quantify the amount of PAH in PSD.
2. Standard curves are run at the beginning and end of the sample set and standards are also injected after every few samples. All of the injected standards are used to determine the least squares line equation. These equations are used to calculate the amount of each individual PAH in the PSD (ng/L.
C. Calculation of estimated water concentration from the PSD concentration
1. Determine time of deployment (days).
2. Record the sample rate (Rs) this is generally from the literature. Use the following equation:

3. $C_w = C_{psd}V_{psd}/R_s t$,
4. Where C_w is the concentration of analyte in water, C_{psd} is the concentration in lipid (PSD as determined above), *t* is the exposure time in days, V_{psd} is the volume of lipid/membrane (by design =1), and R_s is the PSD sampling rate (Petty, *etal*, 1995). Sampling rates for a large series of OC pesticides has been precisely determined at a couple temperatures. An extensive temperature dependence study has recently been completed for polycyclic aromatic hydrocarbons (PAH) (Huckins, *etal*, 1999).

VIII. Quality Control

Each batch run should consist of field samples and appropriate numbers of field or laboratory QC samples (i.e., Matrix Blanks and Fortified Matrix Blanks) to insure batch extraction quality. For a sample set the average QC recovery must be between 40 and 130%. The QC summary consists of the results of all QC samples analyzed including calibration curves with R squared values.

IX. Documentation Requirements

A completed bench/QC summary sheet is required for all analysis.

The bench/QC summary sheet for this method is located at **P:\OSU-SOP's 99\SAM\4-Bench\4000\4003-PAH-PSD**

X. Safety and Health

Please consult Material Safety Data Sheet (MSDS) information on pesticides and reagents. Personnel performing this method will observe all appropriate Oregon State University laboratory safety procedures.

XI. References

US EPA method 550. Analysis of PAHs in Drinking Waters by HPLC.

Huckins, J.N., Manuweera, G.K., Petty, J.D., Mackay, D. & Lebo, J.A., "Lipid-Containing Semipermeable Membrane Devices for Monitoring Organic Contaminants in Water" 1993, Environ. Sci & Tech. 27, 2489-2496.

Huckins, J.N., Petty, J.D., Orazio, C.E., Lebo, J.A., Clark, R.C., Gibson, V.L., Gala, W.R., & Echols, K.R. "Determination of Uptake Kinetics (Sampling Rate) by Lipid-Containing Semipermeable Membrane Devices, (SPMD) for Polycyclic Aromatic Hydrocarbons (PAH) in Water" 1999, Environ. Sci. & Tech. 33, 3918-3923.

Petty, J.D., Huckins, J.N., Martin, D.B., & Adornato, T.G. "Use of Semipermeable Membrane Devices (SPMD) to Determine Bioavailable Organochlorine Pesticide Residues in Streams Receiving Irrigation Drainwater" 1995, Chemosph. 30, 1891-1903.

Prest, H.F., Huckins, J.N., Petty, J.D., Herve, S., Paasivirta, J., & Heinonen, P. "A Survey of Recent Results in Passive Sampling of Water and Air by Semipermeable Membrane Devices" 1995, Marine Pollut. Bul. 31, 306-312

XII. Validation

A. This method has been reviewed and validated and is currently underway for 16 PAHs .

B. The validation data is stored in the VALIDATION FILE.

Table 1: PAHs determined in passive sampling devices and approximate retention times

PAHs	Abbreviations	Retention times
naphthalene	Napth	
acenaphthylene	Athyl	
acenaphthene	Athen	
fluorene	Flo	
phenanthrene	Phen	
anthracene	Anth	
fluoranthene	Fran	
pyrene	Pyr	
benzo(a)anthracene	BaAnth	
chrysene	Chrys	
benzo(b)fluoranthene	BbFluo	
benzo(k)fluoranthene,	BkFluo	
benzo(a)pyrene,	BaPyr	
dibenzo(a,h)anthracene,	DahA	
benzo(g,h,i)perylene,	BghiP	
indeno(1,2,3-cd)pyrene	I123cdP	

Title: Determination of Metals in Diffusion Gel Thin Films (DGT) by Anodic Stripping Voltammetry

Scope
This method describes the analysis of 6 metals in passive sampling devices. Metals are easily extracted from the PSD by dialysis with acid/buffer. The instrumental analysis is completed using anodic stripping voltammetry. Detection limits are determined routinely, but normally are 1 ng/L depending on metal and deployment times.

The samples should be kept cool after retrieval and should be stored at 4°C as soon as possible.

Status
This document is considered current standard operating procedure of the Food Safety and Environmental Stewardship Laboratory when management approval is documented by signature below. This Standard Operating Procedure is effective on the date of approval signature and supersedes all previous versions.

File path: \\Loperb\OSU SOP's\Sam\2-Inorganics\D-Misc.& Sampling\8002-Metals in DGT.doc

Approved	_____ Kim A. Anderson, Ph.D.	**Director** Title	_____ Date
Historical File	_____ Signature/Initials		_____ Date

I. Equipment and Apparatus

- **A.** Buffing pad and cleaning pad
- **B.** An electrode holder
- **C.** 60 ml sample cups
- **D.** Wash bottle of 18 MΩ.cm water
- **E.** 10 and 50 ml graduated cylinders
- **F.** Appropriately sized storage bottles
- **G.** Teflon-coated Stir-bars (or equivalent)
- **H.** Disposable syringes, 10 to 50 ml capacity, depending upon sample size
- **I.** Disposable 0.45µm PTFE syringe filters
- **J.** Hot plate/stirrer
- **K.** 1 small screwdriver
- **L.** Gel disc cutter and glass plate
- **M.** Disposable pipettes
- **N.** Chelex gels in 18 MΩ.cm water
- **O.** Diffusive gel in 0.01-0.1M $NaNO_3$ (or NaCl)

Note: All glassware and containers need to be cleaned with 4 N HNO_3 before use (see SOP glassware cleaning procedure).

II. Reagents

A. HNO_3, Ultra pure grade, Fisher Scientific (or equivalent).
B. 18 MΩ.cm water, EASY pure UV, Barnstead (or equivalent)
C. Tropolone, 98%, Alfa Aesar (or equivalent) (optional).
D. Sodium Acetate Trihydrate (Acetate Buffer), HPLC Grade, Fisher Scientific (14.6 g anhydrous sodium acetate + 18.4 ml glacial acetic acid in 500ml 18 MΩ.cm water) (or equivalent).
E. NaOH, 99.996% (metals basis), Alfa Aesar (or equivalent).

III. Standards

A. Mercury standard solution for plating (plating solution is Hg 200ppm)
B. Metals standard solution (Pb, Cd, Cu, Zn, Sn and Cr)

IV. Instrument Operating Parameters

A. Trace Detect Nano-Band Explorer Instrument (or equivalent)
B. Probes (Iridium electrode, Auxiliary electrode, Reference electrode and Temperature electrode)

V. Sample Preparation

A. Assemble DGT units for deployment
   1. Cut the gel to diameter of 2.5cm using a disc gel cutter and wet the filter membrane disc with 18 MΩ.cm water.
   2. Place the chelex gel on the molding base, make sure the resin side is face up. Place the diffusive gel on top of the chelex gel followed by the filter membrane as shown in Figure 1.
   3. Carefully place the cap on to molding base, making sure it is horizontal. Use even force and press it down to the bottom of the base.
B. DGTs deployment (see SAM 8001.00: Field Sampling Utilizing Inorganic Passive Sampling Devices)
C. Sample treatment and analysis
   1. To retrieve the resin-gel after deployment inserts a screwdriver into the grove in the cap and twist. Remove the cap and then take the filter and diffusive gel layer off to reveal the resin-gel at the bottom layer.
   2. Put the resin-gel in a clean sample tube and add at least 0.6 ml of 1M HNO_3 solution. Make sure the resin-gel is fully immersed in the HNO_3 solution. Leave in solution at least 24 hours before analysis.
   3. Pipette an aliquot from the sample tube into the sample cup and bring the volume up to 40 ml with 18 MΩ.cm water. Adjust pH to about 4.5-9 with NaOH solution prior to analysis.

VI. Sample Analysis

A. Clean Iridium (working) probe with the following technique:
   1. Rinse probe with 18 MΩ.cm water.
   2. Hold the tip of the probe perpendicular to the buffing pad, and begin moving the probe on the plate in a figure 8 pattern for approximately 1 minute.
   3. Rinse probe with 18 MΩ.cm water.

B. Clean auxiliary, reference and temperature probes with 5-10% HNO_3:
   1. Immerse all probes in 50 ml of 5-10% HNO_3 for up to 5 minutes.
   2. Rinse all probes with 18 MΩ.cm water.

C. Prepare following solutions in 60 ml cups and label appropriately:
   1. Rinse (18 MΩ.cm water)
   2. Blank (5ml of acetate buffer and add 45ml of 18 MΩ.cm water)
   3. Hg 200ppm plating solution

D. Turn on computer and click on TraceDetect Nano-Band Explorer. Connect electrode to cable by matching colors (green= working, blue=auxiliary, red=reference, black=temperature).

E. To verify electrode cleaning, click on setting menu, select open, select file "Mercury Plating.tma." Immerse all probes in Hg 200ppm solution. Set Plate Time to 5 seconds. The current should be < 60 nA. If current is higher than 60 nA reclean probes using steps A through E.

F. After verifying the current is < 60 nA perform the mercury plating by setting the Plate Time to 120 seconds. The current should read < 150 nA. If current is higher than 150 nA reclean probes using steps A through F.

G. Remove all probes from mercury cup and immerse into the rinse cup for about 30 seconds.

H. Remove all probes from rinse cup and immerse into the buffer cup. Verify thin film electrode by clicking on open; setting; measure Zn Cd Pb Cu.tma; set the Plate Time to 0, current should be between -3 to 10 nA. If the current is out of this range rinse the probe with 18 MΩ.cm water and prepare new buffer solution.

I. Start to analyze samples, be sure to rinse all probes with 18 MΩ.cm water followed by the blank rinse, and 18 MΩ.cm water again between each standard solution as well as each sample. Plate the probes before each sample analysis with mercury plating solution (as per step F) followed by a rinse with 18 MΩ.cm water, blank, and 18 MΩ.cm water again.

VI. Calculations

A. A standard curve is run at the beginning of each sample set. All of the standards are use to determine the least squares line equation. The equation is use to calculate the concentration of the sample.

B. Calculate the mass of metal accumulated in the resin-gel layer (M) using equation (1)

(1) $M = Ce\,(V_{HNO3} + V\,gel) / fe$

Where Ce is the concentration of metals in the 1M HNO3 elution solution (in µg/l), V_{HNO3} is the volume of HNO_3 added to the resin-gel, Vgel is the volume of resin-gel, typically 0.15ml, and fe is the elution factor for each metal, typically 0.8.

C. Concentration of metal measured by DGT (CDGT) can be calculated using equation (2).

(2) $C_{DGT} = M\Delta g/(DtA)$

Where Δg is the thickness of the diffusive gel (0.8mm) plus the thickness of the filter membrane (typically 0.14mm), D is the diffusive coefficient of metal in the gel (see table 2), t is deployment time and A is exposure area ($A = 3.14\ cm^2$).

VIII. Quality Control

A. Each batch run should consist of field samples and appropriate numbers of field or laboratory QC samples (i.e. matrix blanks and fortified matrix blanks) to insure batch extraction quality. For a sample set the average QC recovery must be between 70 and 130%. The QC summary consists of the results of all QC samples analyzed including calibration curves with R squared values.

IX. Documentation Requirements

A. A completed bench/QC summary sheet is required for all analysis.

1. The bench/QC summary sheet for this method is located at: D:\SOP\SAM\BENCH\heavy metal analysis

X. Safety and Health

A. Please consult Material Safety Data Sheet (MSDS) information on heavy metals and reagents. Also consult SOPs on the section of safety while working with acid. Personnel performing this method will observe all appropriate Oregon State University laboratory safety procedures.

XI. References

1. Davison, B, and Zhang H., "DGT Research" 2/4/2002, http://www.dgtresearch.com.
2. TraceDetect, "Users' Guide TraceDetect Nano-Band Explorer, Version 2.3" 2001.

Table 1: Metals determined in passive sampling devices and approximate reduction potentials

Metals	Reduction Potentials (mV)*
Zn (Zinc)	-950
Cd (Cadmium)	-575
Pb (Lead)	-400
Sn (Tin)	-330
Cu (Copper)	0
Cr (Chromium)	200
As III (Arsenic III)	250

*Please note reduction potential can have slight variation depending on pH.

Figure 1: Assemble DGT units for solution deployment

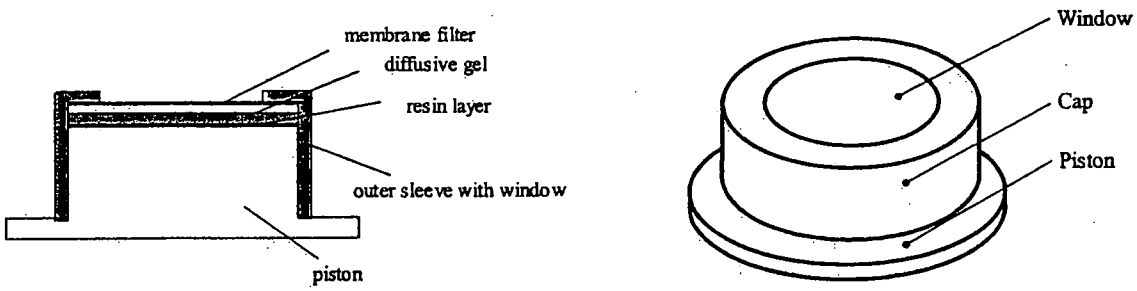


Table 2: Diffusion coefficients of metal ions in DGT gel at different temperatures from 1 to 35°C

Temp (°C)	Ag	Al	Cd	Co	Cr	Cu	Fe	Mn	Ni	Pb	Zn
1	6.58	2.22	2.84	2.77	2.36	2.91	2.85	2.73	2.69	3.75	2.84
2	6.83	2.30	2.95	2.88	2.45	3.02	2.96	2.83	2.80	3.89	2.94
3	7.09	2.39	3.06	2.99	2.54	3.13	3.07	2.94	2.90	4.04	3.05
4	7.35	2.48	3.18	3.10	2.63	3.25	3.18	3.05	3.01	4.19	3.17
5	7.62	2.57	3.29	3.21	2.73	3.36	3.30	3.16	3.12	4.34	3.28
6	7.89	2.66	3.41	3.32	2.82	3.48	3.42	3.27	3.23	4.49	3.40
7	8.17	2.75	3.53	3.44	2.92	3.61	3.54	3.39	3.34	4.65	3.52
8	8.45	2.85	3.65	3.56	3.02	3.73	3.66	3.50	3.46	4.81	3.64
9	8.74	2.94	3.78	3.68	3.13	3.86	3.79	3.62	3.58	4.98	3.77
10	9.04	3.04	3.90	3.80	3.23	3.99	3.91	3.74	3.70	5.14	3.89
11	9.34	3.14	4.03	3.93	3.34	4.12	4.04	3.87	3.82	5.31	4.02
12	9.64	3.25	4.16	4.06	3.45	4.26	4.18	4.00	3.94	5.49	4.15
13	9.95	3.35	4.30	4.19	3.56	4.39	4.31	4.12	4.07	5.67	4.29
14	10.27	3.46	4.43	4.32	3.67	4.53	4.45	4.26	4.20	5.85	4.42
15	10.59	3.57	4.57	4.46	3.79	4.68	4.59	4.39	4.33	6.03	4.56
16	10.92	3.68	4.72	4.60	3.91	4.82	4.73	4.52	4.47	6.21	4.70
17	11.25	3.79	4.86	4.74	4.03	4.97	4.87	4.66	4.60	6.40	4.85
18	11.59	3.90	5.01	4.88	4.15	5.12	5.02	4.80	4.74	6.60	4.99
19	11.93	4.02	5.15	5.02	4.27	5.27	5.17	4.95	4.88	6.79	5.14
20	12.28	4.14	5.30	5.17	4.39	5.42	5.32	5.09	5.02	6.99	5.29
21	12.64	4.26	5.46	5.32	4.52	5.58	5.47	5.24	5.17	7.19	5.44
22	13.00	4.38	5.61	5.47	4.65	5.74	5.63	5.39	5.32	7.40	5.60
23	13.36	4.50	5.77	5.63	4.78	5.90	5.79	5.54	5.47	7.61	5.76
24	13.73	4.62	5.93	5.78	4.91	6.06	5.95	5.69	5.62	7.82	5.92
25	14.11	4.75	6.09	5.94	5.05	6.23	6.11	5.85	5.77	8.03	6.08
26	14.49	4.88	6.26	6.10	5.19	6.40	6.28	6.01	5.93	8.25	6.24
27	14.88	5.01	6.43	6.27	5.32	6.57	6.45	6.17	6.09	8.47	6.41
28	15.27	5.14	6.60	6.43	5.47	6.74	6.62	6.33	6.25	8.69	6.58
29	15.67	5.28	6.77	6.60	5.61	6.92	6.79	6.50	6.41	8.92	6.75
30	16.08	5.41	6.94	6.77	5.75	7.10	6.96	6.66	6.58	9.15	6.92
31	16.49	5.55	7.12	6.94	5.90	7.28	7.14	6.83	6.74	9.39	7.10
32	16.90	5.69	7.30	7.12	6.05	7.46	7.32	7.00	6.91	9.62	7.28
33	17.32	5.83	7.48	7.29	6.20	7.65	7.50	7.18	7.09	9.86	7.46
34	17.75	5.98	7.67	7.47	6.35	7.84	7.69	7.36	7.26	10.10	7.64
35	18.18	6.12	7.85	7.66	6.51	8.03	7.87	7.53	7.44	10.35	7.83

Source: Davison, B, and Zhang H., "DGT Research" 2/4/2002, http://www.dgtresearch.com.

Title: Determination of Arsenic 3+ in Diffusion Gel Thin Films (DGT) by Anodic Stripping Voltammetry

Scope

This method describes the analysis of arsenic in passive sampling devices. Arsenic is easily extracted from the PSD by dialysis with acid/electrolyte solution. The instrumental analysis is completed using anodic stripping voltammetry. Detection limits are determined routinely, but normally are 1 ng/L depending on deployment times.

The samples should be kept cool after retrieval and should be stored at 4°C as soon as possible.

Status

This document is considered current standard operating procedure of the Food Safety and Environmental Stewardship Laboratory when management approval is documented by signature below. This Standard Operating Procedure is effective on the date of approval signature and supersedes all previous versions.

File path: \\Loperb\OSU SOP's\Sam\2-Inorganics\D-Misc.& Sampling\8003-Arsenic in DGT.doc

Approved	Kim A. Anderson, Ph.D.	**Director** Title	Date
Historical File	Signature/Initials		Date

I. Equipment and Apparatus

- **A.** Buffing pad and cleaning pad
- **B.** An electrode holder
- **C.** 60 ml sample cups
- **D.** Wash bottle of 18 MΩ.cm water
- **E.** 10 and 50 ml graduated cylinders
- **F.** Appropriately sized storage bottles.
- **G.** Teflon-coated Stir-bars (or equivalent).
- **H.** Disposable syringes, 10 to 50 ml capacity, depending upon sample size
- **I.** Disposable 0.45µm PTFE syringe filters
- **J.** Hot plate/stirrer
- **K.** 1 small screwdriver
- **L.** Gel disc cutter and Glass plate
- **M.** Disposable pipettes Chelex gels in 18 MΩ.cm water
- **N.** Diffusive gel in 0.01-0.1M $NaNO_3$ (or NaCl)

Note: All glassware and containers need to be cleaned with 4 N HNO_3 before use (see SOPs cleaning glassware procedure).

II. Reagents

A. HNO_3 Ultra pure grade, Fisher Scientific (or equivalent).
B. 18 MΩ.cm water, EASY pure UV, Barnstead (or equivalent)
C. HCl (Electrolyte solution) Ultra pure grade, Fisher Scientific (or equivalent) (8.25 ml HCl (37%) in 50ml 18 MΩ.cm water or 2M HCl solution).

III. Standards

A. 1000ppm Gold in dilute HCl for plating
B. Arsenic standard (III)

IV. Instrument Operating Parameters

A. Trace Detect Nano-Band Explorer Instrument (or equivalent)
B. Probes (Gold Nano-Band electrode, Auxiliary electrode, Reference electrode and Temperature electrode)

V. Sample Preparation

A. Assemble DGT units for deployment
   1. Cut the gel to diameter of 2.5cm using a disc gel cutter and wet the filter membrane disc with MQ water
   2. Place the chelex gel on the molding base; make sure the resin side is face up. Place the diffusive gel on top of the chelex gel followed by the filter membrane as shown in Figure 1.
   3. Carefully place the cap on to molding base, making sure it is horizontal. Then use even force and press it down to the bottom of the base.
B. DGTs deployment (see SAM 8001.00: Field Sampling Utilizing Inorganic Passive Sampling Devices)
C. Sample treatment and analysis
   1. To retrieve the resin-gel after deployment inserts a screwdriver into the grove in the cap and twist. Remove the cap and then take the filter and diffusive gel layer off to reveal the resin-gel at the bottom layer.
   2. Put the resin-gel in a clean sample tube and add at least 0.6 ml of 1M HNO_3 solution. Make sure the resin-gel is fully immersed in the HNO_3 solution. Leave it at least 24 hours before analysis.
   3. Pipette an aliquot from the sample tube and bring the volume up to 40 ml with 18 MΩ.cm water then adjusted pH to about 4.5-9 prior to analysis.

VI. Sample Analysis

A. Clean Gold (working) probe with the following technique
   1. Rinse probe with 18 MΩ.cm water.
   2. Hold the tip of the probe perpendicular to the buffing pad and begin moving the probe on the plate in a figure 8 pattern for approximately 1 minute.
   3. Rinse probe with 18 MΩ.cm water.
B. Clean auxiliary, reference and temperature probes with 5-10% HNO_3
   1. Immersing all probes in 50 ml of 5-10% HNO_3 for up to 5 minutes.
   2. Rinse all probes with 18 MΩ.cm water.

C. Prepare following solutions in 60 ml cups and label appropriately:
   1. Rinse (18 MΩ.cm water).
   2. Electrolyte solution (8.25 ml HCl (37%) in 50ml 18 MΩ.cm water or 2M HCl solution)
   3. Gold 200ppm plating solution

D. Turn on computer and click on TraceDetect Nano-Band Explorer, and connect electrode to cable by matching colors (green= working, blue=auxiliary, red=reference, black=temperature).

E. To verify electrode cleaning, click on setting menu, select open, select file "Gold Plating.tma" Immerse all probes in gold 20ppm solution. Set Plate Time 5 seconds. The current should be < 150 nA. If current is higher than 15 nA, reclean probes using steps A through E. (Ideally a new probe should be <150nA, but analysis may proceed if current is <300nA is measured during gold verify electrode cleaning).

F. After verifying the current is < 150 nA perform the Gold plating by setting the Plate time to 55 seconds. The current should be < 200 nA. If current is higher than 200nA reclean probes using steps A through F. (Ideally a new probe should be <200nA, but analysis may proceed if current < 400nA is measured during gold plating).

G. Remove all probes from gold cup immerses into the rinse cup for about 30 seconds.

H. Remove all probes from rinse cup and immerse into the electrolyte solution cup. Verify thin film electrode by cliking on open; setting; measure As.tma; plate time 0, current should be between -40 to 60 nA. If the current is out of this range rinse the probe with 18 MΩ.cm water and prepare new electrolyte solution

I. Start to analyze samples, be sure to rinse all probes with 18 MΩ.cm water follow by electrolyte solution, and 18 MΩ.cm water again between each standard solution as well as each sample. Plate the probes before each sample analysis with Gold plating solution (as per step F) followed by a rinse with 18 MΩ.cm water, electrolyte solution, and 18 MΩ.cm water again.

VI. Calculations

A. A standard curve is run at the beginning of each sample set. All of the standards are used to determine the least squares line equation. The equation is to calculate the concentration of the sample.

B. Calculate the mass of metal accumulated in the resin-gel layer (M) using equation (1)

(1) $M = Ce\ (V_{HNO3} + V\ gel) / fe$

Where Ce is the concentration of metals in the 1M HNO3 elution solution (in µg/l), V_{HNO3} is the volume of HNO_3 added to the resin-gel, Vgel is the volume of resin-gel, typically 0.15ml, and fe is the elution factor for each metal, typically 0.8.

C. Concentration of metal measured by DGT (CDGT) can be calculated using equation (2).

(2) $C_{DGT} = M\Delta g/(DtA)$

Where Δg is the thickness of the diffusive gel (0.8mm) plus the thickness of the filter membrane (typically 0.14mm), D is the diffusive coefficient of metal in the gel, t is deployment time and A is exposure area ($A = 3.14\ cm^2$).

VIII. Quality Control

A. Each batch run should consist of field samples and appropriate numbers of field or laboratory QC samples (i.e. matrix electrolyte solutions and fortified matrix electrolyte solutions) to insure batch extraction quality. For a sample set the average QC recovery must be between 70 and 130%. The QC summary consists of the results of all QC samples analyzed including calibration curves with R squared values.

IX. Documentation Requirements

A. A completed bench/QC summary sheet is required for all analysis.

1. The bench/QC summary sheet for this method is located at: D:\SOP\SAM\BENCH\heavy metal analysis

X. Safety and Health

A. Please consult Material Safety Data Sheet (MSDS) information on heavy metals and reagents. Also consult SOPs on the section of safety while working with acid. Personnel performing this method will observe all appropriate Oregon State University laboratory safety procedures.

XI. References

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2. TraceDetect, "Users' Guide TraceDetect Nano-Band Explorer, Version 2.3" 2001.

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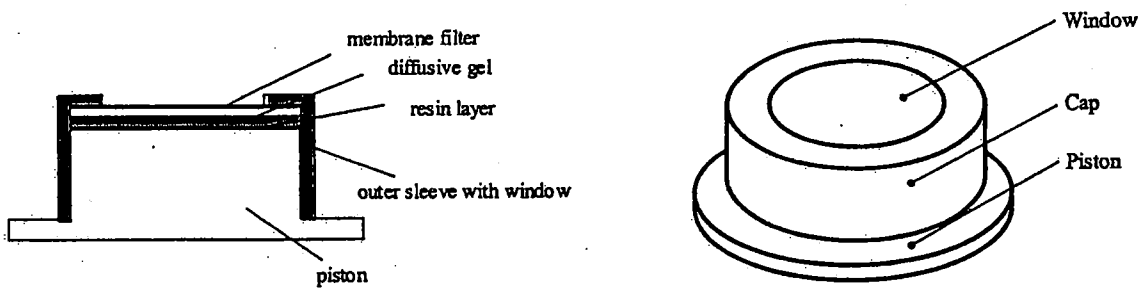
Metals	Reduction Potentials (mV)
Zn (Zinc)	-950
Cd (Cadmium)	-575
Pb (Lead)	-400
Sn (Tin)	-330
Cu (Copper)	0
Cr (Chromium)	200
As III (Arsenic III)	250

* Please note reduction potential can have slight variation depending on pH.

Figure 1: Assemble DGT units for solution deployment



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5 SEPT 2002

McCormick & Baxter
SEDIMENT AND WATER
SAMPLING WITH DIVE TEAM.

SAMPLING PLAN AND
MAPS DATED 08/30/02

SAMPLING FROM EPA BOAT
MONITOR

SUNNY AND HOT DAY. LOW TIDE.
SW-SURFACE WATER.
PW-PORE WATER FROM MINI-PIEZOMETER

TEAM - DOC THOMPSON, JOE GOULET,
ROB PEDERSON, BRUCE DUNCAN,
RENE FUENTES (EPA REGION 10)
ALAN HUMPHREY, DAN COOK
(EPA, ERT, REG 2)

LOCATION NOTES ON DRAWINGS
OF CAP DESIGN REPORT. TAKEN
FROM BOAT GPS READINGS AS
BACKUP DATA SETS

5 SEPT 2002

ATTEMPTED TO LOCATE SEDIMENT SITE SED-7 NEAR ROW OF PILINGS. PULLED ANCHOR PRIOR TO DIVING AND SHEEN CAME TO SURFACE, NEXT TO BARGE. DID NOT SAMPLE HERE.

CALIBRATED HORIBA U-10 MULTI PARAMETER WATER TESTER WITH "AUTO CAL SOLUTION" 1105 AM

FIRST SAMPLE IN MAP SHOWN AS SED-7. TIED TO NORTHERN 5 PILE DOLPHIN AND ALSO ANCHOR OUT TOWARDS MAIN CHANNEL.

	PW	PW	PW	TIME	SW	PW
PH	7.10	7.16	7.39	11.55	7.69	7.36
EC	.470		.430		0.980	.414
TEM	21.6		22°		22.5	—
SAL	0.01		0.01		0.0	0.01
* TURBID	ERROR	ERROR	173		1.76	ERR
DO	—		—		9.43	10.

* HORIBA TURNS OFF

RENÉ FUENTES

NOTE: HORIBA GIVES ERROR IN WATER SAMPLES WHEN IN TURBIDITY MODE AND TURNS OFF.

TOOK SURFACE WATER SAMPLES, SEDIMENT SAMPLES, PORE WATER SAMPLES. ATTEMPTED MANOMETER READINGS BUT HAD AIR LEAK INTO HOSE. WATER FOR PORE WATER HAD SOME SLIGHT SEDIMENT AT FIRST SO IT SEEMS TO BE GROUND WATER. HORIBA READINGS DID NOT SEEM RELIABLE SINCE IT LOCKED UP WITH TURBIDITY. HOWEVER EC WAS CONSISTENT IN PORE WATER (MINI-PIEZOMETER) AND DIFFERENT FROM SURFACE WATER. MANOMETER INDICATED UPWARD GRADIENT GW TO SW BUT IT WAS UNSTABLE WITH BUBBLES

LOCATIONS MARKED WITH GPS FROM EPA BOAT.

5 Sept 2006

SAMPLE LOCATION SD-5
CLOSER TO RR BRIDGE.
CHANGED TUBING ON PERISTALTIC
PUMP.
SAMPLES {SD-5A, SD-5 1} ARE
DUPLICATES FOR THIS SITE

SW PH 7.25
EC 0.074
TURB 40
DO 7.78
TEMP 21.2°C
SALINITY 0.5

PW PH 6.47
EC 0.080 w/ BATTERY
PROBLEM WITH HORIBA → "ERROR"
EC 833 mS
WITH ULTRAMETER

PW - LOW FLOW TO AVOID TURBIDITY
MINI PIEZOMETER WORKED WHEN
COULD SEE TURBIDITY RISING
IN TUBE. EC SEEMS CONSISTENT
IN SW WITH REPEAT SAMPLES, AND
PW IS MUCH HIGHER. CLEAR SAMPLES

REFERENCES

SAMPLES TAKEN FOR SW, PORE WATER,
AND SEDIMENTS WITH
DUPLICATES (PAH, PCB, METALS)
NO DUPLICATES FOR TOC OR TSS.
PHOTOS OF SHORE ALIGNMENT
NEAR TWO YELLOW POLES.
PHOTOS OF SEDIMENT SAMPLING
AND PORE WATER SAMPLING
EQUIPMENT.
SANDY SEDIMENT. ~~COMPACTED~~ Riff

NEW BATTERY ON HORIBA (FROM ULTRAMETER)
SW PH 7.06
EC 0.076 mS/cm
TURB 2
DO 8.62
TEMP 28.3

CHANGED PERISTALTIC PUMP
TUBING FOR NEXT SAMPLING
EVENT.

5 SEPT 2002

SAMPLING AT RFF LOCATION SD-2, AT 330 PM. SEDIMENTS AND SURFACE WATER FOR PAH, PCP, METALS, TOC AND TSS

SAMPLING AT LOCATION SED-1 AT 430 PM. SEDIMENTS AND SURFACE WATER FOR PAH, PCP, METALS, & TOC. A

SAMPLING AT LOCATION SED-8 AT 1730. SEDIMENTS AND SURFACE WATER FOR PAH, PCP METALS & TOC. SILTY CORES.

BACK AT COAST GUARD STATION AT 1800.

RFF

RENE FUENTES 6 SEPT 2002

ADDED NEW STATION WHERE WE NOTICED SHEEN ON ANCHOR PULL YESTERDAY. NEAR DOLPHIN BY BARGE. ACROSS FROM LARGE TREE ON SOUTH END. SED-9

CALIBRATED HORIBA. SEEMS FINE.

	SURFACE WATER	PORE WATER	
TIME	915 AM	945 AM	955
pH	7.18	6.66	—
EC	0.076	.094	0.076
TURB	10	5	10
DO	8.30	9.12	8.69
TEMP	20.6	19.5	19.8
SAL	0.00	0.00	—

PIEZOMETER WORKED AT FIRST SOME SILT, THEN CLEAR WATER, THEN PLUGGED UP AND WE HAD TO SEND DIVERS TO RESET. AGAIN NO PORE WATER SAMPLES

6 SEPT 2002

SILTY SEDIMENTS FROM CORES. STRONG CREOSOTE SMELL IN CORES. CREOSOTE NAPL IN CORES. PHOTOGRAPHED NAPL AND SHEEN ALONG SIDE OF PERISTALTIC PUMP. NOTICE DARK GLOBULES. RECOVERED MINI PIEZOMER WITH NAPL STAINING AND CREOSOTE ODOR. PHOTOGRAPHED AT TWO ANGLES.

SAMPLING AT SED-4 PLAN TO TAKE TRIPLICATE SAMPLES FOR MS/MSD NOSED BOAT ON TO BEACH.

SAMPLED WATER FROM BOAT END RATHER THAN USING DIVERS IN SHALLOW WATER AND STIRRING UP SEDIMENTS.

RENÉ FUENTES

SW	~~XPH~~	PW	
TIME	1115	1125	1130
PH	7.14	6.87	6.89
EC	0.076 mS/cm	0.646	0.668
TURB	10	37	15
DO	8.14	9.97	9.60
TEMP	20.6	19.3°C	19.3°C
SALINITY	0	0.02	0.02

WATER SAMPLES CLEAR, NO ODOR. USED MANOMETER AND HAD CONSISTENT UPWARD HEAD FROM GROUND WATER TO SURFACE WATER OF 0.1 FT (REPEATED MEASUREMENTS 4 TIMES)

MUCH SHEEN WHEN BOAT PULLED BACK FROM BEACH.

6 SEPT 2002

SAMPLING AT SED-3 WHICH IS THE SEEP ON THE DOWNSTREAM SIDE OF RAILROAD BRIDGE.
SOME SHEEN ON WATER SURFACE OUTSIDE BOOM.

SW		RW
TIME	1245	1255
pH	7.28	7.09
COND	0.077 mS/cm	0.599 mS/cm
TURB	10	10
DO	8.33 mg/L	10.22
TEMP	21.2°C	20.5°C
SAL	0.00 %	0.07 %

FOUND CRAYFISH IN CONTAINMENT AREA. TOOK PHOTOS.
PIEZOMETER SEEMS TO BE WORKING FINE. DIVER BROUGHT UP EGGS FROM CARP. PHOTOS.

PUMPING RATE 350 ml/min at this setting

RENÉ FUENTES
SOME SHEEN ON THE MINI-PIEZOMETER ~~AT~~ AT TIP WHEN PULLED OUT

MOVED TO NEW SITE SED-6
DID NOT HAVE ANY CLEAN MINI-PIEZOMETERS SO DID NOT TAKE POLE WATER SAMPLES.

AREA NEAR PIPE WITH RIP RAP ON IT. ALSO NEAR LARGE LOG. STRONG CREOSOTE ODOR AND SHEEN ON WATER AND SHORE.

TOOK PHOTOS OF SHEEN FROM EDGE OF BOAT AND PHOTOS OF SHORELINE WITH SHEEN IN FOREGROUND.

Sept 2002

Return to Coast Guard Station and then to Boat launch to unload and fill out laboratory analysis request forms, chain of custody forms, repack sample containers, and add more ice.
Left Portland at 4:30 PM.
Doc Thompson left with three coolers to be delivered to lab.

NOTE —
Sediment core data copied from Bruce Duncan's field book.

Station SED-5 9/5/02
At 1400. Jars filled from bottom of cores

	Core	Core used	Left in core
TOC	8"	5"	3"
GS	10"	6.5"	3.5"
Metals	11"	5.5"	5.5"
PAH+PCP	11"	5.5"	5.5"
Metals	10 3/4"	5.25"	5.5"
PAH+PCP	10.5"	5.5"	5.0"

Rene Fuentes

SED-2 9/5/02 @ 1640

	Core	Core used	Core remaining
TOC	9"	5"	4"
Metals	6.5"	5.5"	1"
PAH+PCP	7.5"	5.5"	2"
Grain Size	9"	6"	3"

SED-1 9/5/02 @ 1630

	Core	Core used	Core remaining
PAH+PCP	7 1/2"	6 1/2"	1"
Metals	8"	5 1/2"	2 1/2"
TOC	8"	6"	2"
Grain Size	9"	6"	3"

SED-8

	Core	Core used	Core remaining
PAH+PCP	10"	6"	4"
Metals	10"	6"	4"
TOC	10"	6"	4"
Grain Size	7"	6"	1"

6 SEPT 2002

RENÉ FUENTES

SED-6

	Core	Core Used	Core Remaining
METALS	7"	6"	1"
PAH & PCP	9"	6"	3"
TOC	8"	6"	2"
GRAIN SIZE	8"	6"	2"

SED-9

	Core	Core Used	Core Remaining
PAH & PCP	7"	6"	1"
METALS	6"	6"	0"
TOC	2.5"	ALL	0"
GRAIN SIZE	11"	6"	5"

GLOBS OF CREOSOTE IN CORE

SED-4 NO ODOR FROM ANY CORES

	Core	Core Used	Core Remaining
METALS (A)	7"	5"	2"
(B)	7"	4.5"	2.5"
(C)	7"	5"	2"

NOTE THIS STATION HAD EXTRA SAMPLE VOLUME FOR MS/MSD

SED-4 CONTINUED

	Core	Core Used	Core Remaining
PAH & PCP (A)	7"	5"	2"
(B)	6"	5.5"	0.5"
(C)	8"	5.25"	2.75"
TOC	7.5"	5.0"	2.5"
GRAIN SIZE	7"	4.0"	3.0"

TOOK PHOTO OF SAND COVERED BY GRAVEL

SED-3

	Core	Core Used	Core Remaining
TOC	6"	5"	1"
PAH & PCP	6"	5"	1"
METALS	6.5"	ALL	0"
GRAIN SIZE	6"	ALL	0"

AQUA MAP SYSTEM USED TO PLOT DIVER LOCATIONS IN DEEPER WATER. BOAT GPS SYSTEM ALSO USED TO LOCATE SAMPLING LOCATIONS WHERE BOAT ANCHORED.

10 SEPTEMBER 2002

SHORE WORK AT McCORMICK & BAXTER
GATE 1776, WITH CURT BLACK.
ARRIVED ON SITE 8AM.
PHOTO OF SAND TRACK GOING
BACK INTO RIVER. OBSERVED
TWO SEPARATE ONES
MET ODEQ PERSONNEL.
RR BRIDGE GPS UNDER TRACKS
R091015A - NO READINGS

R091016A BRIDGE ABUTMENT
CLOSEST TO WATER LINE
ABOUT 10 FEET SOUTH. ONLY
10 READINGS.

R091016B @ 200 FT MARK ALONG
BEACH 120 READINGS

R091016C SOUTH WELL ON
BEACH 120 READINGS
21 FEET UP FROM LAST READING

R091016D @ 100 FT MARKER
120 READINGS

RENÉ FUENTES

R091016E NORTH BEACH
WELL CLOSEST TO RR LINE.
120 READINGS
32 FT FROM 100 FT FLAG
IN NORTHERN DIRECTION

R091016F NEAR SOUTH END
OF BRIDGE ABUTMENT 10 FT
AWAY TO SOUTH

CORED BEACH AT 150 FT AND
200 FT NO ODOR OR VISUAL
AT SHORE, 12 FEET FROM 200 FT
FLAG.

R091016G ABOUT 150 FT
FROM PIER. FIRST CORING
WITH CREOSOTE

R091016H ABOUT 25 FT
NORTH OF 200 FT FLAG,
PHOTOS OF AUGER WITH
CREOSOTE. EPA BOAT BROUGHT
MANOMETER. PHOTO OF EPA BOAT
AND FISHERMEN IN BACK

10 SEPTEMBER 2002

PHOTO OF WORK AREA FROM PPF WITH ODEQ EQUIPMENT. CORES IN FOREGROUND.

R091017A - ABOUT 350 FT SOUTH OF BRIDGE. END OF SHALLOW CORING CONTAMINATION (VISUAL).

SAMPLE EPA(SH)1 - BLANK NEAR ACTUAL FIRST SAMPLE (02374200). PAH, METALS & LOW MERCURY. JUST CALL FROM LAB THAT THEY NEED 2-1L FOR PAH & PCP THEREFORE WE ARE SHORT OF 1 L BOTTLES TO DO PCP & PAH AT ALL LOCATIONS.

EPA(SH)2 ABOUT 220 FT

TIME	1233	1235	RIVER 1238	
pH	8.15	7.20	7.28	7.39
DO	9.58	9.52	9.20	9.22
TEMP	22.1°	21.7°	21.9	21.8
SAL.	0.0	0.00	0.00	0.00
EC	0.104	0.081	0.074	0.072
TUR	10	10	424	14

RENÉ FUENTES SAMPLED FOR PAH, METALS AND MERCURY. AREA APPEARS CLEAN BASED ON VISUAL, LACK OF ODOR AND CORING. GPS LOCATION R091019A (120 READING)

EPA(SH)3 ABOUT 375 FT FROM BRIDGE. AREA BEYOND SEEP ZONE.

TIME	1311		1310 RIVER	1316
DO	10.56	10.40	10.45	10.35
pH	7.06	6.95	7.02	7.21
EC	0.066	0.064	0.072	0.072
TUR	-1(?)	10	1	10
TEMP	22.6	22.7°	22.4°	22.2°
SAL.	0.00	0.00	0.00	0.00

GPS LOCATION R091020A ABOUT 10 FT NORTH OF CURT

SAMPLE 02374202 FOR PAH, PCP, METALS, MERCURY (4 BOTTLES)

EPA BOAT CAME BY WITH MORE 1 L AMBER BOTTLES

10 SEPTEMBER 2007

SHORE SAMPLE EPA(SH)4
IN PLUME WHICH GOES FROM
250 FT TO 400 FT FROM BRIDGE.
COULD NOT TAKE SAMPLE
FROM MHE SAMPLER
CREOSOTE IN CORER BUT
COULD NOT GET WATER.

TRIED AGAIN SAMPLING AT
325 FT.
NO FIELD PARAMETERS
DUE TO CONTAMINANTS WHICH
MAY DAMAGE HORIBA
SAMPLED FOR PAH, PCP, METALS,
AND MERCURY.

R091021A GPS LOCATION.
SAMPLE DID NOT LOOK OILY.
CORED NEX TO SAMPLING LOCATION
FOR WATER.

RENE FUENTES

SHORE SAMPLE EPA(SH)5
ABOUT 325 FT FROM BRIDGE
R091021B GPS FILE.

BAD LOCATION FOR SEEPAGE
AND ODOR. SAMPLING FOR
METALS, PAH, PCP, AND MERCURY.
WATER SAMPLES APPEAR
CLEAR. PRODUCT ON CORES.

SAMPLE NUMBER 02374204
NO FIELD PARAMETERS.

PHOTOS OF SHEEN ON BEACH &
CREOSOTE PRODUCT ON AUGER HOLE

SEDIMENT SAMPLES
FOR PAH, PCP & METALS

ODEQ USED MANOMETER
NEARBY AND HAD UPWARD
GRADIENT GW (27.5") TO SW (29.5")

10 SEPTEMBER 2002

SEDIMENT SAMPLES TAKEN FOR PAH, PCP & METALS 02374205 AT EPA (SH) 6

FINISHED LABELLING FIRST SET OF BOTTLES AND WRAPPING BOTTLES IN BUBBLE WRAP FOR TRAVELLING IN COOLERS AT 5PM

BACK ON SITE AT 6PM MEASURED THE SOUTH BEACH FROM BULKHEAD. SHEEN WITH AUGER AT ABOUT 275 FT. STRONG ODOR OF CREOSOTE NEAR BULKHEAD.

SOME SHEEN AT 150 ft NEAR DOLPHIN BY OLD ABANDONED DOCK. DID NOT FIND MUCH ON AUGER.

RENE FUENTES

EPA (SH) 7 652 PM SAMPLE TAKEN NEAR BULKHEAD WHERE THERE IS A STRONG ODOR (PCP?)

SAMPLED FOR METALS, MERCURY, PCP (02374206) AND PAH

LEFT SITE AT 738 PM WASHED TIRES AGAIN AND CLOSED 4 GATES

DAY WAS SUNNY AND HOT (ABOUT 85°F). SAW MANY OTTER (?) TRACKS ON BEACHES AT THE SITE. TIDE CAME IN FAIRLY FAST DURING LAST SAMPLE.

RFF

11 SEPTEMBER 2001

STARTED EARLY TO GIVE TIME FOR TIDE TO GO OUT. WENT TO GET MORE ICE AND DISTILLED WATER ON WAY TO SITE.
SUNNY DAY, EXPECTED HIGH 80'S °F

ODEQ SAMPLING AT DEQ-1 CREOSOTE DOCK. HAD PRODUCT AT FIRST.

AT CREOSOTE DOCK ON SOUTH BEACH
R091118A GPS LOCATION
124 READING.
10 FT OUT FROM DOLPHIN
PHOTO OF METALS SAMPLING CONTAINER WITH PRODUCT ON IT.

R091118B LOCATION OF 100 FT FLAG ON SOUTH BEACH

RENÉ FUENTES

GPS NEAR BULKHEAD
R091118C AT 0°F ON EAST END OF PILINGS SOUTH OF HIGH BULKHEAD. 129 READINGS
20 FEET FROM FLAG U
24 FEET TO SAMPLING LOCATION OF 10 SEPT 2001 EPA (SH) 7
GPS R091118D 124 READING AT EPA (SH) 7.

NORTH DOLPHIN NEAR SHORE GPS
R091118E 128 READINGS.

R091118F 128 READINGS AT 200 FT FLAG CLOSE TO WHERE ODEQ HAD SEEPAGE METER

R091118G AT PM SOUTH DOLPHIN ALONG BEACH NEAR CREOSOTE DOCK. AT ABOUT 250 FT FROM BULKHEAD.
126 READINGS

R091118H @ 300 FT FLAG
124 READINGS.

11 SEPTEMBER 2002

WELL ON BEACH. GOT GPS LOCATION R091118I AT WELL CLOSEST TO DOCK ON SOUTH SIDE. AT ABOUT 340 FT. 124 READINGS

SOUTH WELL ON BEACH R091118J AT ABOUT 430 FT. 124 READINGS WELL# 28-8 (?) CORRODED, HARD TO READ.

R091118K 128 READINGS AT 400 FT FLAG

NO OTHER SIGNS OF CONTAMINATION ON SOUTH BEACH (FROM CREOSOTE OR SHEENS).
MULTITUDE OF ANIMAL TRACKS ON BEACH. MORE OTTER (?) TRACKS

TIDE STILL FAIRLY HIGH AT 1150 AM. GAVE ANOTHER BATTERY PACK TO ODEQ FOR PORTABLE DRILL.

ODEQ SAMPLING NOTES

"PRODUCT" FOUND FROM 6 FT PROBE INSTALLED AT 3.7 FT BGS (IN 2" OF WATER)

0237421 DEEP SAMPLE 3.7 FT BGS ODEQ (SH) 1 @ 1100AM

0237422 INTERMEDIATE SAMPLE 1.95 FT BGS ODEQ (SH) 3 @ 1140AM

0237423 SHALLOW SAMPLE @ 0.95 FT BGS ODEQ (SH) 2 @ 11:50AM

BACK ON SOUTH SHORE AT 1:30PM
AUGERED BY OLD DOCK NEAR WHERE ODEQ SAMPLED AND IT SEEMED CLEAR UP TO ABOUT 2.5 FT BGS (AT A LOWER TIDE)
FOUND PRODUCT.
ANOTHER HOLE IN MIDDLE SET OF DOCK PIER FOUND PRODUCT ABOUT 3 FT DOWN WITH AUGER.

11 SEPTEMBER 2002

DID NOT FIND PRODUCT AT 3 FT BGS WITH AUGER ON SOUTH SIDE OF DOCK. HAD TO MOVE UP ON BEACH TO AVOID WAVES.
EPA SH 8 #02374207
INSTALLED MINIPIEZOMETER AT ABOUT 3 FEET BELOW SEDIMENT SURFACE AT NORTH PILING OF CREOSOTE DOCK. PRODUCT IN TUBING AND BOTTLES, TOOK PHOTO.
PAH SAMPLE FIRST.
ABOUT 60% BUBBLES IN SAMPLING TUBE BUT PRODUCT IS FLOWING IN BLEBS. TOOK SECOND CLOSE UP OF TUBING.
TOOK PCP SAMPLE.
SMALL 8 OZ JAR WITH SOME PRODUCT FOR VISUAL DOCUMENTATION.
NO MERCURY SAMPLE TAKEN.
NO METALS SAMPLE TAKEN.

RENE FUENTES

INSTALLED MINI-PIEZOMETER TO ABOUT 8 FEET BELOW SEDIMENT SURFACE JUST NORTH OF DOLPHIN AT CREOSOTE DOCK.
AT ABOUT 345PM THE TIDE SEEM TO HAVE DROPPED TO A POINT WHERE CREOSOTE SHEEN BEGAN TO APPEAR ON SURFACE OFFSHORE. FIRST NOTICED DUE TO STRONG ODORS WHICH APPEARED WHILE LOOKING FOR NEW SAMPLING LOCATION.
MANY AREAS APPEAR TO HAVE GAS BUBBLES RISING TO SURFACE.
SEVERAL ATTEMPTS AT GETTING SCREEN SET. OBTAINED PRODUCT FROM 8 FEET
R091123A GPS (8 OZ JAR FOR VISUAL ONLY)
PRODUCT COMES ALONG SIDE OF TUBING AND CREATED

11 SEPTEMBER 2002

BUOYANTLY NEUTRAL NAPL WHICH ROLLED AROUND ON TOP OF SEDIMENT UNTIL WAVES FROM SHIP HIT SHORE.

GPS FOR ODEQ STATION 2 R091123D AT ABOUT 290FT 127 READINGS. ABOUT 31 FT FROM FLAG (300FT) WHICH IS EAST OF BRIDGE ABUTMENT

CURT CORED SEVERAL LOCATIONS AND DID NOT FIND ANY PRODUCT IN UPPER 2 FEET.

INSTALLED A PIPE TO 6FT ABOUT 50 FT FROM BULKHEAD IN SOUTH BEACH. MUCH GAS BUBBLING IN AREA CONNECTOR FOR PIPE DAMAGED FROM HAMMERING. DID NOT HAVE PRODUCT AT THAT DEPTH, SOME SHEEN. ANOTHER 6 FT PIPE DRIVEN

RENE FUENTES

ABOUT 25 FEET FROM BULKHEAD, NO PRODUCT. HAD SMALL FISH SWIM BY AND PHOTOGRAPHED IT. SEEMED NUMB AND WE PUSHED IT TO SHORE AND PHOTOGRAPHED SORE BY GILLS.

CONTINUE TO HAVE BUBBLING AND SHEEN IN SOME THAT CAN BE SEEN CLOSER TO SHORE, ABOUT 25 FEET AWAY.

THE FOLLOWING COPIED FROM ODEQ SAMPLING NOTES

DEQ2 - FWDA

02374214 (DEEP) 4FT 3 1/2 INCH BGS
ODEQ (SH) 4 @ 1520

02374215 (INTERMEDIATE) 1.5FT BGS
ODEQ (SH) 5 @ 1600

02374216 (SHALLOW) 10 1/4" BGS
ODEQ (SH) 6 @ 1620

11 SEPTEMBER 2001

ODEQ 3 - WILLAMETTE COVE
02374217 (DEEP) @ 5.5' BGS
ODEQ - SH-7 @ 1725
02374218 - (INTERMEDIATE) @ 3.5' BGS
ODEQ (SH) 8 @ 1735
02374219 (SHALLOW) @ 3.0' BGS
ODEQ - SH-9 @ 1740

(INFORMATION FROM ROD STRUCK AND MARK REW AFTER THEY COLLECTED SAMPLES)

WILLAMETTE COVE GPS
*R091201A 200 READINGS
TO ALLOW CORRECTIONS
FOR WEAK SIGNAL OVER
FIRST 25 READINGS.
LOCATION OF GPS ABOUT
30 FT CLOSER TO RIVER (WEST)
THAN AREA SAMPLED.
SAME AREA WHERE ODEQ
PLACED TWO FLUX CHAMBERS
WHICH THEY ALSO LOCATED
WITH GPS.

RENE FUENTES 12 SEPTEMBER 2

SAMPLES DELIVERED TO
EPA'S MANCHESTER LAB
AND LOGGED IN
BY KAREN NORTON.
LEFT EPA LAB AT
2:30 PM.

B Laboratory Analytical Data Packages for September 2002 Event

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

DATE: 10 OCT 2002

SUBJECT: McCormick & Baxter

FROM: John Birri, Special Projects Coordinator
Laboratory Branch, DESA

TO: Gerald Dodo
US EPA Region 10, Office of Environmental Assessment

Attached are the results of the McCormick & Baxter sampling survey conducted by your office during the week of September 2, 2002. These data include the results of nine solid samples for total organic carbon (TOC) analysis. Any correspondence concerning these results should refer to our internal project number, 02090018, to uniquely identify the data. Please refer to the first page of the report for a description of any remark codes used as data qualifiers. It should be noted that all data are considered EPA-validated.

If you have any questions you can contact me by phone at (732) 906-6886, by fax at (732) 906-6165 or via the LAN at "birri.john@epa.gov".

Attachment

RECEIVED
NOV 29 2002
DEPT OF ENVIRONMENTAL QUALITY
NORTHWEST REGION

U.S. Environmental Protection Agency
Region 2 Laboratory

Data Report: McCormick & Baxter

Project Number: 02090018

Program: Y206

Project Leader: RENE FUENTES

Remark Codes	Explanation
B	RESULTS BASED UPON COLONY COUNTS OUTSIDE ACCEPTABLE RANGE
J	ESTIMATED VALUE
K	ACTUAL VALUE KNOWN TO BE LESS THAN VALUE GIVEN
L	ACTUAL VALUE KNOWN TO BE GREATER THAN VALUE GIVEN
N	SEE NARRATIVE COMMENTS
V	SAMPLE RECEIVED BUT NOT ANALYZED DUE TO LAB ACCIDENT
U	REPORTING LIMIT
NV	NOT VALIDATED
INC	RESULT NOT ENTERED
QD	ACCURACY CHECK SAMPLE ABOVE UPPER ACCEPTANCE LIMIT
QE	ACCURACY CHECK SAMPLE BELOW LOWER ACCEPTANCE LIMIT
QF	PRECISION OF CALIBRATION CURVE LESS THAN ACCEPTANCE CRITERIA
QJ	REPORTING LIMIT ESTIMATED DUE TO INTERFERENCE
QG	CONTINUING CALIBRATION CHECK DOES NOT MEET ACCEPTANCE CRITERIA
QS	SPIKE RECOVERIES ABOVE UPPER ACCEPTANCE LIMIT
QR	SPIKE RECOVERIES BELOW LOWER ACCEPTANCE LIMIT
QP	SAMPLE REPLICATE PRECISION DOES NOT MEET ACCEPTANCE CRITERIA
QH	RECOMMENDED HOLDING TIME EXCEEDED
QT	TENTATIVELY IDENTIFIED COMPOUND
QM	PRESENCE OF MATERIAL VERIFIED BUT NOT QUANTIFIED
QB	BLANK CONTAMINATED WITH ANALYTE IN EXCESS OF ACCEPTANCE CRITERIA
QQ	SAMPLE IMPROPERLY MAINTAINED

Report Date: 10/7/2002 10:56AM

U.S. EPA Region 2 Laboratory
Data Report

Survey Name: McCormick & Baxter

Project Number: 02090018

*Sorted By Sample ID

AD04613 Field/Station ID: 02362500 Date Received: 9/13/2002
Matrix: Sediment
Sample Description: SED - 7

Single Component Analyses

CAS Number	Analyte Name	Result	Remark Codes	Units
10-19-5	ORGANIC CARBON, TOT	6100		mg/kg

AD04614 Field/Station ID: 02362501 Date Received: 9/13/2002
Matrix: Sediment
Sample Description: SED - 5

10-19-5	ORGANIC CARBON, TOT	6100		mg/kg

AD04615 Field/Station ID: 02362503 Date Received: 9/13/2002
Matrix: Sediment
Sample Description: SED - 1

10-19-5	ORGANIC CARBON, TOT	[illegible]		mg/kg

AD04616 Field/Station ID: 02362504 Date Received: 9/13/2002
Matrix: Sediment
Sample Description: SED - 8

10-19-5	ORGANIC CARBON, TOT	16000		mg/kg

AD04617 Field/Station ID: 02362505 Date Received: 9/13/2002
Matrix: Sediment
Sample Description: SED - 9

10-19-5	ORGANIC CARBON, TOT	[illegible]		mg/kg

:fer to Page 1 for an explanation of Remark Codes

U.S. EPA Region 2 Laboratory
Data Report

Survey Name: McCormick & Baxter

Project Number: 02090018

*Sorted By Sample 15

AD04618 Field/Station ID: 02362506 Date Received: 9/13/2002
Matrix: Sediment

Sample Description: SED - 4

10-19-5	ORGANIC CARBON, TOT	2,800	mg/Kg

AD04619 Field/Station ID: 02362507 Date Received: 9/13/2002
Matrix: Sediment

Sample Description: SED - 3

10-19-5	ORGANIC CARBON, TOT	[illegible]	mg/Kg

AD04620 Field/Station ID: 02362508 Date Received: 9/13/2002
Matrix: Sediment

Sample Description: SED - 6

10-19-5	ORGANIC CARBON, TOT	6,500	mg/Kg

AD04621 Field/Station ID: 02362509 Date Received: 9/13/2002
Matrix: Sediment

Sample Description: SED - 2

10-19-5	ORGANIC CARBON, TOT	[illegible]	mg/Kg

roject Approval: [signature] Date: 10/9/02

:fer to Page 1 for an explanation of Remark Codes

Report Date: 10/7/2002 10:56AM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

October 17, 2002

MEMORANDUM

SUBJECT: Data Verification Report of Pentachlorophenol Results for the McCormick and Baxter Project Samples 02364300 thru 02364314, 02374200 thru 02374204, 02374206, 02374207, and 02374211 thru 02374219

FROM: Gerald H. Dodo, Chemist
USEPA

TO: Rene Fuentes
USEPA

CC: Rod Struck
ODEQ

The following is a data verification report of the pentachlorophenol (PCP) analyses results for water samples collected from the McCormick and Baxter project. These samples were analyzed for PCP using SW-846 Method 8041 by the USEPA Region 10 Laboratory ESAT Team located in Manchester, WA. The analyses' results were delivered as document ES10-1-1550 under Technical Direction Form 1138. This report covers the samples listed above.

The project code for these samples is TEC-247B and the account number is 02T10P50102D10P9LA00.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the quality control guidelines outlined in Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

I. Holding Times: Acceptable

The technical holding times for the extraction and analysis of water samples are seven and 40 days, respectively. All samples were extracted and analyzed within the technical holding

times. No qualifiers were applied based on holding times.

II. Initial Calibration: Acceptable

Calibration factors from the initial calibration data were used to calculate PCP results. The percent relative standard deviations were <20 which was judged acceptable. No qualifiers were applied based on the initial calibrations.

III. Continuing Calibration: Acceptable

All retention times were within the windows determined from the initial calibration. The percent difference (%D) criterion of ≤15% was met. No qualifiers were applied based on the continuing calibration checks.

IV. Blanks: Acceptable

PCP was not detected above the quantitation limit in the method blanks. No qualifiers were applied based on the blank results.

V. Surrogates:

The surrogate recoveries could not be measured for samples 02374207 and 02374211 due to chromatographic interference. All other recoveries met the applied criterion of 50-150%. No qualifiers were applied based on the surrogates.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD): Acceptable

MS/MSD analyses were performed using samples 02364306 and 02364313 (S1/S2). The criteria of 50-150% recovery with a relative percent difference (RPD) of ≤50 were applied. The recoveries met the criteria, therefore, no qualifiers were applied based on the MS/MSD results.

VII. Compound Identification: Acceptable

All detected compounds were within the retention time windows determined from the initial calibration. No qualifiers were applied on this basis.

VIII. Compound Quantitation: Acceptable

Reported results were calculated using acceptable initial

calibration functions. Sample quantitation limits were adjusted to sample volumes extracted.

OVERALL ASSESSMENT

The data was evaluated using the guidelines set out in the quality control specifications outlined in Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall needs for data qualifiers for each analysis were determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

In general, all unqualified data can be used without restriction. The usefulness of qualified data should be treated according to the severity of the qualifier. Should questions arise regarding the qualification of data and its relation to the usefulness, the reader is encouraged to contact Gerald Dodo at the Region 10 laboratory, phone number (360) 871-8728.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

LABORATORY QUALIFIER/REMARK CODE DEFINITIONS

Qualifier/ Remark Code	Definition (Codes Assigned To Values)
<	**Microbiology** – Level of target organism present in the sample is less than detection limit. The reported value is the detection limit.
	Flash Point – The expected flash point temperature is less than the reported value.
>	**Microbiology** – Level of target organism exceeds upper limit for acceptable range of countable colonies (MF only) or exceeds MPN indices based on number of positive tubes (MPN only). The reported value is the upper limit.
	Flash Point – If the sample has a flashpoint, it is greater than the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
JK	The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JL	The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
K	The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
L	The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
NJ	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
U	The analyte was not detected at or above the reported value.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
A	Absent – The target parameter was analyzed for but was not present or was undetected. No value is reported with this qualification.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.
P	Present at a undetermined level – The target parameter is present but not quantifiable or no quantifiable result was determined. No value is reported with this qualification.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable. No value is reported with this qualification.
T	A trace of the subject parameter was present. For asbestos analysis the subject parameter was identified but at a low level that a quantifiable percentage of content is unreliable. No value is reported with this qualification.
TNTC	Too Numerous To Count – Any membrane where the total number of bacterial colonies exceeds 200 per membrane, or if the colonies are not distinct enough for accurate counting (i.e. confluent growth).

Qualifier/ Remark Code	Definition (Codes Assigned To Values Generated via Field or Screening Methods)
F	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value has been found to be acceptable for use.
JF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value is an estimate.
JKF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JLF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
UF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value.
UJF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Cross Reference to Older Codes
A	UND, ND – Undetected, Not detected
NA	NAR, NAF – No analytical result, Not analyzed for
P	PNQ – Present but not quantified
R	REJ - Rejected
T	TRACE

NOTE: For any qualifier code see the QA memo or case narrative for a more detailed description of its use.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.051**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	90	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364301
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	78	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364302
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.025**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	66	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364303
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	91	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364304
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.025**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364305
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	88	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	73	%Rec	
	118796	Phenol, 2,4,6-tribromo	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	80	%Rec	
	118796	Phenol, 2,4,6-tribromo	88	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364307
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	**87865**	**Pentachlorophenol**	**0.079**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364308
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.078**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	92	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364309
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	87	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364310
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7 POURWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	88	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364311
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5 POURWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364312
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (OR 5A) POURWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	93	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD) POURWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	79	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	74	%Rec	
	118796	Phenol, 2,4,6-tribromo	83	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	79	%Rec	
	118796	Phenol, 2,4,6-tribromo	98	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	BEACH B-1 (EPA-SH-1)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	70	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364314
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3 POURWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	79	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374202
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 3		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.021	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374203
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 4		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.021	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374204
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374206
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.36**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	73	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374207
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 118796	Phenol, 2,4,6-tribromo			NA
	87865	**Pentachlorophenol**	**2.5**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374211
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 118796	Phenol, 2,4,6-tribromo			NA
	87865	**Pentachlorophenol**	**1.1**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374212
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -3		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.20**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	77	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374213
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.021**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	73	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374214
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -4		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	81	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374215
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.022	ug/L	U
	118796	Phenol, 2,4,6-tribromo	86	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374216
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -6		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	73	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374217
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	110	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374218
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374219
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -9		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	83	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2253A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2260A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	72	%Rec	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

LABORATORY CONTACTS

For further information regarding the attached data contact the appropriate person listed below or Joseph N. Blazevich Sr., supervisor for the Environmental Chemistry Section at the Region Ten Manchester Laboratory.

CONTACT	PHONE NUMBER/ E-MAIL	TYPE OF ANALYSES
Kathy Parker	(360) 871-8716 parker.katherine@epa.gov	Classical & Hg Analyses – EPA & ESAT
Isa Chamberlain	(360) 871-8706 chamberlain.isa@epa.gov	Metals Analyses – EPA
Katie Adams	(360) 871-8748 adams.katie@epa.gov	Metals Analyses – ESAT
Gerald Dodo	(360) 871-8728 dodo.gerald@epa.gov	Organic & Field Analyses – ESAT
Robert Rieck	(360) 871-8719 rieck.bob@epa.gov	Pesticide/PCB, herbicides, PBDE – EPA
Steve Pope	(360) 871-8717 pope.steve@epa.gov	GC/MS VOC & VOA Analyses – EPA
Peggy Knight	(360) 871-8713 knight.peggy@epa.gov	GC/MS SV Organic Analyses – EPA
Stephanie Harris	(360) 871-8710 harris.stephanie@epa.gov	Microbiology
Susan Davis	(360) 871-8806 sdav461@ecy.wa.gov	Asbestos

Supervisor for the Environmental Chemistry Section

Joseph N. Blazevich	(360) 871-8705 blazevich.joseph@epa.gov	All Analyses – EPA & ESAT

Revised: April 10, 2002

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

October 17, 2002

MEMORANDUM

SUBJECT: Data Verification Report of Pentachlorophenol Results for the McCormick and Baxter Project Samples 02362500, 02362501, 02362502, 02362503, 02362504, 02362505, 02362506, 02362507, 02362508, 02362509, and 02374205

FROM: Gerald H. Dodo, Chemist
USEPA

TO: Rene Fuentes
USEPA

CC: Rod Struck
ODEQ

The following is a data verification report of the pentachlorophenol (PCP) analyses results for soil samples collected from the McCormick and Baxter project. These samples were analyzed for PCP using SW-846 Method 8041 by the USEPA Region 10 Laboratory ESAT Team located in Manchester, WA. The analyses' results were delivered as document ES10-1-1554 under Technical Direction Form 1138. This report covers the samples listed above.

The project code for these samples is TEC-247B and the account number is 02T10P50102D10P9LA00.

DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the quality control guidelines outlined in Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

I. Holding Times: Acceptable

The technical holding times for the extraction and analysis of soil samples are 14 and 40 days, respectively. All samples were extracted and analyzed within the technical holding times.

No qualifiers were applied based on holding times.

II. Initial Calibration: Acceptable

Calibration factors from the initial calibration data were used to calculate PCP results. The percent relative standard deviations were <20 which was judged acceptable. No qualifiers were applied based on the initial calibrations.

III. Continuing Calibration: Acceptable

All retention times were within the windows determined from the initial calibration. The percent difference (%D) criterion of ≤15% was met. No qualifiers were applied based on the continuing calibration checks.

IV. Blanks: Acceptable

PCP was not detected above the quantitation limit in the method blanks. No qualifiers were applied based on the blank results.

V. Surrogates: Acceptable

The surrogate recoveries met the applied criterion of 50-150%. No qualifiers were applied based on the surrogates.

VI. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

An MS/MSD analysis was performed using sample 02362506 (S1/S2). The recoveries were not measurable due to the spike level being too low relative to the native concentration.

VII. Compound Identification: Acceptable

All detected compounds were within the retention time windows determined from the initial calibration. No qualifiers were applied on this basis.

VIII. Compound Quantitation: Acceptable

Reported results were calculated using acceptable initial calibration functions. Sample quantitation limits were adjusted to sample amounts extracted.

OVERALL ASSESSMENT

The data was evaluated using the guidelines set out in the quality control specifications outlined in Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this, the overall needs for data qualifiers for each analysis were determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

In general, all unqualified data can be used without restriction. The usefulness of qualified data should be treated according to the severity of the qualifier. Should questions arise regarding the qualification of data and its relation to the usefulness, the reader is encouraged to contact Gerald Dodo at the Region 10 laboratory, phone number (360) 871-8728.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

LABORATORY QUALIFIER/REMARK CODE DEFINITIONS

Qualifier/ Remark Code	Definition (Codes Assigned To Values)
<	**Microbiology** – Level of target organism present in the sample is less than detection limit. The reported value is the detection limit.
	Flash Point – The expected flash point temperature is less than the reported value.
>	**Microbiology** – Level of target organism exceeds upper limit for acceptable range of countable colonies (MF only) or exceeds MPN indices based on number of positive tubes (MPN only). The reported value is the upper limit.
	Flash Point – If the sample has a flashpoint, it is greater than the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
JK	The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JL	The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
K	The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
L	The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
NJ	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
U	The analyte was not detected at or above the reported value.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
A	Absent – The target parameter was analyzed for but was not present or was undetected. No value is reported with this qualification.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.
P	Present at a undetermined level – The target parameter is present but not quantifiable or no quantifiable result was determined. No value is reported with this qualification.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable. No value is reported with this qualification.
T	A trace of the subject parameter was present. For asbestos analysis the subject parameter was identified but at a low level that a quantifiable percentage of content is unreliable. No value is reported with this qualification.
TNTC	Too Numerous To Count – Any membrane where the total number of bacterial colonies exceeds 200 per membrane, or if the colonies are not distinct enough for accurate counting (i.e. confluent growth).

Qualifier/ Remark Code	Definition (Codes Assigned To Values Generated via Field or Screening Methods)
F	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value has been found to be acceptable for use.
JF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value is an estimate.
JKF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JLF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
UF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value.
UJF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Cross Reference to Older Codes
A	UND, ND – Undetected, Not detected
NA	NAR, NAF – No analytical result, Not analyzed for
P	PNQ – Present but not quantified
R	REJ - Rejected
T	TRACE

NOTE: For any qualifier code see the QA memo or case narrative for a more detailed description of its use.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362500
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**630**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	79	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362501
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**3.7**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	70	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362502
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**2.8**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	77	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362503
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**27**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	86	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**24**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	84	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362505
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**26**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	78	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**20**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	63	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol			NA
	118796	Phenol, 2,4,6-tribromo	86	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol			NA
	118796	Phenol, 2,4,6-tribromo	79	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362507
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**360**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	84	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362508
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**58**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	70	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362509
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	1.60	ug/kg	U
	118796	Phenol, 2,4,6-tribromo	60	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02374205
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 6 (SEDIMENT)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**130**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	86	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	OBS2255A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	1.9	ug/kg	U
	118796	Phenol, 2,4,6-tribromo	64	%Rec	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

October 28, 2002

MEMORANDUM

SUBJECT: Data Verification Report of Polynuclear Aromatic Hydrocarbon Results for the McCormick and Baxter Project Samples 02362500 thru 02362509, 02364300 thru 02364314, 02374200 thru 02374207, and 02374211 thru 02374219

FROM: Gerald H. Dodo, Chemist
USEPA

TO: Rene Fuentes
USEPA

CC: Rod Struck
ODEQ

The following is a data verification report for the polynuclear aromatic hydrocarbon (PAH) analyses' results for water and sediment samples collected from the McCormick and Baxter project. These samples were analyzed using USEPA SW846 Method 8270C, GC/MS in the SIM mode specific for PAHs by the USEPA Region 10 Laboratory ESAT Team located in Manchester, WA. The analyses' results were delivered as ESAT document number ES10-1-1563 under Technical Direction Form 1138. This review covers the samples listed above.

The project code for these samples is TEC-247B. The account number is 02T10P50102D10P9LA00.

Data qualifications

The following comments refer to laboratory performance meeting the Quality Control specifications outlined in the SW846 Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

I. Holding Times: Acceptable

The holding times for the extraction of water and sediment

samples are seven and 14 days, respectively, from the date of sampling. The holding time for extracts is 40 days. The samples were extracted and analyzed within holding times. No qualifiers were applied based on holding times.

II. GC/MS Tuning:

The tuning summary agreed with the raw data. All decafluorotriphenylphosphine ion abundance met criteria. Sample analyses were preceded by a tune less than 12 hours prior to analysis except for the diluted reanalysis for sample 02364312. This extract was analyzed 3 minutes past the 12-hour period which was judged insignificant. No qualifiers were applied on the basis of the tuning data.

III. Initial Calibration: Acceptable

A five to nine point initial calibration was performed on 09/30/02 for the target compounds. All percent relative standard deviations (%RSDs) met the criteria of ≤30%. All average RRFs met the criteria of ≥0.05. No qualifiers were applied based on the initial calibrations.

IV. Continuing Calibration:

The continuing calibration check met the criteria for frequency of analysis and RRT windows for all target compounds and surrogates. The RRFs were ≥0.05 and the accuracy for the target compounds met the criteria of 75-125% of the true value except for the following.

10/02/02 Samples 02364300, 02364301, 02364311 thru 02364314, 02374200 thru 02374204, and 02374206.

Dibenzo(a,h)anthracene resulted with >125% of the true value. The associated sample results for this compound were non-detected, therefore, no qualifiers were applied.

10/03/02 Samples 02364302 thru 02364310, Diluted Reanalyses for Samples 02364311 thru 02364313, 02374201, 02374203, 02374204, and 02374206.

Dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for this compound were qualified J.

10/04/02 1st seq. Samples 02374212 thru 02374214, 02374216 thru 02374219, Diluted Reanalyses for Samples 02364308, 02364310, 02364311, 02364314, Matrix Spikes 02364306S1, 02364306S2, 02364313S1, and 02364313S2.

Benzo(k)fluoranthene and dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for these compounds were qualified J.

10/04/02 2nd seq. Sample 02374215, Diluted Reanalyses for Samples 02374213, 02374214, and 02374216 thru 02374219.

Benzo(k)fluoranthene and dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for these compounds were qualified J.

10/07/02 1st seq. Samples 02362500 thru 02362504, 02362509, Diluted Reanalyses for Samples 02362500 thru 02362503, and 02362509.

Benzo(k)fluoranthene and dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for these compounds were qualified J.

10/07/02 2nd seq. Samples 02362505 thru 02362508, Matrix Spikes 02362506S1, and 02362506S2.

Pyrene resulted with <75% of the true value. The associated sample results for this compound were qualified J if detected and UJ if non-detected. Dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for this compound were qualified J.

10/08/02 Sample 02374207, Diluted Reanalyses for Samples 02374207, 02374211, and 02374219

Pyrene resulted with <75% of the true value. The associated sample results for this compound were qualified J if detected and UJ if non-detected. Dibenzo(a,h)anthracene resulted with >125% of the true value. The associated detected sample results for this compound were qualified J.

V. Blanks:

Method blanks were prepared and analyzed with each sample extraction batch. Naphthalene was detected in the blanks at a concentration above the quantitation limit. Naphthalene detected in the samples at less than the quantitation limits were qualified U as a conservative measure. Other naphthalene results for the samples were reported without qualification if the sample result area integration exceeded five times that of the blanks. Otherwise, the naphthalene results were qualified U if the area

integration was below this criterion. The sample concentration or the sample quantitation limit, whichever is greater, was reported as the qualified result.

VI. Surrogates:

The criterion applied for surrogate recoveries was 50-150%. Samples 02362502 and 02362504 resulted with <50% recoveries for the surrogate 9,10-diphenylanthracene. Sample 02362507 resulted with <50% recovery for the surrogate p-terphenyl. The target compound results for these samples were qualified J/UJ.

Surrogate recoveries for samples 02374207 and 02374211 were not measurable due to the analyses needing to be performed with high dilution factors of the extracts. The high concentrations of PAH prevented analyses of the more concentrated extracts.

VII. Matrix Spike/Matrix Spike Duplicate (MS/MSD):

MS/MSD analyses were performed using samples 02362506, 02364306, and 02364313 (S1/S2). The MS/MSD criteria applied were 50-150% recovery and ≤50% relative percent difference, RPD.

02362506S1/S2

Only the recoveries for 2-chloronaphthalene were measurable due to the spike level for the other target compounds being too low relative to the native concentrations. The 2-chloronaphthalene recoveries met the criteria.

02364306S1/S2

The dibenzo(a,h)anthracene recovery for 02364306S2 was >150%. This compound was not detected in sample 02364306. No qualifier was applied since the high recovery does not indicate a problem with the reported quantitation limit.

02364313S1/S2

The recoveries for acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, and chrysene were not measurable due to the spike level being too low relative to the native concentrations. The dibenzo(a,h)anthracene recoveries were >150%. This compound was not detected in sample 02364313. No qualifier was applied since the high recoveries do not indicate a problem with the reported quantitation limit.

VIII. Internal Standard Performance: Acceptable

The retention time variations of all internal standards were

within 30 seconds of the continuing calibration standard. The %areas of all internal standards used for the reported results were within the specified 50% to 200% of the continuing calibration standard. No qualifiers were applied based on the internal standards.

IX. Compound Identification: Acceptable

All detected compounds' relative retention times were within acceptable limits. Criteria were met for mass spectral ion matching and ion abundance matching or the mass spectra were judged acceptable.

X. Compound Quantitation:

The reported results were calculated using the initial calibration response factors and equations. Sample quantitation limits were adjusted according to sample amounts and the initial calibration standards. Detected results below the sample quantitation limits were qualified J.

The reported naphthalene result for sample 02362507 was from a response above the calibration range. This result was qualified J.

Overall Assessment for the Case

The usefulness of the data is based on the criteria outlined in the USEPA SW846 Method 8270C, 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99). All requirements for data qualifiers from the preceding sections were accumulated. Each sample data summary sheet and each compound was checked for positive or negative results. From this overall need for data qualifiers for each analysis was determined. In cases where more than one of the preceding sections required data qualifiers, the most restrictive qualifier has been added to the data.

In general, all unqualified data can be used without restriction. The usefulness of qualified data should be treated according to the severity of the qualifier. Should questions arise regarding the qualification of data and its relation to the usefulness, the reader is encouraged to contact Gerald Dodo at the Region 10 laboratory, phone number (360) 871-8728.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

LABORATORY QUALIFIER/REMARK CODE DEFINITIONS

Qualifier/ Remark Code	Definition (Codes Assigned To Values)
<	**Microbiology** – Level of target organism present in the sample is less than detection limit. The reported value is the detection limit.
	Flash Point – The expected flash point temperature is less than the reported value.
>	**Microbiology** – Level of target organism exceeds upper limit for acceptable range of countable colonies (MF only) or exceeds MPN indices based on number of positive tubes (MPN only). The reported value is the upper limit.
	Flash Point – If the sample has a flashpoint, it is greater than the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
JK	The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JL	The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
K	The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
L	The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
NJ	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
U	The analyte was not detected at or above the reported value.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
A	Absent – The target parameter was analyzed for but was not present or was undetected. No value is reported with this qualification.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.
P	Present at a undetermined level – The target parameter is present but not quantifiable or no quantifiable result was determined. No value is reported with this qualification.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable. No value is reported with this qualification.
T	A trace of the subject parameter was present. For asbestos analysis the subject parameter was identified but at a low level that a quantifiable percentage of content is unreliable. No value is reported with this qualification.
TNTC	Too Numerous To Count – Any membrane where the total number of bacterial colonies exceeds 200 per membrane, or if the colonies are not distinct enough for accurate counting (i.e. confluent growth).

Qualifier/ Remark Code	Definition (Codes Assigned To Values Generated via Field or Screening Methods)
F	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value has been found to be acceptable for use.
JF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value is an estimate.
JKF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JLF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
UF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value.
UJF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Cross Reference to Older Codes
A	UND, ND – Undetected, Not detected
NA	NAR, NAF – No analytical result, Not analyzed for
P	PNQ – Present but not quantified
R	REJ - Rejected
T	TRACE

NOTE: For any qualifier code see the QA memo or case narrative for a more detailed description of its use.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362500
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	12.2	ug/kg	U
	86737	**9H-Fluorene**	**1530**	**ug/kg**	
	83329	**Acenaphthene**	**1370**	**ug/kg**	
	208968	**Acenaphthylene**	**29.3**	**ug/kg**	
	120127	**Anthracene**	**1480**	**ug/kg**	
	56553	**Benzo(a)anthracene**	**844**	**ug/kg**	
	50328	**Benzo(a)pyrene**	**452**	**ug/kg**	
	191242	**Benzo(g,h,i)perylene**	**207**	**ug/kg**	
	205992	**Benzo[b]Fluoranthene**	**558**	**ug/kg**	
	207089	**Benzo[k]fluoranthene**	**327**	**ug/kg**	**J**
	218019	**Chrysene**	**861**	**ug/kg**	
	53703	**Dibenzo[a,h]anthracene**	**93.0**	**ug/kg**	**J**
	132649	**Dibenzofuran**	**694**	**ug/kg**	
	206440	**Fluoranthene**	**3790**	**ug/kg**	
	193395	**Indeno(1,2,3-cd)pyrene**	**218**	**ug/kg**	
	91203	**Naphthalene**	**810**	**ug/kg**	
	90120	**Naphthalene, 1-methyl-**	**314**	**ug/kg**	
	91576	**Naphthalene, 2-methyl-**	**508**	**ug/kg**	
	85018	**Phenanthrene**	**4310**	**ug/kg**	
	129000	**Pyrene**	**1990**	**ug/kg**	
	483658	**Retene**	**399**	**ug/kg**	
	1499101	9,10 DIPHENYLANTHRACENE	53	%Rec	
	92944	p-Terphenyl	82	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362501
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	93.2	ug/kg	U
86737	**9H-Fluorene**	**1600**	**ug/kg**	
83329	**Acenaphthene**	**2130**	**ug/kg**	
208968	Acenaphthylene	46.6	ug/kg	U
120127	**Anthracene**	**466**	**ug/kg**	
56553	**Benzo(a)anthracene**	**380**	**ug/kg**	
50328	**Benzo(a)pyrene**	**146**	**ug/kg**	
191242	**Benzo(g,h,i)perylene**	**47.9**	**ug/kg**	
205992	**Benzo[b]Fluoranthene**	**250**	**ug/kg**	
207089	**Benzo[k]fluoranthene**	**178**	**ug/kg**	**J**
218019	**Chrysene**	**408**	**ug/kg**	
53703	Dibenzo[a,h]anthracene	93.2	ug/kg	U
132649	**Dibenzofuran**	**543**	**ug/kg**	
206440	**Fluoranthene**	**1300**	**ug/kg**	
193395	**Indeno(1,2,3-cd)pyrene**	**63.7**	**ug/kg**	**J**
91203	**Naphthalene**	**832**	**ug/kg**	
90120	**Naphthalene, 1-methyl-**	**189**	**ug/kg**	
91576	**Naphthalene, 2-methyl-**	**292**	**ug/kg**	
85018	**Phenanthrene**	**2280**	**ug/kg**	
129000	**Pyrene**	**683**	**ug/kg**	
483658	**Retene**	**4450**	**ug/kg**	
1499101	9,10 DIPHENYLANTHRACENE	58	%Rec	
92944	p-Terphenyl	90	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362502
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	9.0	ug/kg	UJ
86737	9H-Fluorene	355	ug/kg	J
83329	Acenaphthene	440	ug/kg	J
208968	Acenaphthylene	5.3	ug/kg	J
120127	Anthracene	110	ug/kg	J
56553	Benzo(a)anthracene	201	ug/kg	J
50328	Benzo(a)pyrene	84.0	ug/kg	J
191242	Benzo(g,h,i)perylene	25.1	ug/kg	J
205992	Benzo[b]Fluoranthene	130	ug/kg	J
207089	Benzo[k]fluoranthene	86.8	ug/kg	J
218019	Chrysene	190	ug/kg	J
53703	Dibenzo[a,h]anthracene	14.6	ug/kg	J
132649	Dibenzofuran	152	ug/kg	J
206440	Fluoranthene	892	ug/kg	J
193395	Indeno(1,2,3-cd)pyrene	32.8	ug/kg	J
91203	Naphthalene	651	ug/kg	J
90120	Naphthalene, 1-methyl-	91.0	ug/kg	J
91576	Naphthalene, 2-methyl-	175	ug/kg	J
85018	Phenanthrene	887	ug/kg	J
129000	Pyrene	399	ug/kg	J
483658	Retene	12500	ug/kg	J
1499101	9,10 DIPHENYLANTHRACENE	46	%Rec	
92944	p-Terphenyl	65	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362503
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	208	ug/kg	U
	86737	9H-Fluorene	44900	ug/kg	
	83329	Acenaphthene	48800	ug/kg	
	208968	Acenaphthylene	161	ug/kg	
	120127	Anthracene	23300	ug/kg	
	56553	Benzo(a)anthracene	13200	ug/kg	
	50328	Benzo(a)pyrene	4930	ug/kg	
	191242	Benzo(g,h,i)perylene	1120	ug/kg	
	205992	Benzo[b]Fluoranthene	6300	ug/kg	
	207089	Benzo[k]fluoranthene	4740	ug/kg	J
	218019	Chrysene	12700	ug/kg	
	53703	Dibenzo[a,h]anthracene	243	ug/kg	J
	132649	Dibenzofuran	2310	ug/kg	
	206440	Fluoranthene	57700	ug/kg	
	193395	Indeno(1,2,3-cd)pyrene	1590	ug/kg	
	91203	Naphthalene	3180	ug/kg	
	90120	Naphthalene, 1-methyl-	18800	ug/kg	
	91576	Naphthalene, 2-methyl-	1890	ug/kg	
	85018	Phenanthrene	94300	ug/kg	
	129000	Pyrene	31000	ug/kg	
	483658	Retene	55500	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	62	%Rec	
	92944	p-Terphenyl	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	10.7	ug/kg	UJ
86737	9H-Fluorene	41.3	ug/kg	J
83329	Acenaphthene	18.6	ug/kg	J
208968	Acenaphthylene	6.7	ug/kg	J
120127	Anthracene	31.8	ug/kg	J
56553	Benzo(a)anthracene	90.7	ug/kg	J
50328	Benzo(a)pyrene	55.9	ug/kg	J
191242	Benzo(g,h,i)perylene	32.0	ug/kg	J
205992	Benzo[b]Fluoranthene	99.9	ug/kg	J
207089	Benzo[k]fluoranthene	69.3	ug/kg	J
218019	Chrysene	92.2	ug/kg	J
53703	Dibenzo[a,h]anthracene	17.6	ug/kg	J
132649	Dibenzofuran	27.2	ug/kg	J
206440	Fluoranthene	203	ug/kg	J
193395	Indeno(1,2,3-cd)pyrene	37.9	ug/kg	J
91203	Naphthalene	41.4	ug/kg	J
90120	Naphthalene, 1-methyl-	8.9	ug/kg	J
91576	Naphthalene, 2-methyl-	16.6	ug/kg	J
85018	Phenanthrene	61.5	ug/kg	J
129000	Pyrene	148	ug/kg	J
483658	Retene	93.7	ug/kg	J
1499101	9,10 DIPHENYLANTHRACENE	49	%Rec	
92944	p-Terphenyl	73	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362505
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	12.7	ug/kg	U
	86737	9H-Fluorene	779	ug/kg	
	83329	Acenaphthene	902	ug/kg	
	208968	Acenaphthylene	30.1	ug/kg	
	120127	Anthracene	358	ug/kg	
	56553	Benzo(a)anthracene	485	ug/kg	
	50328	Benzo(a)pyrene	230	ug/kg	
	191242	Benzo(g,h,i)perylene	82.1	ug/kg	
	205992	Benzo[b]Fluoranthene	383	ug/kg	
	207089	Benzo[k]fluoranthene	235	ug/kg	
	218019	Chrysene	565	ug/kg	
	53703	Dibenzo[a,h]anthracene	17.2	ug/kg	J
	132649	Dibenzofuran	489	ug/kg	
	206440	Fluoranthene	2850	ug/kg	
	193395	Indeno(1,2,3-cd)pyrene	110	ug/kg	
	91203	Naphthalene	2100	ug/kg	
	90120	Naphthalene, 1-methyl-	479	ug/kg	
	91576	Naphthalene, 2-methyl-	1130	ug/kg	
	85018	Phenanthrene	2180	ug/kg	
	129000	Pyrene	1240	ug/kg	J
	483658	Retene	237	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	63	%Rec	
	92944	p-Terphenyl	96	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	7.2	ug/kg	U
	86737	9H-Fluorene	656	ug/kg	
	83329	Acenaphthene	274	ug/kg	
	208968	Acenaphthylene	19.7	ug/kg	
	120127	Anthracene	526	ug/kg	
	56553	Benzo(a)anthracene	787	ug/kg	
	50328	Benzo(a)pyrene	298	ug/kg	
	191242	Benzo(g,h,i)perylene	93.3	ug/kg	
	205992	Benzo[b]Fluoranthene	632	ug/kg	
	207089	Benzo[k]fluoranthene	419	ug/kg	
	218019	Chrysene	999	ug/kg	
	53703	Dibenzo[a,h]anthracene	64.3	ug/kg	J
	132649	Dibenzofuran	262	ug/kg	
	206440	Fluoranthene	5250	ug/kg	J
	193395	Indeno(1,2,3-cd)pyrene	139	ug/kg	
	91203	Naphthalene	310	ug/kg	
	90120	Naphthalene, 1-methyl-	79.1	ug/kg	
	91576	Naphthalene, 2-methyl-	129	ug/kg	
	85018	Phenanthrene	2450	ug/kg	
	129000	Pyrene	2290	ug/kg	
	483658	Retene	71.4	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	59	%Rec	
	92944	p-Terphenyl	87	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
86737	9H-Fluorene			NA
83329	Acenaphthene			NA
208968	Acenaphthylene			NA
120127	Anthracene			NA
56553	Benzo(a)anthracene			NA
50328	Benzo(a)pyrene			NA
191242	Benzo(g,h,i)perylene			NA
205992	Benzo[b]Fluoranthene			NA
207089	Benzo[k]fluoranthene			NA
218019	Chrysene			NA
53703	Dibenzo[a,h]anthracene			NA
206440	Fluoranthene			NA
193395	Indeno(1,2,3-cd)pyrene			NA
91203	Naphthalene			NA
90120	Naphthalene, 1-methyl-			NA
91576	Naphthalene, 2-methyl-			NA
85018	Phenanthrene			NA
129000	Pyrene			NA
483658	Retene			NA
91587	2-Chloronaphthalene	67.8	%Rec	
1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
92944	p-Terphenyl	76	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
86737	9H-Fluorene			NA
83329	Acenaphthene			NA
208968	Acenaphthylene			NA
120127	Anthracene			NA
56553	Benzo(a)anthracene			NA
50328	Benzo(a)pyrene			NA
191242	Benzo(g,h,i)perylene			NA
205992	Benzo[b]Fluoranthene			NA
207089	Benzo[k]fluoranthene			NA
218019	Chrysene			NA
53703	Dibenzo[a,h]anthracene			NA
206440	Fluoranthene			NA
193395	Indeno(1,2,3-cd)pyrene			NA
91203	Naphthalene			NA
90120	Naphthalene, 1-methyl-			NA
91576	Naphthalene, 2-methyl-			NA
85018	Phenanthrene			NA
129000	Pyrene			NA
483658	Retene			NA
91587	2-Chloronaphthalene	68.2	%Rec	
1499101	9,10 DIPHENYLANTHRACENE	50	%Rec	
92944	p-Terphenyl	76	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362507
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	206	ug/kg	UJ
86737	**9H-Fluorene**	**616**	**ug/kg**	**J**
83329	**Acenaphthene**	**1720**	**ug/kg**	**J**
208968	**Acenaphthylene**	**113**	**ug/kg**	**J**
120127	**Anthracene**	**157**	**ug/kg**	**J**
56553	**Benzo(a)anthracene**	**36.0**	**ug/kg**	**J**
50328	**Benzo(a)pyrene**	**16.0**	**ug/kg**	**J**
191242	Benzo(g,h,i)perylene	11.9	ug/kg	UJ
205992	**Benzo[b]Fluoranthene**	**16.4**	**ug/kg**	**J**
207089	**Benzo[k]fluoranthene**	**10.1**	**ug/kg**	**J**
218019	**Chrysene**	**35.4**	**ug/kg**	**J**
53703	Dibenzo[a,h]anthracene	23.8	ug/kg	UJ
132649	**Dibenzofuran**	**589**	**ug/kg**	**J**
206440	**Fluoranthene**	**306**	**ug/kg**	**J**
193395	Indeno(1,2,3-cd)pyrene	23.8	ug/kg	UJ
91203	**Naphthalene**	**241000**	**ug/kg**	**J**
90120	**Naphthalene, 1-methyl-**	**3860**	**ug/kg**	**J**
91576	**Naphthalene, 2-methyl-**	**5910**	**ug/kg**	**J**
85018	**Phenanthrene**	**956**	**ug/kg**	**J**
129000	**Pyrene**	**223**	**ug/kg**	**J**
483658	**Retene**	**43300**	**ug/kg**	**J**
1499101	9,10 DIPHENYLANTHRACENE	57	%Rec	
92944	p-Terphenyl	24	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362508
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	9.1	ug/kg	U
	86737	9H-Fluorene	431	ug/kg	
	83329	Acenaphthene	405	ug/kg	
	208968	Acenaphthylene	14.8	ug/kg	
	120127	Anthracene	213	ug/kg	
	56553	Benzo(a)anthracene	333	ug/kg	
	50328	Benzo(a)pyrene	181	ug/kg	
	191242	Benzo(g,h,i)perylene	68.2	ug/kg	
	205992	Benzo[b]Fluoranthene	373	ug/kg	
	207089	Benzo[k]fluoranthene	199	ug/kg	
	218019	Chrysene	339	ug/kg	
	53703	Dibenzo[a,h]anthracene	40.3	ug/kg	J
	132649	Dibenzofuran	250	ug/kg	
	206440	Fluoranthene	1020	ug/kg	
	193395	Indeno(1,2,3-cd)pyrene	92.4	ug/kg	
	91203	Naphthalene	495	ug/kg	
	90120	Naphthalene, 1-methyl-	88.1	ug/kg	
	91576	Naphthalene, 2-methyl-	162	ug/kg	
	85018	Phenanthrene	668	ug/kg	
	129000	Pyrene	525	ug/kg	J
	483658	Retene	57.7	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	56	%Rec	
	92944	p-Terphenyl	84	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362509
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	8.0	ug/kg	U
	86737	9H-Fluorene	7.0	ug/kg	
	83329	Acenaphthene	3.4	ug/kg	J
	208968	Acenaphthylene	2.4	ug/kg	J
	120127	Anthracene	6.7	ug/kg	
	56553	Benzo(a)anthracene	29.5	ug/kg	
	50328	Benzo(a)pyrene	17.1	ug/kg	
	191242	Benzo(g,h,i)perylene	11.9	ug/kg	
	205992	Benzo[b]Fluoranthene	25.1	ug/kg	
	207089	Benzo[k]fluoranthene	16.9	ug/kg	J
	218019	Chrysene	33.3	ug/kg	
	53703	Dibenzo[a,h]anthracene	1.3	ug/kg	J
	132649	Dibenzofuran	5.3	ug/kg	
	206440	Fluoranthene	65.9	ug/kg	
	193395	Indeno(1,2,3-cd)pyrene	12.5	ug/kg	
	91203	Naphthalene	12.2	ug/kg	
	90120	Naphthalene, 1-methyl-	2.2	ug/kg	J
	91576	Naphthalene, 2-methyl-	5.0	ug/kg	
	85018	Phenanthrene	18.8	ug/kg	
	129000	Pyrene	48.1	ug/kg	
	483658	Retene	69.6	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	66	%Rec	
	92944	p-Terphenyl	77	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.037	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	Benzo(a)anthracene	0.037	ug/L	U
50328	Benzo(a)pyrene	0.037	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	Chrysene	0.037	ug/L	U
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.0083**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	Phenanthrene	0.019	ug/L	U
129000	Pyrene	0.019	ug/L	U
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
92944	p-Terphenyl	124	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364301
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.036	ug/L	U
	86737	9H-Fluorene	0.018	ug/L	U
	83329	Acenaphthene	0.018	ug/L	U
	208968	Acenaphthylene	0.018	ug/L	U
	120127	Anthracene	0.018	ug/L	U
	56553	Benzo(a)anthracene	0.036	ug/L	U
	50328	Benzo(a)pyrene	0.036	ug/L	U
	191242	Benzo(g,h,i)perylene	0.018	ug/L	U
	205992	Benzo[b]Fluoranthene	0.018	ug/L	U
	207089	Benzo[k]fluoranthene	0.018	ug/L	U
	218019	Chrysene	0.036	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
	132649	Dibenzofuran	0.018	ug/L	U
	206440	**Fluoranthene**	**0.0041**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
	91203	Naphthalene	0.018	ug/L	U
	90120	Naphthalene, 1-methyl-	0.018	ug/L	U
	91576	Naphthalene, 2-methyl-	0.018	ug/L	U
	85018	Phenanthrene	0.018	ug/L	U
	129000	Pyrene	0.018	ug/L	U
	483658	Retene	0.018	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	85	%Rec	
	92944	p-Terphenyl	132	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364302
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	Benzo(a)anthracene	0.037	ug/L	U
	50328	Benzo(a)pyrene	0.037	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.037	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.0043**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	Phenanthrene	0.019	ug/L	U
	129000	Pyrene	0.019	ug/L	U
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	100	%Rec	
	92944	p-Terphenyl	127	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364303
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.036	ug/L	U
86737	9H-Fluorene	0.018	ug/L	U
83329	Acenaphthene	0.018	ug/L	U
208968	Acenaphthylene	0.018	ug/L	U
120127	Anthracene	0.018	ug/L	U
56553	Benzo(a)anthracene	0.036	ug/L	U
50328	Benzo(a)pyrene	0.036	ug/L	U
191242	Benzo(g,h,i)perylene	0.018	ug/L	U
205992	Benzo[b]Fluoranthene	0.018	ug/L	U
207089	Benzo[k]fluoranthene	0.018	ug/L	U
218019	Chrysene	0.036	ug/L	U
53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
132649	Dibenzofuran	0.018	ug/L	U
206440	Fluoranthene	0.018	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
91203	Naphthalene	0.018	ug/L	U
90120	Naphthalene, 1-methyl-	0.018	ug/L	U
91576	Naphthalene, 2-methyl-	0.018	ug/L	U
85018	Phenanthrene	0.018	ug/L	U
129000	Pyrene	0.018	ug/L	U
483658	Retene	0.018	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	98	%Rec	
92944	p-Terphenyl	124	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364304
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.038	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	**Acenaphthene**	**0.013**	**ug/L**	**J**
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	**Benzo(a)anthracene**	**0.0051**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.038	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	**Chrysene**	**0.0067**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.024**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	Phenanthrene	0.019	ug/L	U
129000	**Pyrene**	**0.013**	**ug/L**	**J**
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	94	%Rec	
92944	p-Terphenyl	121	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364305
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.037	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	**Benzo(a)anthracene**	**0.0041**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.037	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	**Chrysene**	**0.0039**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.018**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	**Phenanthrene**	**0.0087**	**ug/L**	**J**
129000	**Pyrene**	**0.011**	**ug/L**	**J**
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	79	%Rec	
92944	p-Terphenyl	122	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.037	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	Benzo(a)anthracene	0.037	ug/L	U
50328	Benzo(a)pyrene	0.037	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	Chrysene	0.037	ug/L	U
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.0071**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	Phenanthrene	0.019	ug/L	U
129000	Pyrene	0.019	ug/L	U
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
92944	p-Terphenyl	121	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
1499101	9,10 DIPHENYLANTHRACENE	70	%Rec	
86737	9H-Fluorene	89.7	%Rec	
83329	Acenaphthene	85.6	%Rec	
208968	Acenaphthylene	75.9	%Rec	
120127	Anthracene	89.8	%Rec	
56553	Benzo(a)anthracene	87.5	%Rec	
50328	Benzo(a)pyrene	106	%Rec	
191242	Benzo(g,h,i)perylene	84.5	%Rec	
205992	Benzo[b]Fluoranthene	88.2	%Rec	
207089	Benzo[k]fluoranthene	120	%Rec	
218019	Chrysene	99.1	%Rec	
53703	Dibenzo[a,h]anthracene	147	%Rec	
206440	Fluoranthene	92.5	%Rec	
193395	Indeno(1,2,3-cd)pyrene	80.3	%Rec	
91203	Naphthalene	80.6	%Rec	
92944	p-Terphenyl	99	%Rec	
85018	Phenanthrene	87.1	%Rec	
129000	Pyrene	64.6	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
86737	9H-Fluorene	108	%Rec	
83329	Acenaphthene	103	%Rec	
208968	Acenaphthylene	90.2	%Rec	
120127	Anthracene	113	%Rec	
56553	Benzo(a)anthracene	101	%Rec	
50328	Benzo(a)pyrene	120	%Rec	
191242	Benzo(g,h,i)perylene	96.7	%Rec	
205992	Benzo[b]Fluoranthene	103	%Rec	
207089	Benzo[k]fluoranthene	139	%Rec	
218019	Chrysene	117	%Rec	
53703	Dibenzo[a,h]anthracene	167	%Rec	
206440	Fluoranthene	111	%Rec	
193395	Indeno(1,2,3-cd)pyrene	117	%Rec	
91203	Naphthalene	96.2	%Rec	
92944	p-Terphenyl	113	%Rec	
85018	Phenanthrene	106	%Rec	
129000	Pyrene	77.8	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364307
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.039	ug/L	U
86737	9H-Fluorene	0.020	ug/L	U
83329	Acenaphthene	0.020	ug/L	U
208968	Acenaphthylene	0.020	ug/L	U
120127	Anthracene	0.020	ug/L	U
56553	Benzo(a)anthracene	0.039	ug/L	U
50328	Benzo(a)pyrene	0.039	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	Chrysene	0.039	ug/L	U
53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
132649	Dibenzofuran	0.020	ug/L	U
206440	**Fluoranthene**	**0.032**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.039	ug/L	U
91203	Naphthalene	0.020	ug/L	U
90120	Naphthalene, 1-methyl-	0.020	ug/L	U
91576	Naphthalene, 2-methyl-	0.020	ug/L	U
85018	**Phenanthrene**	**0.013**	**ug/L**	**J**
129000	**Pyrene**	**0.016**	**ug/L**	**J**
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
92944	p-Terphenyl	119	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364308
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	9H-Fluorene	10.0	ug/L	
	83329	Acenaphthene	9.8	ug/L	
	208968	Acenaphthylene	0.042	ug/L	
	120127	Anthracene	3.8	ug/L	
	56553	Benzo(a)anthracene	1.5	ug/L	
	50328	Benzo(a)pyrene	0.44	ug/L	
	191242	Benzo(g,h,i)perylene	0.087	ug/L	
	205992	Benzo[b]Fluoranthene	0.77	ug/L	
	207089	Benzo[k]fluoranthene	0.39	ug/L	
	218019	Chrysene	1.2	ug/L	
	53703	Dibenzo[a,h]anthracene	0.093	ug/L	J
	132649	Dibenzofuran	5.7	ug/L	
	206440	Fluoranthene	11.9	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.13	ug/L	
	91203	Naphthalene	3.3	ug/L	
	90120	Naphthalene, 1-methyl-	1.3	ug/L	
	91576	Naphthalene, 2-methyl-	1.3	ug/L	
	85018	Phenanthrene	22.7	ug/L	
	129000	Pyrene	5.3	ug/L	
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	67	%Rec	
	92944	p-Terphenyl	110	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364309
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.037	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	Benzo(a)anthracene	0.037	ug/L	U
50328	Benzo(a)pyrene	0.037	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	Chrysene	0.037	ug/L	U
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.0084**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	**Phenanthrene**	**0.0098**	**ug/L**	**J**
129000	Pyrene	0.019	ug/L	U
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
92944	p-Terphenyl	121	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364310
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7 POURWATER		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.039	ug/L	U
	86737	**9H-Fluorene**	**0.30**	**ug/L**	
	83329	**Acenaphthene**	**8.5**	**ug/L**	
	208968	Acenaphthylene	0.020	ug/L	U
	120127	**Anthracene**	**0.048**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.011**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.039	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.010**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
	132649	**Dibenzofuran**	**0.18**	**ug/L**	
	206440	**Fluoranthene**	**0.077**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.039	ug/L	U
	91203	**Naphthalene**	**0.46**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**0.62**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.37**	**ug/L**	
	85018	**Phenanthrene**	**0.27**	**ug/L**	
	129000	**Pyrene**	**0.041**	**ug/L**	
	483658	**Retene**	**0.012**	**ug/L**	**J**
	1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
	92944	p-Terphenyl	122	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364311
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5 POURWATER		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			**Result**	**Units**	**Qlfr**
	91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	**9H-Fluorene**	**6.7**	**ug/L**	
	83329	**Acenaphthene**	**25.4**	**ug/L**	
	208968	**Acenaphthylene**	**0.024**	**ug/L**	
	120127	**Anthracene**	**0.35**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.040**	**ug/L**	
	50328	Benzo(a)pyrene	0.038	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	**Chrysene**	**0.037**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
	132649	**Dibenzofuran**	**5.3**	**ug/L**	
	206440	**Fluoranthene**	**0.48**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
	91203	**Naphthalene**	**0.17**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**18.4**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**2.1**	**ug/L**	
	85018	**Phenanthrene**	**3.4**	**ug/L**	
	129000	**Pyrene**	**0.20**	**ug/L**	
	483658	**Retene**	**0.79**	**ug/L**	
	1499101	9,10 DIPHENYLANTHRACENE	80	%Rec	
	92944	p-Terphenyl	121	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364312
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (OR 5A) POURWATER		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

		Result	Units	Qlfr
Analytes : 91587	2-Chloronaphthalene	0.058	ug/L	U
86737	**9H-Fluorene**	**18.4**	**ug/L**	
83329	**Acenaphthene**	**65.5**	**ug/L**	
208968	**Acenaphthylene**	**0.046**	**ug/L**	
120127	**Anthracene**	**0.98**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.21**	**ug/L**	
50328	**Benzo(a)pyrene**	**0.061**	**ug/L**	
191242	**Benzo(g,h,i)perylene**	**0.037**	**ug/L**	
205992	**Benzo[b]Fluoranthene**	**0.075**	**ug/L**	
207089	**Benzo[k]fluoranthene**	**0.056**	**ug/L**	
218019	**Chrysene**	**0.17**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
132649	**Dibenzofuran**	**14.9**	**ug/L**	
206440	**Fluoranthene**	**1.7**	**ug/L**	
193395	**Indeno(1,2,3-cd)pyrene**	**0.036**	**ug/L**	**J**
91203	**Naphthalene**	**0.35**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**51.5**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**3.5**	**ug/L**	
85018	**Phenanthrene**	**11.1**	**ug/L**	
129000	**Pyrene**	**0.73**	**ug/L**	
483658	**Retene**	**5.4**	**ug/L**	
1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
92944	p-Terphenyl	123	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD) POURWATER		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	**9H-Fluorene**	**1.9**	**ug/L**	
	83329	**Acenaphthene**	**6.6**	**ug/L**	
	208968	Acenaphthylene	0.019	ug/L	U
	120127	**Anthracene**	**0.42**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.39**	**ug/L**	
	50328	**Benzo(a)pyrene**	**0.033**	**ug/L**	**J**
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	**Benzo[b]Fluoranthene**	**0.069**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.034**	**ug/L**	
	218019	**Chrysene**	**0.34**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	**Dibenzofuran**	**0.066**	**ug/L**	
	206440	**Fluoranthene**	**3.3**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.074	ug/L	U
	90120	**Naphthalene, 1-methyl-**	**0.030**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.017**	**ug/L**	**J**
	85018	**Phenanthrene**	**5.1**	**ug/L**	
	129000	**Pyrene**	**1.8**	**ug/L**	
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	122	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
86737	9H-Fluorene			NA
83329	Acenaphthene			NA
120127	Anthracene			NA
56553	Benzo(a)anthracene			NA
218019	Chrysene			NA
206440	Fluoranthene			NA
85018	Phenanthrene			NA
129000	Pyrene			NA
1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
208968	Acenaphthylene	89.8	%Rec	
50328	Benzo(a)pyrene	122	%Rec	
191242	Benzo(g,h,i)perylene	99.1	%Rec	
205992	Benzo[b]Fluoranthene	94.9	%Rec	
207089	Benzo[k]fluoranthene	144	%Rec	
53703	Dibenzo[a,h]anthracene	163	%Rec	
193395	Indeno(1,2,3-cd)pyrene	127	%Rec	
91203	Naphthalene	80.1	%Rec	
92944	p-Terphenyl	119	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
86737	9H-Fluorene			NA
83329	Acenaphthene			NA
120127	Anthracene			NA
56553	Benzo(a)anthracene			NA
218019	Chrysene			NA
206440	Fluoranthene			NA
85018	Phenanthrene			NA
129000	Pyrene			NA
1499101	9,10 DIPHENYLANTHRACENE	82	%Rec	
208968	Acenaphthylene	84.6	%Rec	
50328	Benzo(a)pyrene	117	%Rec	
191242	Benzo(g,h,i)perylene	91.1	%Rec	
205992	Benzo[b]Fluoranthene	108	%Rec	
207089	Benzo[k]fluoranthene	128	%Rec	
53703	Dibenzo[a,h]anthracene	153	%Rec	
193395	Indeno(1,2,3-cd)pyrene	125	%Rec	
91203	Naphthalene	82.9	%Rec	
92944	p-Terphenyl	111	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364314
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3 POURWATER		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.13	ug/L	U
86737	9H-Fluorene	39.0	ug/L	
83329	Acenaphthene	104	ug/L	
208968	Acenaphthylene	0.24	ug/L	
120127	Anthracene	3.5	ug/L	
56553	Benzo(a)anthracene	0.23	ug/L	
50328	Benzo(a)pyrene	0.049	ug/L	
191242	Benzo(g,h,i)perylene	0.0089	ug/L	J
205992	Benzo[b]Fluoranthene	0.058	ug/L	
207089	Benzo[k]fluoranthene	0.043	ug/L	
218019	Chrysene	0.19	ug/L	
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	28.3	ug/L	
206440	Fluoranthene	3.1	ug/L	
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	2.8	ug/L	
90120	Naphthalene, 1-methyl-	63.2	ug/L	
91576	Naphthalene, 2-methyl-	6.4	ug/L	
85018	Phenanthrene	33.3	ug/L	
129000	Pyrene	1.6	ug/L	
483658	Retene	0.35	ug/L	
1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
92944	p-Terphenyl	131	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	BEACH B-1 (EPA-SH-1)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.040	ug/L	U
86737	9H-Fluorene	0.020	ug/L	U
83329	Acenaphthene	0.020	ug/L	U
208968	Acenaphthylene	0.020	ug/L	U
120127	Anthracene	0.020	ug/L	U
56553	Benzo(a)anthracene	0.040	ug/L	U
50328	Benzo(a)pyrene	0.040	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	Chrysene	0.040	ug/L	U
53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
132649	Dibenzofuran	0.020	ug/L	U
206440	Fluoranthene	0.020	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
91203	Naphthalene	0.030	ug/L	U
90120	Naphthalene, 1-methyl-	0.020	ug/L	U
91576	Naphthalene, 2-methyl-	0.020	ug/L	U
85018	Phenanthrene	0.020	ug/L	U
129000	Pyrene	0.020	ug/L	U
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
92944	p-Terphenyl	105	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 2		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.040	ug/L	U
86737	**9H-Fluorene**	**11.0**	**ug/L**	
83329	**Acenaphthene**	**19.3**	**ug/L**	
208968	**Acenaphthylene**	**0.067**	**ug/L**	
120127	**Anthracene**	**0.17**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.014**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.040	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	**Chrysene**	**0.013**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
132649	**Dibenzofuran**	**4.2**	**ug/L**	
206440	**Fluoranthene**	**0.17**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
91203	Naphthalene	0.056	ug/L	U
90120	**Naphthalene, 1-methyl-**	**0.20**	**ug/L**	
91576	Naphthalene, 2-methyl-	0.020	ug/L	U
85018	**Phenanthrene**	**0.043**	**ug/L**	
129000	**Pyrene**	**0.16**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
92944	p-Terphenyl	105	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374202
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 3		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.043	ug/L	U
	86737	**9H-Fluorene**	**0.020**	**ug/L**	**J**
	83329	**Acenaphthene**	**0.048**	**ug/L**	
	208968	Acenaphthylene	0.021	ug/L	U
	120127	**Anthracene**	**0.012**	**ug/L**	**J**
	56553	Benzo(a)anthracene	0.043	ug/L	U
	50328	Benzo(a)pyrene	0.043	ug/L	U
	191242	Benzo(g,h,i)perylene	0.021	ug/L	U
	205992	Benzo[b]Fluoranthene	0.021	ug/L	U
	207089	Benzo[k]fluoranthene	0.021	ug/L	U
	218019	Chrysene	0.043	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.043	ug/L	U
	132649	Dibenzofuran	0.021	ug/L	U
	206440	**Fluoranthene**	**0.0096**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.043	ug/L	U
	91203	Naphthalene	0.039	ug/L	U
	90120	Naphthalene, 1-methyl-	0.021	ug/L	U
	91576	Naphthalene, 2-methyl-	0.021	ug/L	U
	85018	**Phenanthrene**	**0.017**	**ug/L**	**J**
	129000	**Pyrene**	**0.069**	**ug/L**	
	483658	Retene	0.021	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	83	%Rec	
	92944	p-Terphenyl	101	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374203
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 4		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.043	ug/L	U
86737	**9H-Fluorene**	**0.077**	**ug/L**	
83329	**Acenaphthene**	**3.4**	**ug/L**	
208968	Acenaphthylene	0.021	ug/L	U
120127	**Anthracene**	**0.042**	**ug/L**	
56553	Benzo(a)anthracene	0.043	ug/L	U
50328	Benzo(a)pyrene	0.043	ug/L	U
191242	Benzo(g,h,i)perylene	0.021	ug/L	U
205992	Benzo[b]Fluoranthene	0.021	ug/L	U
207089	Benzo[k]fluoranthene	0.021	ug/L	U
218019	Chrysene	0.043	ug/L	U
53703	Dibenzo[a,h]anthracene	0.043	ug/L	U
132649	**Dibenzofuran**	**0.052**	**ug/L**	
206440	**Fluoranthene**	**0.018**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.043	ug/L	U
91203	Naphthalene	0.021	ug/L	U
90120	Naphthalene, 1-methyl-	0.021	ug/L	U
91576	Naphthalene, 2-methyl-	0.021	ug/L	U
85018	**Phenanthrene**	**0.019**	**ug/L**	**J**
129000	**Pyrene**	**0.035**	**ug/L**	
483658	Retene	0.021	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	82	%Rec	
92944	p-Terphenyl	100	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374204
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 5		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	**9H-Fluorene**	**0.89**	**ug/L**	
83329	**Acenaphthene**	**9.5**	**ug/L**	
208968	**Acenaphthylene**	**0.062**	**ug/L**	
120127	**Anthracene**	**0.11**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.017**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.041	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	**Chrysene**	**0.014**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	**Dibenzofuran**	**0.55**	**ug/L**	
206440	**Fluoranthene**	**0.17**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
91203	**Naphthalene**	**1.2**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**1.0**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**0.29**	**ug/L**	
85018	**Phenanthrene**	**0.26**	**ug/L**	
129000	**Pyrene**	**0.070**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
92944	p-Terphenyl	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02374205
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 6 (SEDIMENT)		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	77.9	ug/kg	U
86737	9H-Fluorene	14900	ug/kg	
83329	Acenaphthene	14800	ug/kg	
208968	Acenaphthylene	81.4	ug/kg	
120127	Anthracene	8420	ug/kg	
56553	Benzo(a)anthracene	3380	ug/kg	
50328	Benzo(a)pyrene	763	ug/kg	
191242	Benzo(g,h,i)perylene	139	ug/kg	
205992	Benzo[b]Fluoranthene	1010	ug/kg	
207089	Benzo[k]fluoranthene	840	ug/kg	
218019	Chrysene	2750	ug/kg	
53703	Dibenzo[a,h]anthracene	126	ug/kg	
132649	Dibenzofuran	11600	ug/kg	
206440	Fluoranthene	20300	ug/kg	
193395	Indeno(1,2,3-cd)pyrene	221	ug/kg	
91203	Naphthalene	3990	ug/kg	
90120	Naphthalene, 1-methyl-	4970	ug/kg	
91576	Naphthalene, 2-methyl-	5640	ug/kg	
85018	Phenanthrene	35000	ug/kg	
129000	Pyrene	9600	ug/kg	
483658	Retene	139	ug/kg	
1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
92944	p-Terphenyl	93	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374206
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 7		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	**9H-Fluorene**	**0.047**	**ug/L**	
83329	**Acenaphthene**	**10.3**	**ug/L**	
208968	**Acenaphthylene**	**0.11**	**ug/L**	
120127	**Anthracene**	**0.20**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.011**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.041	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	**Chrysene**	**0.024**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	**Dibenzofuran**	**5.7**	**ug/L**	
206440	**Fluoranthene**	**0.26**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
91203	**Naphthalene**	**0.21**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**0.033**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**0.019**	**ug/L**	**J**
85018	**Phenanthrene**	**0.090**	**ug/L**	
129000	**Pyrene**	**0.097**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	126	%Rec	
92944	p-Terphenyl	99	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374207
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 8		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	1499101	9,10 DIPHENYLANTHRACENE			NA
	92944	p-Terphenyl			NA
	91587	2-Chloronaphthalene	25.0	ug/L	U
	86737	9H-Fluorene	18900	ug/L	
	83329	Acenaphthene	23800	ug/L	
	208968	Acenaphthylene	141	ug/L	
	120127	Anthracene	10200	ug/L	
	56553	Benzo(a)anthracene	2090	ug/L	
	50328	Benzo(a)pyrene	699	ug/L	
	191242	Benzo(g,h,i)perylene	115	ug/L	
	205992	Benzo[b]Fluoranthene	969	ug/L	
	207089	Benzo[k]fluoranthene	599	ug/L	
	218019	Chrysene	2270	ug/L	
	53703	Dibenzo[a,h]anthracene	95.2	ug/L	J
	132649	Dibenzofuran	14500	ug/L	
	206440	Fluoranthene	13600	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	181	ug/L	
	91203	Naphthalene	421000	ug/L	
	90120	Naphthalene, 1-methyl-	25800	ug/L	
	91576	Naphthalene, 2-methyl-	43300	ug/L	
	85018	Phenanthrene	32000	ug/L	
	129000	Pyrene	6170	ug/L	J
	483658	Retene	74.7	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374211
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -1		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

			Result	Units	Qlfr
Analytes :	1499101	9,10 DIPHENYLANTHRACENE			NA
	92944	p-Terphenyl			NA
	91587	2-Chloronaphthalene	21.7	ug/L	U
	86737	**9H-Fluorene**	**8340**	**ug/L**	
	83329	**Acenaphthene**	**10100**	**ug/L**	
	208968	**Acenaphthylene**	**87.7**	**ug/L**	
	120127	**Anthracene**	**4140**	**ug/L**	
	56553	**Benzo(a)anthracene**	**720**	**ug/L**	
	50328	**Benzo(a)pyrene**	**180**	**ug/L**	
	191242	**Benzo(g,h,i)perylene**	**29.2**	**ug/L**	
	205992	**Benzo[b]Fluoranthene**	**264**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**157**	**ug/L**	
	218019	**Chrysene**	**533**	**ug/L**	
	53703	**Dibenzo[a,h]anthracene**	**20.0**	**ug/L**	**J**
	132649	**Dibenzofuran**	**5810**	**ug/L**	
	206440	**Fluoranthene**	**4910**	**ug/L**	
	193395	**Indeno(1,2,3-cd)pyrene**	**46.0**	**ug/L**	
	91203	**Naphthalene**	**62900**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**14200**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**18000**	**ug/L**	
	85018	**Phenanthrene**	**11600**	**ug/L**	
	129000	**Pyrene**	**2110**	**ug/L**	**J**
	483658	**Retene**	**12.3**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374212
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -3		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.039	ug/L	U
	86737	**9H-Fluorene**	**0.070**	**ug/L**	
	83329	**Acenaphthene**	**0.040**	**ug/L**	
	208968	Acenaphthylene	0.020	ug/L	U
	120127	**Anthracene**	**0.13**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.042**	**ug/L**	
	50328	Benzo(a)pyrene	0.039	ug/L	U
	191242	**Benzo(g,h,i)perylene**	**0.019**	**ug/L**	**J**
	205992	**Benzo[b]Fluoranthene**	**0.050**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.054**	**ug/L**	**J**
	218019	**Chrysene**	**0.075**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
	132649	**Dibenzofuran**	**0.047**	**ug/L**	
	206440	**Fluoranthene**	**0.46**	**ug/L**	
	193395	**Indeno(1,2,3-cd)pyrene**	**0.021**	**ug/L**	**J**
	91203	Naphthalene	0.15	ug/L	U
	90120	**Naphthalene, 1-methyl-**	**0.017**	**ug/L**	**J**
	91576	**Naphthalene, 2-methyl-**	**0.027**	**ug/L**	
	85018	**Phenanthrene**	**0.47**	**ug/L**	
	129000	**Pyrene**	**0.21**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
	92944	p-Terphenyl	99	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374213
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -2		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

			Result	Units	Qlfr
Analytes :	91587	2-Chloronaphthalene	0.041	ug/L	U
	86737	**9H-Fluorene**	**1.4**	**ug/L**	
	83329	**Acenaphthene**	**1.3**	**ug/L**	
	208968	Acenaphthylene	0.020	ug/L	U
	120127	**Anthracene**	**0.59**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.030**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.041	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.048**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
	132649	**Dibenzofuran**	**0.80**	**ug/L**	
	206440	**Fluoranthene**	**0.67**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
	91203	**Naphthalene**	**8.8**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**1.0**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**1.9**	**ug/L**	
	85018	**Phenanthrene**	**3.6**	**ug/L**	
	129000	**Pyrene**	**0.30**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	102	%Rec	
	92944	p-Terphenyl	112	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374214
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -4		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	**9H-Fluorene**	**22.5**	**ug/L**	
83329	**Acenaphthene**	**42.1**	**ug/L**	
208968	**Acenaphthylene**	**0.24**	**ug/L**	
120127	**Anthracene**	**1.6**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.12**	**ug/L**	
50328	**Benzo(a)pyrene**	**0.018**	**ug/L**	**J**
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	**Benzo[b]Fluoranthene**	**0.028**	**ug/L**	
207089	**Benzo[k]fluoranthene**	**0.023**	**ug/L**	**J**
218019	**Chrysene**	**0.095**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	**Dibenzofuran**	**11.0**	**ug/L**	
206440	**Fluoranthene**	**1.9**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
91203	**Naphthalene**	**1.4**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**13.8**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**1.5**	**ug/L**	
85018	**Phenanthrene**	**12.8**	**ug/L**	
129000	**Pyrene**	**0.89**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	71	%Rec	
92944	p-Terphenyl	88	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374215
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -5		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.22	ug/L	U
86737	**9H-Fluorene**	**0.21**	**ug/L**	
83329	**Acenaphthene**	**1.5**	**ug/L**	
208968	Acenaphthylene	0.11	ug/L	U
120127	**Anthracene**	**0.26**	**ug/L**	
56553	Benzo(a)anthracene	0.22	ug/L	U
50328	Benzo(a)pyrene	0.22	ug/L	U
191242	**Benzo(g,h,i)perylene**	**0.071**	**ug/L**	**J**
205992	Benzo[b]Fluoranthene	0.11	ug/L	U
207089	Benzo[k]fluoranthene	0.11	ug/L	U
218019	**Chrysene**	**0.11**	**ug/L**	**J**
53703	Dibenzo[a,h]anthracene	0.22	ug/L	U
132649	**Dibenzofuran**	**0.084**	**ug/L**	**J**
206440	**Fluoranthene**	**1.2**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.22	ug/L	U
91203	**Naphthalene**	**0.38**	**ug/L**	
90120	Naphthalene, 1-methyl-	0.11	ug/L	U
91576	**Naphthalene, 2-methyl-**	**0.068**	**ug/L**	**J**
85018	**Phenanthrene**	**1.1**	**ug/L**	
129000	**Pyrene**	**0.52**	**ug/L**	
483658	Retene	0.11	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	60	%Rec	
92944	p-Terphenyl	72	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374216
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -6		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540
Analytes :

		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	9H-Fluorene	0.025	ug/L	
83329	Acenaphthene	3.0	ug/L	
208968	Acenaphthylene	0.025	ug/L	
120127	Anthracene	0.078	ug/L	
56553	Benzo(a)anthracene	0.026	ug/L	J
50328	Benzo(a)pyrene	0.069	ug/L	
191242	Benzo(g,h,i)perylene	0.054	ug/L	
205992	Benzo[b]Fluoranthene	0.046	ug/L	
207089	Benzo[k]fluoranthene	0.032	ug/L	J
218019	Chrysene	0.023	ug/L	J
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	Dibenzofuran	0.020	ug/L	U
206440	Fluoranthene	0.028	ug/L	
193395	Indeno(1,2,3-cd)pyrene	0.046	ug/L	
91203	Naphthalene	0.069	ug/L	U
90120	Naphthalene, 1-methyl-	0.10	ug/L	
91576	Naphthalene, 2-methyl-	0.022	ug/L	
85018	Phenanthrene	0.031	ug/L	
129000	Pyrene	0.025	ug/L	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	74	%Rec	
92944	p-Terphenyl	94	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374217
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -7		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.34	ug/L	U
	86737	**9H-Fluorene**	**152**	**ug/L**	
	83329	**Acenaphthene**	**222**	**ug/L**	
	208968	**Acenaphthylene**	**0.57**	**ug/L**	
	120127	**Anthracene**	**19.6**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.28**	**ug/L**	
	50328	**Benzo(a)pyrene**	**0.019**	**ug/L**	**J**
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	**Benzo[b]Fluoranthene**	**0.022**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.024**	**ug/L**	**J**
	218019	**Chrysene**	**0.21**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	**Dibenzofuran**	**134**	**ug/L**	
	206440	**Fluoranthene**	**12.7**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
	91203	**Naphthalene**	**958**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**269**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**259**	**ug/L**	
	85018	**Phenanthrene**	**151**	**ug/L**	
	129000	**Pyrene**	**5.2**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	73	%Rec	
	92944	p-Terphenyl	95	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374218
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -8		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.040	ug/L	U
86737	**9H-Fluorene**	**106**	**ug/L**	
83329	**Acenaphthene**	**163**	**ug/L**	
208968	**Acenaphthylene**	**0.44**	**ug/L**	
120127	**Anthracene**	**17.6**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.36**	**ug/L**	
50328	**Benzo(a)pyrene**	**0.031**	**ug/L**	**J**
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	**Benzo[b]Fluoranthene**	**0.046**	**ug/L**	
207089	**Benzo[k]fluoranthene**	**0.040**	**ug/L**	**J**
218019	**Chrysene**	**0.29**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
132649	**Dibenzofuran**	**94.3**	**ug/L**	
206440	**Fluoranthene**	**12.6**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
91203	**Naphthalene**	**397**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**205**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**166**	**ug/L**	
85018	**Phenanthrene**	**125**	**ug/L**	
129000	**Pyrene**	**5.7**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	74	%Rec	
92944	p-Terphenyl	96	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374219
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -9		

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.14	ug/L	U
	86737	**9H-Fluorene**	**91.1**	**ug/L**	
	83329	**Acenaphthene**	**118**	**ug/L**	
	208968	**Acenaphthylene**	**0.35**	**ug/L**	
	120127	**Anthracene**	**14.1**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.76**	**ug/L**	
	50328	**Benzo(a)pyrene**	**0.097**	**ug/L**	
	191242	**Benzo(g,h,i)perylene**	**0.012**	**ug/L**	**J**
	205992	**Benzo[b]Fluoranthene**	**0.15**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.099**	**ug/L**	**J**
	218019	**Chrysene**	**0.62**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	**Dibenzofuran**	**70.0**	**ug/L**	
	206440	**Fluoranthene**	**15.8**	**ug/L**	
	193395	**Indeno(1,2,3-cd)pyrene**	**0.020**	**ug/L**	**J**
	91203	**Naphthalene**	**703**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**170**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**167**	**ug/L**	
	85018	**Phenanthrene**	**104**	**ug/L**	
	129000	**Pyrene**	**6.2**	**ug/L**	**J**
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	71	%Rec	
	92944	p-Terphenyl	91	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	BS2255A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	6.7	ug/kg	U
86737	9H-Fluorene	3.3	ug/kg	U
83329	Acenaphthene	3.3	ug/kg	U
208968	Acenaphthylene	3.3	ug/kg	U
120127	Anthracene	3.3	ug/kg	U
56553	Benzo(a)anthracene	6.7	ug/kg	U
50328	Benzo(a)pyrene	6.7	ug/kg	U
191242	Benzo(g,h,i)perylene	3.3	ug/kg	U
205992	Benzo[b]Fluoranthene	3.3	ug/kg	U
207089	Benzo[k]fluoranthene	3.3	ug/kg	U
218019	Chrysene	6.7	ug/kg	U
53703	Dibenzo[a,h]anthracene	6.7	ug/kg	U
132649	Dibenzofuran	3.3	ug/kg	U
206440	Fluoranthene	3.3	ug/kg	U
193395	Indeno(1,2,3-cd)pyrene	6.7	ug/kg	U
91203	Naphthalene	3.3	ug/kg	U
90120	Naphthalene, 1-methyl-	3.3	ug/kg	U
91576	Naphthalene, 2-methyl-	3.3	ug/kg	U
85018	Phenanthrene	3.3	ug/kg	U
129000	Pyrene	3.3	ug/kg	U
483658	Retene	3.3	ug/kg	U
1499101	9,10 DIPHENYLANTHRACENE	69	%Rec	
92944	p-Terphenyl	74	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	BW2253A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	0.036	ug/L	U
	86737	9H-Fluorene	0.018	ug/L	U
	83329	Acenaphthene	0.018	ug/L	U
	208968	Acenaphthylene	0.018	ug/L	U
	120127	Anthracene	0.018	ug/L	U
	56553	Benzo(a)anthracene	0.036	ug/L	U
	50328	Benzo(a)pyrene	0.036	ug/L	U
	191242	Benzo(g,h,i)perylene	0.018	ug/L	U
	205992	Benzo[b]Fluoranthene	0.018	ug/L	U
	207089	Benzo[k]fluoranthene	0.018	ug/L	U
	218019	Chrysene	0.036	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
	132649	Dibenzofuran	0.018	ug/L	U
	206440	Fluoranthene	0.018	ug/L	U
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
	91203	Naphthalene	0.018	ug/L	U
	90120	Naphthalene, 1-methyl-	0.018	ug/L	U
	91576	Naphthalene, 2-methyl-	0.018	ug/L	U
	85018	Phenanthrene	0.018	ug/L	U
	129000	Pyrene	0.018	ug/L	U
	483658	Retene	0.018	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
	92944	p-Terphenyl	137	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	BW2253A2
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.034	ug/L	U
86737	9H-Fluorene	0.017	ug/L	U
83329	Acenaphthene	0.017	ug/L	U
208968	Acenaphthylene	0.017	ug/L	U
120127	Anthracene	0.017	ug/L	U
56553	Benzo(a)anthracene	0.034	ug/L	U
50328	Benzo(a)pyrene	0.034	ug/L	U
191242	Benzo(g,h,i)perylene	0.017	ug/L	U
205992	Benzo[b]Fluoranthene	0.017	ug/L	U
207089	Benzo[k]fluoranthene	0.017	ug/L	U
218019	Chrysene	0.034	ug/L	U
53703	Dibenzo[a,h]anthracene	0.034	ug/L	U
132649	Dibenzofuran	0.017	ug/L	U
206440	Fluoranthene	0.017	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.034	ug/L	U
91203	Naphthalene	0.017	ug/L	U
90120	Naphthalene, 1-methyl-	0.017	ug/L	U
91576	Naphthalene, 2-methyl-	0.017	ug/L	U
85018	Phenanthrene	0.017	ug/L	U
129000	Pyrene	0.017	ug/L	U
483658	Retene	0.017	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	94	%Rec	
92944	p-Terphenyl	140	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2260A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.038	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	Benzo(a)anthracene	0.038	ug/L	U
50328	Benzo(a)pyrene	0.038	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	Chrysene	0.038	ug/L	U
53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	Fluoranthene	0.019	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
91203	**Naphthalene**	**0.025**	**ug/L**	
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	Phenanthrene	0.019	ug/L	U
129000	Pyrene	0.019	ug/L	U
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	91	%Rec	
92944	p-Terphenyl	108	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2260A2
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			**Result**	**Units**	**Qlfr**
	91587	2-Chloronaphthalene	0.036	ug/L	U
	86737	9H-Fluorene	0.018	ug/L	U
	83329	Acenaphthene	0.018	ug/L	U
	208968	Acenaphthylene	0.018	ug/L	U
	120127	Anthracene	0.018	ug/L	U
	56553	Benzo(a)anthracene	0.036	ug/L	U
	50328	Benzo(a)pyrene	0.036	ug/L	U
	191242	Benzo(g,h,i)perylene	0.018	ug/L	U
	205992	Benzo[b]Fluoranthene	0.018	ug/L	U
	207089	Benzo[k]fluoranthene	0.018	ug/L	U
	218019	Chrysene	0.036	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
	132649	Dibenzofuran	0.018	ug/L	U
	206440	Fluoranthene	0.018	ug/L	U
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
	91203	**Naphthalene**	**0.022**	**ug/L**	
	90120	Naphthalene, 1-methyl-	0.018	ug/L	U
	91576	Naphthalene, 2-methyl-	0.018	ug/L	U
	85018	Phenanthrene	0.018	ug/L	U
	129000	Pyrene	0.018	ug/L	U
	483658	Retene	0.018	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
	92944	p-Terphenyl	108	%Rec	

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

October 28, 2002

MEMORANDUM

SUBJECT: Data Verification Report of Polynuclear Aromatic Hydrocarbon Results for the McCormick and Baxter Project Samples 02362500 thru 02362509, 02364300 thru 02364314, 02374200 thru 02374207, and 02374211 thru 02374219

FROM: Gerald H. Dodo, Chemist
USEPA

TO: Rene Fuentes
USEPA

CC: Rod Struck
ODEQ

The following is a data verification report for the polynuclear aromatic hydrocarbon (PAH) analyses' results for water and sediment samples collected from the McCormick and Baxter project. These samples were analyzed using USEPA SW846 Method 8270C, GC/MS in the SIM mode specific for PAHs by the USEPA Region 10 Laboratory ESAT Team located in Manchester, WA. The analyses' results were delivered as ESAT document number ES10-1-1563 under Technical Direction Form 1138. This review covers the samples listed above.

The project code for these samples is TEC-247B. The account number is 02T10P50102D10P9LA00.

Data qualifications

The following comments refer to laboratory performance meeting the Quality Control specifications outlined in the SW846 Method 8000B and the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (10/99).

I. Holding Times: Acceptable

The holding times for the extraction of water and sediment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

DATE: November 1, 2002

TO: Rene Fuentes, Project Manager

FROM: M.K.Parker, Manchester Laboratory Chemist MKParker

SUBJECT: Classical Chemistry Analyses for McCormick & Baxter, Portland Project (TEC-247B) : Mercury and Total Suspended Solids for Samples 02362500 to 02362509, 02364300 to 02364314 and 02374200 to 02374206.

The following is a quality assurance data review of classical chemistry analyses performed at the Manchester Laboratory. The analyses were performed following USEPA and laboratory guidelines at the USEPA Manchester Environmental Laboratory (MEL), Port Orchard, WA.

This is an exception memo. All Manchester Environmental Laboratory quality assurance criteria for the analyses were met (holding time, calibration correlation coefficient, method blank, initial and continuing calibration verification, independent calibration verification, sample duplication and matrix spike duplication) without exception.

The mercury analysis performed on the water samples was USEPA Method 1631B. This is a low level analysis with a reporting limit of 0.2 ng/L. Samples 02364300 through 02364314 were collected in plastic cubitainers and preserved with an unknown grade of nitric acid. Trace metals grade nitric acid and plastic cubitainers (especially when blown open by a person with mercury amalgam fillings in their teeth) can be a source for mercury contamination at this level. If a field blank was collected with this group of samples, the data user may achieve a more accurate assessment of the concentration of mercury in the samples by subtracting the field blank from the reported sample results. Samples 02374200 through 02374206 were collected in pretested mercury collection bottles and preserved with bromine monochloride which is accounted for by the analysis procedure. The results for these sample are believed to be accurate without field blank subtraction.

All instrument results below the method detection limit for each analysis are qualified (U) to indicate to the data user that if the analyte is present in the samples, the concentration is below the minimum level at which the laboratory has established the practical quantitation limit.

Questions concerning the data may be directed to Kathy Parker at the Manchester Environmental Laboratory by either email (parker.katherine@epa.gov) or telephone (360.871.8716).

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

LABORATORY QUALIFIER/REMARK CODE DEFINITIONS

Qualifier/ Remark Code	Definition (Codes Assigned To Values)
<	**Microbiology** – Level of target organism present in the sample is less than detection limit. The reported value is the detection limit.
	Flash Point – The expected flash point temperature is less than the reported value.
>	**Microbiology** – Level of target organism exceeds upper limit for acceptable range of countable colonies (MF only) or exceeds MPN indices based on number of positive tubes (MPN only). The reported value is the upper limit.
	Flash Point – If the sample has a flashpoint, it is greater than the reported value.
J	The identification of the analyte is acceptable; the reported value is an estimate.
JK	The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JL	The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
K	The identification of the analyte is acceptable; the reported value may be biased high. The actual value is expected to be less than the reported value.
L	The identification of the analyte is acceptable; the reported value may be biased low. The actual value is expected to be greater than the reported value.
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
NJ	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.
U	The analyte was not detected at or above the reported value.
UJ	The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
A	Absent – The target parameter was analyzed for but was not present or was undetected. No value is reported with this qualification.
NA	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.
P	Present at a undetermined level – The target parameter is present but not quantifiable or no quantifiable result was determined. No value is reported with this qualification.

Qualifier/ Remark Code	Definition (Codes With No Reported Values)
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable. No value is reported with this qualification.
T	A trace of the subject parameter was present. For asbestos analysis the subject parameter was identified but at a low level that a quantifiable percentage of content is unreliable. No value is reported with this qualification.
TNTC	Too Numerous To Count – Any membrane where the total number of bacterial colonies exceeds 200 per membrane, or if the colonies are not distinct enough for accurate counting (i.e. confluent growth).

Qualifier/ Remark Code	Definition (Codes Assigned To Values Generated via Field or Screening Methods)
F	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value has been found to be acceptable for use.
JF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable and the reported value is an estimate.
JKF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased high. The actual value is expected to be less than the reported value.
JLF	The associated datum was generated using field methods and/or screening methods. The identification of the analyte is acceptable; the reported value is an estimate and may be biased low. The actual value is expected to be greater than the reported value.
UF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value.
UJF	The associated datum was generated using field methods and/or screening methods. The analyte was not detected at or above the reported value. The reported value is an estimate.

Qualifier/ Remark Code	Cross Reference to Older Codes
A	UND, ND – Undetected, Not detected
NA	NAR, NAF – No analytical result, Not analyzed for
P	PNQ – Present but not quantified
R	REJ - Rejected
T	TRACE

NOTE: For any qualifier code see the QA memo or case narrative for a more detailed description of its use.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362500
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0617**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362501
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: **7439976**	**Mercury**	**0.0360**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362502
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0272**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362503
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: **7439976**	**Mercury**	**0.238**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0733**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0714**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	99.8	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	103	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362505
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.109**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	111	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	109	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362507
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: **7439976**	**Mercury**	**0.0435**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362508
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.627	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362509
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0251**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

		Result	Units	Qlfr
GEN				
Parameter : Total suspended solids				
Method : USGS I3765				
Prep Method: USGS I3765				
Analytes : *90069	**Total suspended Solids**	8.40	mg/L	
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	**Mercury**	1480	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	1450	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	115	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	106	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364301
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

		Result	Units	Qlfr
GEN				
Parameter : Total suspended solids				
Method : USGS I3765				
Prep Method: USGS I3765				
Analytes : *90069	Total suspended Solids	9.68	mg/L	
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	Mercury	249	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364302
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	**7439976 Mercury**	**855**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364303
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

		Result	Units	Qlfr
GEN				
Parameter : Total suspended solids				
Method : USGS I3765				
Prep Method: USGS I3765				
Analytes : *90069	**Total suspended Solids**	10.0	mg/L	
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	**Mercury**	237	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364304
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**41.6**	**mg/L**	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**403**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364305
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

		Result	Units	Qlfr
GEN				
Parameter :	Total suspended solids			
Method :	USGS I3765			
Prep Method:	USGS I3765			
Analytes :	***90069 Total suspended Solids**	**29.4**	**mg/L**	
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	**7439976 Mercury**	**929**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**4.42**	**mg/L**	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**89.0**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
GEN				
Parameter	: Total suspended solids			
Method	: USGS I3765			
Prep Method	: USGS I3765			
Analytes	: *90069 Total suspended Solids	4.89	mg/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364307
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method:	USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**4.40**	**mg/L**	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method:	1631B				
Analytes	: **7439976**	**Mercury**	**187**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364308
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

		Result	Units	Qlfr
GEN				
Parameter : Total suspended solids				
Method : USGS I3765				
Prep Method: USGS I3765				
Analytes : *90069	**Total suspended Solids**	24.8	mg/L	
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	**Mercury**	201	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364309
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

		Result	Units	Qlfr
GEN				
Parameter :	Total suspended solids			
Method :	USGS I3765			
Prep Method:	USGS I3765			
Analytes :	***90069 Total suspended Solids**	**12.0**	**mg/L**	
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	**7439976 Mercury**	**1370**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364310
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7 POURWATER		

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	4.19	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364311
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5 POURWATER		

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	**7439976 Mercury**	**6.16**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364312
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (OR 5A) POURWATER		

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	9.94	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD) POURWATER		

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: **7439976 Mercury**	**0.947**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364314
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3 POURWATER		

		Result	Units	Qlfr
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	**Mercury**	2.47	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	BEACH B-1 (EPA-SH-1)		

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	**7439976** **Mercury**	**1.29**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	1.25	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	7439976 Mercury	108	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	109	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 2		

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	**Mercury**	**0.501**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374202
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 3		

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	0.867	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374203
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 4		

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: **7439976 Mercury**	**1.02**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374204
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 5		

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	5.87	ng/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374206
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 7		

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : **7439976** **Mercury**	**1.12**	**ng/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020918A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020918B
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	99.6	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020924A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020924B
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	97.9	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW020909A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
GEN				
Parameter : Total suspended solids				
Method : USGS I3765				
Prep Method: USGS I3765				
Analytes : *90069	Total suspended Solids	2.0	mg/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW020909A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

		Result	Units	Qlfr
GEN				
Parameter	: Total suspended solids			
Method	: USGS I3765			
Prep Method	: USGS I3765			
Analytes	: *90069 Total suspended Solids	101	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021016A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	Mercury	0.20	ng/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021017A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	106	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021025A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	0.20	ng/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021025A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	7439976 Mercury	112	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021029A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	0.20	ng/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021029A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury ,	98.5	%Rec	

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TECHNICAL MEMORANDUM

DATE: January 9, 2003

TO: John Montgomery, E & E, Portland

FROM: Heather Brunelle, E & E, Portland

SUBJ: McCormick & Baxter Creosoting Company Site

RE: September 2002 Sampling Data Review – North Creek Analytical, Inc.

CC: 000749.OQ04.06.01 Site File

A cursory data quality assurance review of surface water, sediment, and flux chamber water sample results has been completed. North Creek Analytical, Inc. (NCA) of Beaverton, Oregon performed the analyses. Oregon Department of Environmental Quality (DEQ) received three data packages from NCA: P2I0173, P2I0307, and P2I0348.

The following summarizes the findings of the data review for each data package.

Data Package: P2I0348

Sample Identifications

SPMD #1	SPMD#15 DUP	SPMD#2 (Filtered)	SPMD#11 (Filtered)
SPMD #2	SPMD#11	SPMD#20 (Filtered)	SPMD#5 (Filtered)
SPMD#20	SPMD#5	SPMD#15 (Filtered)	
SPMD#15	SPMD#1 (Filtered)	SPMD#15 DUP (Filtered)	

On September 12, 2002, fourteen grab surface water (filtered and non-filtered) samples were received by NCA for analysis of:

- Semivolatile petroleum hydrocarbons, per DEQ NWTPH-Dx Method;
- Dissolved metals (As, Cr, Cu, and Zn), per United States Environmental Protection Agency (EPA) Method 6020;
- Total metals (As, Cr, Cu, and Zn), per EPA Method 6020;
- Semivolatile organic compounds (SVOCs), per EPA Method 8270C;

- Polynuclear aromatic hydrocarbons (PAHs) and pentachlorophenol (PCP), per EPA Method 8270M-SIM;
- Tentatively Identified Compounds (TICs), per gas chromatography/mass spectrometry (GC/MS); and
- Conventional Chemistry Parameters (Dissolved Organic Carbon [DOC] and Total Suspended Solids [TSS]), per APHA/EPA Methods.

No problems were identified that would affect data usability.

Diesel and Heavy Oil Range Hydrocarbons per NWTPH-Dx Method

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so they had not cooled to 4°C ± 2°C by time of receipt. All samples were extracted within the holding time of 14-days.
- Samples SMPD #15 and SMPD #15 DUP (duplicate) were submitted for analysis of diesel and heavy oil range hydrocarbons per NWTPH-Dx Method.
- A method blank was prepared on September 13, 2002 and analyzed on October 22, 2002; hydrocarbons were not detected in the method blanks.
- No hydrocarbons were identified in grab surface water samples SPMD #15 and SPMD #15 DUP.
- Matrix spike (MS) and matrix spike duplicate (MSD) samples, laboratory control samples (LCSs), and surrogate spike recoveries were not reported. The diesel and heavy oil range hydrocarbon analysis was only performed on the EPA Method 8270M-SIM sample and method blank extracts.

Dissolved Metals per EPA Method 6020

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so they had cooled to 4°C ± 2°C by time of receipt. All samples were analyzed within the holding time of 6-months.
- Samples SMPD #1, SMPD #2, SPMD #20, SPMD #15, SPMD #15 DUP, SPMD #11, and SPMD #5 were submitted for analysis of dissolved metals (As, Cr, Cu, and Zn) per EPA Method 6020.
- A method blank was prepared and analyzed on September 23, 2002; metals were not detected in the method blank.
- A LCS was prepared and analyzed on September 23, 2002. Percent recoveries of analytes were within the method required limits of 80 to 120 percent.
- A laboratory duplicate was prepared and analyzed on September 23, 2002. The relative percent differences (RPDs) were within the method-required limit of 20 percent.
- MSs were prepared and analyzed on September 23, 2002. Percent recoveries of analytes were within the method required limits of 80 to 120 percent.

Total Metals per EPA Method 6020

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so they had not cooled to 4°C ± 2°C by time of receipt. All samples were analyzed within the holding time of 6-months.

- Samples SMPD #1, SMPD #2, SPMD #20, SPMD #15, SPMD #15 DUP, SPMD #11, and SPMD #5 were submitted for analysis of total metals (As, Cr, Cu, and Zn) per EPA Method 6020.
- A method blank was prepared on September 17, 2002 and analyzed on September 19, 2002; metals were not detected in the method blank.
- A LCS was prepared on September 17, 2002 and analyzed on September 19, 2002. Percent recoveries of analytes were within the method required limits of 80 to 120 percent.
- A laboratory duplicate was prepared on September 17, 2002 and analyzed on September 19, 2002. The RPDs were within the method required limit of 20 percent.
- MSs were prepared on September 17, 2002 and analyzed on September 19, 2002. Percent recoveries of analytes were within the method required limits of 80 to 120 percent.

Dissolved Polynuclear Aromatic Compounds and Pentachlorophenol per EPA Method 8270M-SIM

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so had not cooled to 4°C ± 2°C by time of receipt. Samples were extracted on September 18 and 19, 2002 and analyzed on September 27, 2002. All samples were extracted within the holding time of 14-days and analyzed within the holding time of 40 days.
- Filtered samples SMPD #1, SMPD #2, SPMD #20, SPMD #15, SPMD #15 DUP, SPMD #11, and SPMD #5 were submitted for analysis of PAHs and PCP per EPA Method 8270M-SIM.
- Method blanks were prepared on September 18 and analyzed on September 27, 2002 and prepared on September 19 and analyzed on September 27, 2002. Analytes were not detected in the method blanks.
- LCSs and LCS duplicates were prepared on September 18 and analyzed on September 27, 2002, and were prepared on September 19 and analyzed on September 27, 2002. Percent recoveries and RPDs of analytes were within the method required limits.
- Surrogate recoveries were within method-required limits.

Total Polynuclear Aromatic Compounds and Pentachlorophenol per EPA Method 8270M-SIM

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so had not cooled to 4°C ± 2°C by time of receipt. Samples were extracted on September 17 and 18, 2002 and analyzed on September 26 and 27, 2002. All samples were extracted within the holding time of 14-days and analyzed within the holding time of 40 days.
- Samples SMPD #1, SMPD #2, SPMD #20, SPMD #15, SPMD #15 DUP, SPMD #11, and SPMD #5 were submitted for analysis of PAHs and PCP per EPA Method 8270M-SIM.
- Method blanks were analyzed on September 17 and analyzed on September 26, 2002 and prepared on September 18 and analyzed on September 27, 2002. Analytes were not detected in the method blanks.

- LCSs and LCS duplicates were prepared on September 17 and analyzed on September 26, 2002 and prepared on September 18 and analyzed on September 27, 2002. Percent recoveries and RPDs of analytes were within the method required limits.
- Surrogate recoveries were within method-required limits with the exception of the low recovery of surrogate Benzo(a)pyrene-d12 in sample SMPD #1. As a result, associated non-detect results for the analytes Benz(a)anthracene, Chrysene, Benzo(b&k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3,c-d)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene in sample labeled SMPD #1 are flagged with the qualifier UJ.

Semivolatile Petroleum Hydrocarbons per EPA Method 8270C

- Sample temperatures were reported at 10.2°C at time of receipt. Samples were received within two hours of collection so had not cooled to 4°C ± 2°C by time of receipt. All samples were extracted within the holding time of 14-days and analyzed within the holding time of 40 days.
- Samples SMPD #15 and SMPD #15 DUP were submitted for analysis of SVOCs per EPA Method 8270C.
- Method blanks were prepared on September 13 and 18, 2002 and analyzed on October 10, 2002; analytes were not detected in the method blanks.
- No tentatively identified compounds (TICS) were identified in grab surface water samples SPMD #15 and SPMD #15 DUP.
- MS and MSD samples, LCSs, and surrogate spike recoveries were not reported. The SVOC analysis was only performed on the EPA Method 8270M-SIM sample and method blank extracts.

Conventional Chemistry Parameters per APHA/EPA Methods

- Samples SMPD #1, SMPD #2, SPMD #20, SPMD #15, SPMD #15 DUP, SPMD #11, and SPMD #5 were submitted for analysis of DOC per EPA Method 415.1 and TSS per EPA Method 160.2.
- TSS method blanks were prepared on September 13 and 16, 2002 and analyzed on September 16 and 17, 2002. A DOC blank was prepared on September 25 and analyzed on September 26, 2002. Analytes were not detected in the method blanks.
- TSS duplicates were prepared on September 13 and analyzed on September 16, 2002 and prepared on September 16 and analyzed on September 17, 2002. The RPD for the duplicate analyzed on September 16 was outside of limits due to an inhomogeneous sample. The RPD for the duplicate analyzed on September 17 was within limits.
- A DOC duplicate was prepared on September 25 and analyzed on September 26, 2002. The PD was within limits.
- TSS LCSs were prepared on September 13 and 16, 2002 and analyzed on September 16 and 17, 2002. A DOC LCS was prepared on September 25 and analyzed on September 26, 2002. Percent recoveries were within the method required limits of 80 to 120 percent.
- A DOC MS sample was prepared on September 25 and analyzed on September 26, 2002. The percent recovery was within the method required limits of 80 to 120 percent.

Data Package: P2I0307

Sample Identifications

CreoDock N Drum	CreoDock S Drum	WC-Blue-Flux
FWDA-Flux	WC1-Flux	CreoDock North-Flux

On September 11, 2002, six water samples were received by NCA for analysis of:

- PAHs and PCP per EPA Method 8270M-SIM;
- TICs per GC/MS;
- Diesel and heavy range hydrocarbons per NWTPH-Dx Method; and
- SVOCs per EPA Method 8270C.

No problems were identified that would affect data usability.

PAHs and PCP per EPA Method 8270M-SIM

- Sample temperatures were reported at 11.2°C at time of receipt. Samples were received within several hours of collection so they had not cooled to 4°C ± 2°C by time of receipt. All samples were prepared on September 13, 2002 and analyzed on September 23, 2002. All samples were extracted within the holding time of 14-days and analyzed within the holding time of 40 days.
- A method blank was prepared on September 13, 2002 and analyzed on September 20, 2002; analytes were not detected in the method blanks.
- A LCS was prepared on September 13, 2002 and analyzed on September 20, 2002. Percent recoveries of analytes were within the method required limits.
- A LCS duplicate was prepared and analyzed on September 23, 2002. The RPDs were within the method-required limit of 60 percent.
- MSs and MSDs were not reported.
- Surrogate recoveries were within method-required limits.

SVOCs per EPA Method 8270C

- Sample temperatures were reported at 11.2°C at time of receipt. Samples were received within several hours of collection so they had not cooled to 4°C ± 2°C by time of receipt. All samples were prepared on September 13, 2002 and analyzed on October 10, 2002. All samples were extracted within the holding time of 14-days and analyzed within the holding time of 40 days.
- Method blanks were prepared on September 13 and 18, 2002 and analyzed on October 10, 2002. Analytes were not detected in the method blanks.
- MS and MSD samples, LCSs, and surrogate spike recoveries were not reported. The SVOC analysis was only performed on the EPA Method 8270M-SIM sample and method blank extracts.

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx

- Sample temperatures were reported at 11.2°C at time of receipt. Samples were received within several hours of collection so had not cooled to 4°C ± 2°C by time of receipt. All samples were prepared on September 13, 2002 and analyzed on October 22, 2002. All samples were extracted within the holding time of 14-days.

- A method blank was prepared on September 13, 2002 and analyzed on October 22, 2002. Analytes were not detected in the method blanks.
- MS and MSD samples, LCSs, and surrogate spike recoveries were not reported. The diesel and heavy oil hydrocarbon analysis was only performed on the EPA Method 8270M-SIM sample and method blank extracts.

Data Package: P2I0173

Sample Identifications

MBHA1-3 MBHA2-2 MBHA2-1 MBHA1-1

On September 6, 2002, four soil samples were received by NCA for analysis of diesel and heavy oil range hydrocarbons per NWTPH-Dx Method. No problems were identified that would affect data usability.

- Sample temperatures were reported at 6.3°C at time of receipt. All samples were prepared on September 11 and analyzed on September 12, 2002. All samples were extracted within the holding time of 14-days.
- A method blank was prepared on September 11, 2002 and analyzed on September 12, 2002; analytes were not detected in the method blank.
- A LCS was prepared on September 11, 2002 and analyzed on September 12, 2002. Percent recoveries of analytes were within the method required limits.
- Two laboratory duplicates were prepared and analyzed on September 11, 2002 and analyzed on September 12, 2002. The RPDs were within the method-required limit of 50 percent.
- Surrogate recoveries were within method-required limits (50 to 150 percent) with the exception of the elevated surrogate recovery (152 percent) of the results of sample MBHA2-2. Since no analytes were detected in the sample, the quality of the data has not been affected.

Conclusion and Recommendation

The overall usefulness of the data is based on the criteria outlined in the analytical methods. Based upon the information provided, the data are acceptable for use.

Deq Sed Samples

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Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
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Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MBHA1-3	P2I0173-01	Soil	09/05/02 12:28	09/06/02 13:10
MBHA2-2	P2I0173-02	Soil	09/05/02 12:48	09/06/02 13:10
MBHA2-1	P2I0173-03	Soil	09/05/02 13:00	09/06/02 13:10
MBHA1-1	P2I0173-04	Soil	09/05/02 13:10	09/06/02 13:10

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509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MBHA1-3 (P2I0173-01) Soil					Sampled: 09/05/02	Received: 09/06/02			
Diesel Range Organics	**27.3**	25.0	mg/kg dry	1	NWTPH-Dx	09/11/02	09/12/02	2090399	D-17
Heavy Oil Range Hydrocarbons	ND	50.0	"	"	"	"	"	"	
Surr: 1-Chlorooctadecane	*88.4 %*	*50-150*							
MBHA2-2 (P2I0173-02) Soil					Sampled: 09/05/02	Received: 09/06/02			
Diesel Range Organics	ND	25.0	mg/kg dry	1	NWTPH-Dx	09/11/02	09/12/02	2090399	
Heavy Oil Range Hydrocarbons	ND	50.0	"	"	"	"	"	"	
Surr: 1-Chlorooctadecane	*152 %*	*50-150*							*S-08*
MBHA2-1 (P2I0173-03) Soil					Sampled: 09/05/02	Received: 09/06/02			
Diesel Range Organics	ND	25.0	mg/kg dry	1	NWTPH-Dx	09/11/02	09/12/02	2090399	
Heavy Oil Range Hydrocarbons	ND	50.0	"	"	"	"	"	"	
Surr: 1-Chlorooctadecane	*80.3 %*	*50-150*							
MBHA1-1 (P2I0173-04) Soil					Sampled: 09/05/02	Received: 09/06/02			
Diesel Range Organics	ND	25.0	mg/kg dry	1	NWTPH-Dx	09/11/02	09/12/02	2090399	
Heavy Oil Range Hydrocarbons	ND	50.0	"	"	"	"	"	"	
Surr: 1-Chlorooctadecane	*78.8 %*	*50-150*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

Percent Dry Weight (Solids) per Standard Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MBHA1-3 (P2I0173-01) Soil					Sampled: 09/05/02	Received: 09/06/02			
% Solids	**77.3**	1.00	% by Weight	1	NCA SOP	09/09/02	09/10/02	2090273	
MBHA2-2 (P2I0173-02) Soil					Sampled: 09/05/02	Received: 09/06/02			
% Solids	**72.1**	1.00	% by Weight	1	NCA SOP	09/09/02	09/10/02	2090273	
MBHA2-1 (P2I0173-03) Soil					Sampled: 09/05/02	Received: 09/06/02			
% Solids	**72.7**	1.00	% by Weight	1	NCA SOP	09/09/02	09/10/02	2090273	
MBHA1-1 (P2I0173-04) Soil					Sampled: 09/05/02	Received: 09/06/02			
% Solids	**78.4**	1.00	% by Weight	1	NCA SOP	09/09/02	09/10/02	2090273	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090399 - EPA 3550 Fuels										
Blank (2090399-BLK1)				Prepared: 09/11/02		Analyzed: 09/12/02				
Diesel Range Organics	ND	25.0	mg/kg							
Heavy Oil Range Hydrocarbons	ND	50.0	"							
Surr: 1-Chlorooctadecane	*3.08*		"	*4.80*		*64.2*	*50-150*			
LCS (2090399-BS1)				Prepared: 09/11/02		Analyzed: 09/12/02				
Diesel Range Organics	124	25.0	mg/kg	125		99.2	50-150			
Heavy Oil Range Hydrocarbons	79.3	50.0	"	75.0		106	50-150			
Surr: 1-Chlorooctadecane	*4.12*		"	*4.80*		*85.8*	*50-150*			
Duplicate (2090399-DUP1)		**Source: P2I0260-01**		Prepared: 09/11/02		Analyzed: 09/12/02				
Diesel Range Organics	ND	25.0	mg/kg dry		ND				50	
Heavy Oil Range Hydrocarbons	ND	50.0	"		ND				50	
Surr: 1-Chlorooctadecane	*3.85*		"	*5.86*		*65.7*	*50-150*			
Duplicate (2090399-DUP2)		**Source: P2I0173-01**		Prepared: 09/11/02		Analyzed: 09/12/02				
Diesel Range Organics	27.7	25.0	mg/kg dry		27.3			1.45	50	
Heavy Oil Range Hydrocarbons	ND	50.0	"		ND			2.27	50	
Surr: 1-Chlorooctadecane	*5.76*		"	*6.21*		*92.8*	*50-150*			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

Percent Dry Weight (Solids) per Standard Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090273 - Dry Weight										
Duplicate (2090273-DUP1)		**Source: P2I0157-02**		Prepared: 09/09/02	Analyzed: 09/10/02					
% Solids	91.7	1.00	% by Weight		91.8			0.109	20	
Duplicate (2090273-DUP2)		**Source: P2I0166-08**		Prepared: 09/09/02	Analyzed: 09/10/02					
% Solids	74.2	1.00	% by Weight		74.3			0.135	20	
Duplicate (2090273-DUP3)		**Source: P2I0174-03**		Prepared: 09/09/02	Analyzed: 09/10/02					
% Solids	97.8	1.00	% by Weight		98.0			0.204	20	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/13/02 16:17

Notes and Definitions

D-17	Detected hydrocarbons in the diesel range do not have a distinct diesel pattern and may be due to heavily weathered diesel or possibly biogenic interference.
S-08	Surrogate recovery is above control limits. Since no analytes were detected in the sample, the quality of the data has not been affected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%.
wet	Sample results reported on a wet weight basis (as received)
RPD	Relative Percent Difference

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CHAIN OF CUSTODY REPORT

Work Order #: P2I0173

CLIENT:

REPORT TO: Rod Struck - DEQ, NWR
ADDRESS: 2020 SW 4th Suite 400
Portland OR 97201
PHONE: 503-229-5562 FAX: 503-229-6945

INVOICE TO: Rod Struck - DEQ NWR
2020 SW 4th Suite 400
Portland OR 97201

P.O. NUMBER: 122136

PROJECT NAME: McCormick + Baxter
PROJECT NUMBER:
SAMPLED BY: Rod Struck

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1

OTHER ~~Please Specify~~

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	TPH-DX	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1. MBHA1-3	9/5/02 12:28	↓	Soil	1		
2. MBHA2-2	↓ 12:48	↓	↓	↓		
3. MBHA2-1	↓ 13:00	↓	↓	↓		
4. MBHA1-1	↓ 13:10	↓	↓	↓		
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						

RELINQUISHED BY: PRINT NAME: Kenneth A. Cannon FIRM: DEQ DATE: 9/6/02 TIME: 10:00
RECEIVED BY: PRINT NAME: [signature] FIRM: NCA DATE: 9-6-02 TIME: 1000

RELINQUISHED BY: PRINT NAME: FIRM: DATE: TIME:
RECEIVED BY: PRINT NAME: Erica Dakan FIRM: NCA DATE: 9/6/02 TIME: 1310

Ignore ↑ OC Client SP

ADDITIONAL REMARKS:

TEMP: 6.3

PAGE OF

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CreoDock N Drum	P2I0307-01	Water	09/10/02 17:10	09/12/02 15:15
FWDA-Flux	P2I0307-02	Water	09/10/02 15:15	09/12/02 15:15
CreoDock S Drum	P2I0307-03	Water	09/10/02 15:27	09/12/02 15:15
WC1-Flux	P2I0307-04	Water	09/10/02 14:10	09/12/02 15:15
WC-Blue-Flux	P2I0307-05	Water	09/11/02 08:15	09/12/02 15:15
CreoDock North-Flux	P2I0307-06	Water	09/11/02 07:10	09/12/02 15:15

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			**R-05**
Acenaphthene	**14.7**	1.00	ug/l	10	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	1.00	"	"	"	"	"	"	
Anthracene	ND	1.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	1.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.00	"	"	"	"	"	"	
Chrysene	ND	1.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	1.00	"	"	"	"	"	"	
Fluorene	**1.59**	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	1.00	"	"	"	"	"	"	
Pyrene	ND	1.00	"	"	"	"	"	"	
Surr: Fluorene-d10	*29.1 %*	*25-125*							
Surr: Pyrene-d10	*45.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*41.1 %*	*10-125*							
FWDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*33.4 %*	*25-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
FWDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			
Surr: Pyrene-d10	*46.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*39.3 %*	*10-125*							
CreoDock S Drum (P2I0307-03) Water					Sampled: 09/10/02	Received: 09/12/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.151**	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*32.1 %*	*25-125*							
Surr: Pyrene-d10	*50.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*43.0 %*	*10-125*							
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			R-05
Acenaphthene	**71.8**	2.50	ug/l	25	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	2.50	"	"	"	"	"	"	
Anthracene	**4.62**	2.50	"	"	"	"	"	"	
Benzo (a) anthracene	ND	2.50	"	"	"	"	"	"	
Benzo (a) pyrene	ND	2.50	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	2.50	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	2.50	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	2.50	"	"	"	"	"	"	
Chrysene	ND	2.50	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Fluoranthene	**6.05**	2.50	"	"	"	"	"	"	
Fluorene	**31.8**	2.50	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	2.50	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**R-05**
Naphthalene	ND	2.50	ug/l	25	EPA 8270m	09/13/02	09/23/02	2090518	
Phenanthrene	ND	2.50	"	"	"	"	"	"	
Pyrene	**3.44**	2.50	"	"	"	"	"	"	
Surr: Fluorene-d10	*41.0 %*	*25-125*							
Surr: Pyrene-d10	*50.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*36.0 %*	*10-125*							
WC-Blue-Flux (P2I0307-05) Water					Sampled: 09/11/02	Received: 09/12/02			
Acenaphthene	**0.564**	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.188**	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.405**	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	**0.251**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*28.7 %*	*25-125*							
Surr: Pyrene-d10	*43.5 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*38.0 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock North-Flux (P210307-06) Water					Sampled: 09/11/02	Received: 09/12/02			
Acenaphthene	**18.1**	1.00	ug/l	10	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.217**	0.100	"	1	"	"	09/23/02	"	
Anthracene	**0.222**	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.227**	0.100	"	"	"	"	"	"	
Fluorene	**1.64**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.400	"	"	"	"	"	"	R
Phenanthrene	**0.637**	0.100	"	"	"	"	"	"	
Pyrene	**0.120**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*34.8 %*	*25-125*							
Surr: Pyrene-d10	*51.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*49.4 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090518 - EPA 3520/600 Series										
Blank (2090518-BLK1)				Prepared: 09/13/02 Analyzed: 09/20/02						
Acenaphthene	ND	0.100	ug/l							
Acenaphthylene	ND	0.100	"							
Anthracene	ND	0.100	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (a) pyrene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.100	"							
Benzo (ghi) perylene	ND	0.100	"							
Benzo (k) fluoranthene	ND	0.100	"							
Chrysene	ND	0.100	"							
Dibenzo (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	0.100	"							
[illegible]ene	ND	0.100	"							
Indeno (1,2,3-cd) pyrene	ND	0.100	"							
Naphthalene	ND	0.100	"							
Phenanthrene	ND	0.100	"							
Pyrene	ND	0.100	"							
Surr: Fluorene-d10	*0.861*		"	*2.50*		*34.4*	*25-125*			
Surr: Pyrene-d10	*1.05*		"	*2.50*		*42.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.829*		"	*2.50*		*33.2*	*10-125*			
LCS (2090518-BS1)				Prepared: 09/13/02 Analyzed: 09/20/02						
Acenaphthene	1.02	0.100	ug/l	2.50		40.8	26-135			
Benzo (a) pyrene	1.01	0.100	"	2.50		40.4	38-137			
Pyrene	0.930	0.100	"	2.50		37.2	33-133			
Surr: Fluorene-d10	*0.900*		"	*2.50*		*36.0*	*25-125*			
Surr: Pyrene-d10	*1.05*		"	*2.50*		*42.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.02*		"	*2.50*		*40.8*	*10-125*			

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Project Manager

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	09/27/02 09:42

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090518 - EPA 3520/600 Series										
LCS Dup (2090518-BSD1)				Prepared: 09/13/02 Analyzed: 09/23/02						
Acenaphthene	0.926	0.100	ug/l	2.50		37.0	26-135	9.66	60	
Benzo (a) pyrene	0.960	0.100	"	2.50		38.4	38-137	5.08	60	
Pyrene	0.964	0.100	"	2.50		38.6	33-133	3.59	60	
Surr: Fluorene-d10	*0.863*		"	*2.50*		*34.5*	*25-125*			
Surr: Pyrene-d10	*1.09*		"	*2.50*		*43.6*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.959*		"	*2.50*		*38.4*	*10-125*			

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DEQ-Portland 2020 SW 4th Suite 400 Portland, OR 97201	Project: McCormick & Baxter Project Number: 122136 Project Manager: Rod Struck	**Reported:** 09/27/02 09:42

Notes and Definitions

R-03	The reporting limit for this analyte was raised due to matrix interference.
R-05	Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%.
wet	Sample results reported on a wet weight basis (as received)
RPD	Relative Percent Difference

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CHAIN OF CUSTODY REPORT

Work Order #: P2I0307

CLIENT: DEQ
REPORT TO: Rod Struck
ADDRESS: DEQ/NWR 2020 SW 4th Suite 400, PHD
PHONE: (503) 229-5562 FAX:

INVOICE TO: Kevin Parrett DEQ/NWR 2020 SW 4th Suite 400 PHD OR 97201

P.O. NUMBER:

PROJECT NAME: McCormick & Baxter
PROJECT NUMBER:
SAMPLED BY: Struck / Anderson

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 7 5 4 3 2 1 <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 4 3 2 1 <1 (STD.)
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PAHs 8270-SIM													MATRIX (W. S. O)	# OF CONT.	COMMENTS	NCA WO ID
1. CreoDock N Drum	9/10/02 17:10	X																
2. FWDA-Flux	9/10/02 15:15	X																
3. CreoDock S Drum	9/10/02 15:27	X																
4. WC1-Flux	9/10/02 14:10	X																
5. WC-Blue-Flux	9/11/02 0815	X																
6. CreoDock North-Flux	9/11/02 0710	X																
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
13.																		
14.																		
15.																		

RELINQUISHED BY: Rodney G Struck DATE: 9/11/02
PRINT NAME: Rodney G. Struck FIRM: DEQ TIME: 12:30 pm
RECEIVED BY: [signature] DATE: 9-11-02
PRINT NAME: Tammy Elston FIRM: NCA TIME: 1400

RELINQUISHED BY: [signature] DATE: 9-11-02
PRINT NAME: FIRM: TIME:
RECEIVED BY: Erica Dakan DATE: 9/11/02
PRINT NAME: Erica Dakan FIRM: NCA TIME: 1515

ADDITIONAL REMARKS:

TEMP 11

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CreoDock N Drum	P2I0307-01	Water	09/10/02 17:10	09/12/02 15:15
FWDA-Flux	P2I0307-02	Water	09/10/02 15:15	09/12/02 15:15
CreoDock S Drum	P2I0307-03	Water	09/10/02 15:27	09/12/02 15:15
WC1-Flux	P2I0307-04	Water	09/10/02 14:10	09/12/02 15:15
WC-Blue-Flux	P2I0307-05	Water	09/11/02 08:15	09/12/02 15:15
CreoDock North-Flux	P2I0307-06	Water	09/11/02 07:10	09/12/02 15:15

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			
Diesel Range Organics	**0.208**	0.0483	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01,D-15
Heavy Oil Range Hydrocarbons	ND	0.0966	"	"	"	"	"	"	A-01
FWDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			
Diesel Range Organics	**0.0610**	0.0478	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01,D-15
Heavy Oil Range Hydrocarbons	ND	0.0957	"	"	"	"	"	"	A-01
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			
Diesel Range Organics	**1.10**	0.0478	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01,D-15
Heavy Oil Range Hydrocarbons	**0.128**	0.0957	"	"	"	"	"	"	A-01,D-15
CreoDock North-Flux (P2I0307-06) Water					Sampled: 09/11/02	Received: 09/12/02			
Diesel Range Organics	**0.201**	0.0510	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01,D
Heavy Oil Range Hydrocarbons	ND	0.102	"	"	"	"	"	"	A-

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DEQ-Portland 2020 SW 4th Suite 400 Portland, OR 97201	Project: McCormick & Baxter Project Number: 122136 Project Manager: Rod Struck	**Reported:** 10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Acenaphthene	**17.3**	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
[illegible]loroaniline	ND	20.0	"	"	"	"	"	"	
[illegible](2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

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Lisa Domenighini, Project Manager

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Fluorene	ND	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
FWDA-Flux (P210307-02) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Acenaphthene	ND	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
[illegible]loroaniline	ND	20.0	"	"	"	"	"	"	
[illegible](2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

[illegible]th Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Project Manager

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
FWDA-Flux (P210307-02) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Fluorene	ND	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	Reported:
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
VC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Acenaphthene	**70.7**	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	**5.31**	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
4-Chloroaniline	ND	20.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	**29.1**	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	**7.13**	5.00	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
Fluorene	**41.7**	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	

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DEQ-Portland 2020 SW 4th Suite 400 Portland, OR 97201	Project: McCormick & Baxter Project Number: 122136 Project Manager: Rod Struck	**Reported:** 10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock North-Flux (P2I0307-06) Water					Sampled: 09/11/02	Received: 09/12/02			**A-01a**
Acenaphthene	**22.1**	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	
Anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	5.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	5.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	5.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	5.00	"	"	"	"	"	"	
Benzoic Acid	ND	50.0	"	"	"	"	"	"	
Benzyl alcohol	ND	10.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	5.00	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	5.00	"	"	"	"	"	"	
[illegible]loroaniline	ND	20.0	"	"	"	"	"	"	
[illegible]is(2-chloroethoxy)methane	ND	10.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	5.00	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	10.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	5.00	"	"	"	"	"	"	
2-Chlorophenol	ND	5.00	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	5.00	"	"	"	"	"	"	
Chrysene	ND	5.00	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	5.00	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	5.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Dibenzofuran	ND	5.00	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	5.00	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.00	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.00	"	"	"	"	"	"	
Diethyl phthalate	ND	5.00	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	5.00	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	25.0	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	5.00	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	5.00	"	"	"	"	"	"	

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Project Manager

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock North-Flux (P2I0307-06) Water					Sampled: 09/11/02	Received: 09/12/02			**A-01a**
Fluorene	ND	5.00	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
Hexachlorobenzene	ND	5.00	"	"	"	"	"	"	
Hexachlorobutadiene	ND	10.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	10.0	"	"	"	"	"	"	
Hexachloroethane	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	5.00	"	"	"	"	"	"	
Isophorone	ND	5.00	"	"	"	"	"	"	
2-Methylnaphthalene	ND	5.00	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3-,4-Methylphenol	ND	5.00	"	"	"	"	"	"	
Naphthalene	ND	5.00	"	"	"	"	"	"	
2-Nitroaniline	ND	5.00	"	"	"	"	"	"	
3-Nitroaniline	ND	10.0	"	"	"	"	"	"	
4-Nitroaniline	ND	10.0	"	"	"	"	"	"	
Nitrobenzene	ND	5.00	"	"	"	"	"	"	
2-Nitrophenol	ND	5.00	"	"	"	"	"	"	
4-Nitrophenol	ND	25.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	10.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	5.00	"	"	"	"	"	"	
Pentachlorophenol	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	5.00	"	"	"	"	"	"	
Phenol	ND	5.00	"	"	"	"	"	"	
Pyrene	ND	5.00	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	5.00	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	5.00	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.00	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Tentatively Identified Compounds per GC/MS (estimated concentrations)

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
No TICS identified	ND	10.0	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
WDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
No TICS identified	ND	10.0	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
VC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**A-01a**
-Methylnaphthalene	**19.8**	10.0	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	
2,3-dihydro-1H-Inden-1-ol	**38.3**	10.0	"	"	"	"	"	"	
2,3-Dihydro-1H-Indene	**45.5**	10.0	"	"	"	"	"	"	
Carbazole	**13.9**	10.0	"	"	"	"	"	"	
dimethylnaphthalene isomer @ 16.18	**15.6**	10.0	"	"	"	"	"	"	
dimethylnaphthalene isomer @ 16.39	**19.5**	10.0	"	"	"	"	"	"	
ethylbenzene isomer	**11.2**	10.0	"	"	"	"	"	"	
nown @ 18.45	**12.6**	10.0	"	"	"	"	"	"	
unknown aromatic hydrocarbon @ 12.44	**19.2**	10.0	"	"	"	"	"	"	
nknown substituted aromatic ydrocarbon	**29.3**	10.0	"	"	"	"	"	"	
CreoDock North-Flux (P2I0307-06) Water					Sampled: 09/11/02	Received: 09/12/02			**A-01a**
No TICS identified	ND	10.0	ug/l	1	EPA 8270C	09/13/02	10/10/02	2100425	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock N Drum (P2I0307-01) Water					Sampled: 09/10/02	Received: 09/12/02			**R-05**
Acenaphthene	**14.7**	1.00	ug/l	10	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	1.00	"	"	"	"	"	"	
Anthracene	ND	1.00	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.00	"	"	"	"	"	"	
Benzo (a) pyrene	ND	1.00	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.00	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.00	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.00	"	"	"	"	"	"	
Chrysene	ND	1.00	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	2.00	"	"	"	"	"	"	
Fluoranthene	ND	1.00	"	"	"	"	"	"	
Fluorene	**1.59**	1.00	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	1.00	"	"	"	"	"	"	
Pyrene	ND	1.00	"	"	"	"	"	"	
Surr: Fluorene-d10	*29.1 %*	*25-125*							
Surr: Pyrene-d10	*45.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*41.1 %*	*10-125*							
FWDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*33.4 %*	*25-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
FWDA-Flux (P2I0307-02) Water					Sampled: 09/10/02	Received: 09/12/02			
Surr: Pyrene-d10	*46.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*39.3 %*	*10-125*							
CreoDock S Drum (P2I0307-03) Water					Sampled: 09/10/02	Received: 09/12/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.151**	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*32.1 %*	*25-125*							
Surr: Pyrene-d10	*50.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*43.0 %*	*10-125*							
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**R-05**
Acenaphthene	**71.8**	2.50	ug/l	25	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	ND	2.50	"	"	"	"	"	"	
Anthracene	**4.62**	2.50	"	"	"	"	"	"	
Benzo (a) anthracene	ND	2.50	"	"	"	"	"	"	
Benzo (a) pyrene	ND	2.50	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	2.50	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	2.50	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	2.50	"	"	"	"	"	"	
Chrysene	ND	2.50	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	5.00	"	"	"	"	"	"	
Fluoranthene	**6.05**	2.50	"	"	"	"	"	"	
Fluorene	**31.8**	2.50	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	2.50	"	"	"	"	"	"	

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
WC1-Flux (P2I0307-04) Water					Sampled: 09/10/02	Received: 09/12/02			**R-05**
Naphthalene	ND	2.50	ug/l	25	EPA 8270m	09/13/02	09/23/02	2090518	
Phenanthrene	ND	2.50	"	"	"	"	"	"	
Pyrene	**3.44**	2.50	"	"	"	"	"	"	
Surr: Fluorene-d10	*41.0 %*	*25-125*							
Surr: Pyrene-d10	*50.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*36.0 %*	*10-125*							
WC-Blue-Flux (P2I0307-05) Water					Sampled: 09/11/02	Received: 09/12/02			
Acenaphthene	**0.564**	0.100	ug/l	1	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.188**	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.405**	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	ND	0.100	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	**0.251**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*28.7 %*	*25-125*							
Surr: Pyrene-d10	*43.5 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*38.0 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
CreoDock North-Flux (P210307-06) Water					Sampled: 09/11/02	Received: 09/12/02			
Acenaphthene	**18.1**	1.00	ug/l	10	EPA 8270m	09/13/02	09/23/02	2090518	
Acenaphthylene	**0.217**	0.100	"	1	"	"	09/23/02	"	
Anthracene	**0.222**	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.227**	0.100	"	"	"	"	"	"	
Fluorene	**1.64**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
[illegible]thalene	ND	0.400	"	"	"	"	"	"	R-03
Phenanthrene	**0.637**	0.100	"	"	"	"	"	"	
Pyrene	**0.120**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*34.8 %*	*25-125*							
Surr: Pyrene-d10	*51.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*49.4 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100533 - EPA 3510 Fuels										
Blank (2100533-BLK1)				Prepared: 09/13/02 Analyzed: 10/22/02						
Diesel Range Organics	ND	0.0500	mg/l							A-01
Heavy Oil Range Hydrocarbons	ND	0.100	"							A-01

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						
Acenaphthene	ND	5.00	ug/l							
Acenaphthylene	ND	5.00	"							
Anthracene	ND	5.00	"							
Benzo (a) anthracene	ND	5.00	"							
Benzo (a) pyrene	ND	5.00	"							
Benzo (b) fluoranthene	ND	5.00	"							
Benzo (ghi) perylene	ND	5.00	"							
Benzo (k) fluoranthene	ND	5.00	"							
Benzoic Acid	ND	50.0	"							
Benzyl alcohol	ND	10.0	"							
4-Bromophenyl phenyl ether	ND	5.00	"							
Butylbenzyl phthalate	ND	5.00	"							
4-Chloro-3-methylphenol	ND	5.00	"							
4-Chloroaniline	ND	20.0	"							
Bis(2-chloroethoxy)methane	ND	10.0	"							
Bis(2-chloroethyl)ether	ND	5.00	"							
Bis(2-chloroisopropyl)ether	ND	10.0	"							
2-Chloronaphthalene	ND	5.00	"							
2-Chlorophenol	ND	5.00	"							
4-Chlorophenyl phenyl ether	ND	5.00	"							
Chrysene	ND	5.00	"							
Di-n-butyl phthalate	ND	5.00	"							
Di-n-octyl phthalate	ND	5.00	"							
Dibenzo (a,h) anthracene	ND	5.00	"							
Dibenzofuran	ND	5.00	"							
1,2-Dichlorobenzene	ND	5.00	"							
1,3-Dichlorobenzene	ND	5.00	"							
1,4-Dichlorobenzene	ND	5.00	"							
3,3'-Dichlorobenzidine	ND	5.00	"							
2,4-Dichlorophenol	ND	5.00	"							
Diethyl phthalate	ND	5.00	"							
2,4-Dimethylphenol	ND	10.0	"							
Dimethyl phthalate	ND	5.00	"							
4,6-Dinitro-2-methylphenol	ND	10.0	"							
2,4-Dinitrophenol	ND	25.0	"							
2,4-Dinitrotoluene	ND	5.00	"							

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						
2,6-Dinitrotoluene	ND	5.00	ug/l							
Bis(2-ethylhexyl)phthalate	ND	10.0	"							
Fluoranthene	ND	5.00	"							
Fluorene	ND	5.00	"							
Hexachlorobenzene	ND	5.00	"							
Hexachlorobutadiene	ND	10.0	"							
Hexachlorocyclopentadiene	ND	10.0	"							
Hexachloroethane	ND	10.0	"							
Indeno (1,2,3-cd) pyrene	ND	5.00	"							
Isophorone	ND	5.00	"							
2-Methylnaphthalene	ND	5.00	"							
2-Methylphenol	ND	10.0	"							
3-,4-Methylphenol	ND	5.00	"							
Naphthalene	ND	5.00	"							
2-Nitroaniline	ND	5.00	"							
3-Nitroaniline	ND	10.0	"							
4-Nitroaniline	ND	10.0	"							
Nitrobenzene	ND	5.00	"							
2-Nitrophenol	ND	5.00	"							
4-Nitrophenol	ND	25.0	"							
N-Nitrosodi-n-propylamine	ND	10.0	"							
N-Nitrosodiphenylamine	ND	5.00	"							
Pentachlorophenol	ND	10.0	"							
Phenanthrene	ND	5.00	"							
Phenol	ND	5.00	"							
Pyrene	ND	5.00	"							
1,2,4-Trichlorobenzene	ND	5.00	"							
2,4,5-Trichlorophenol	ND	5.00	"							
2,4,6-Trichlorophenol	ND	5.00	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01a**
Acenaphthene	ND	1.25	ug/l							
Acenaphthylene	ND	1.25	"							
Anthracene	ND	1.25	"							
Benzo (a) anthracene	ND	1.25	"							
Benzo (a) pyrene	ND	1.25	"							
Benzo (b) fluoranthene	ND	1.25	"							
Benzo (ghi) perylene	ND	1.25	"							
Benzo (k) fluoranthene	ND	1.25	"							
Benzoic Acid	ND	12.5	"							
Benzyl alcohol	ND	2.50	"							
4-Bromophenyl phenyl ether	ND	1.25	"							
Butyl benzyl phthalate	ND	1.25	"							
4-Chloro-3-methylphenol	ND	1.25	"							
4-Chloroaniline	ND	5.00	"							
Bis(2-chloroethoxy)methane	ND	2.50	"							
Bis(2-chloroethyl)ether	ND	1.25	"							
Bis(2-chloroisopropyl)ether	ND	2.50	"							
2-Chloronaphthalene	ND	1.25	"							
2-Chlorophenol	ND	1.25	"							
4-Chlorophenyl phenyl ether	ND	1.25	"							
Chrysene	ND	1.25	"							
Di-n-butyl phthalate	ND	1.25	"							
Di-n-octyl phthalate	ND	1.25	"							
Dibenzo (a,h) anthracene	ND	1.25	"							
Dibenzofuran	ND	1.25	"							
1,2-Dichlorobenzene	ND	1.25	"							
1,3-Dichlorobenzene	ND	1.25	"							
1,4-Dichlorobenzene	ND	1.25	"							
3,3'-Dichlorobenzidine	ND	1.25	"							
2,4-Dichlorophenol	ND	1.25	"							
Diethyl phthalate	ND	1.25	"							
2,4-Dimethylphenol	ND	2.50	"							
Dimethyl phthalate	ND	1.25	"							
4,6-Dinitro-2-methylphenol	ND	2.50	"							
2,4-Dinitrophenol	ND	6.25	"							
2,4-Dinitrotoluene	ND	1.25	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01a**
2,6-Dinitrotoluene	ND	1.25	ug/l							
Bis(2-ethylhexyl)phthalate	ND	2.50	"							
Fluoranthene	ND	1.25	"							
Fluorene	ND	1.25	"							
Hexachlorobenzene	ND	1.25	"							
Hexachlorobutadiene	ND	2.50	"							
Hexachlorocyclopentadiene	ND	2.50	"							
Hexachloroethane	ND	2.50	"							
Indeno (1,2,3-cd) pyrene	ND	1.25	"							
Isophorone	ND	1.25	"							
2-Methylnaphthalene	ND	1.25	"							
2-Methylphenol	ND	2.50	"							
3-,4-Methylphenol	ND	1.25	"							
Naphthalene	ND	1.25	"							
2-Nitroaniline	ND	1.25	"							
3-Nitroaniline	ND	2.50	"							
4-Nitroaniline	ND	2.50	"							
Nitrobenzene	ND	1.25	"							
2-Nitrophenol	ND	1.25	"							
4-Nitrophenol	ND	6.25	"							
N-Nitrosodi-n-propylamine	ND	2.50	"							
N-Nitrosodiphenylamine	ND	1.25	"							
Pentachlorophenol	ND	2.50	"							
Phenanthrene	ND	1.25	"							
Phenol	ND	1.25	"							
Pyrene	ND	1.25	"							
1,2,4-Trichlorobenzene	ND	1.25	"							
2,4,5-Trichlorophenol	ND	1.25	"							
2,4,6-Trichlorophenol	ND	1.25	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Tentatively Identified Compounds per GC/MS (estimated concentrations) - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						**A-01a**
No TICS identified	ND	10.0	ug/l							
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01a**
No TICS identified	ND	2.50	ug/l							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090518 - EPA 3520/600 Series										
Blank (2090518-BLK1)				Prepared: 09/13/02 Analyzed: 09/20/02						
Acenaphthene	ND	0.100	ug/l							
Acenaphthylene	ND	0.100	"							
Anthracene	ND	0.100	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (a) pyrene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.100	"							
Benzo (ghi) perylene	ND	0.100	"							
Benzo (k) fluoranthene	ND	0.100	"							
Chrysene	ND	0.100	"							
Dibenzo (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	0.100	"							
Fluorene	ND	0.100	"							
Indeno (1,2,3-cd) pyrene	ND	0.100	"							
Naphthalene	ND	0.100	"							
Phenanthrene	ND	0.100	"							
Pyrene	ND	0.100	"							
Surr: Fluorene-d10	*0.861*		"	*2.50*		*34.4*	*25-125*			
Surr: Pyrene-d10	*1.05*		"	*2.50*		*42.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.829*		"	*2.50*		*33.2*	*10-125*			
LCS (2090518-BS1)				Prepared: 09/13/02 Analyzed: 09/20/02						
Acenaphthene	1.02	0.100	ug/l	2.50		40.8	26-135			
Benzo (a) pyrene	1.01	0.100	"	2.50		40.4	38-137			
Pyrene	0.930	0.100	"	2.50		37.2	33-133			
Surr: Fluorene-d10	*0.900*		"	*2.50*		*36.0*	*25-125*			
Surr: Pyrene-d10	*1.05*		"	*2.50*		*42.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.02*		"	*2.50*		*40.8*	*10-125*			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090518 - EPA 3520/600 Series										
LCS Dup (2090518-BSD1)				Prepared: 09/13/02 Analyzed: 09/23/02						
Acenaphthene	0.926	0.100	ug/l	2.50		37.0	26-135	9.66	60	
Benzo (a) pyrene	0.960	0.100	"	2.50		38.4	38-137	5.08	60	
Pyrene	0.964	0.100	"	2.50		38.6	33-133	3.59	60	
Surr: Fluorene-d10	*0.863*		"	*2.50*		*34.5*	*25-125*			
Surr: Pyrene-d10	*1.09*		"	*2.50*		*43.6*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.959*		"	*2.50*		*38.4*	*10-125*			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:27

Notes and Definitions

A-01	8270 SIM extract.
A-01a	SIM extracts.
D-15	Detected hydrocarbons have non-petroleum peaks or elution pattern that suggests the presence of biogenic interference.
R-03	The reporting limit for this analyte was raised due to matrix interference.
R-05	Reporting limits raised due to dilution necessary for analysis. Sample contains high levels of reported analyte, non-target analyte, and/or matrix interference.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%.
wet	Sample results reported on a wet weight basis (as received)
RPD	Relative Percent Difference

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CHAIN OF CUSTODY REPORT

Work Order #: P2I0307

CLIENT: DEQ

REPORT TO: Rod Struck

ADDRESS: DEQ/NWR 2020 SW 4th Suite 400, PHD

PHONE: (503) 229-5562 FAX:

INVOICE TO: Kevin Parrett DEQ/NWR 2020 SW 4th Suite 400 PHD OR 97201

P.O. NUMBER:

PROJECT NAME: McCormick & Baxter

PROJECT NUMBER:

SAMPLED BY: Struck / Anderson

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: 10 (STD.) | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 (STD.) | 4 | 3 | 2 | 1 | <1

OTHER Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PAHs 8270-SIM													MATRIX (W. S. O)	# OF CONT.	COMMENTS	NCA WO ID
1. CreoDock N Drum	9/10/02 17:10	X																
2. FWDA-Flux	9/10/02 15:15	X																
3. CreoDock S Drum	9/10/02 15:27	X																
4. WC1-Flux	9/10/02 14:10	X																
5. WC-Blue-Flux	9/11/02 0815	X																
6. CreoDock North-Flux	9/11/02 0710	X																
7.																		
8.																		
9.																		
10.																		
11.																		
12.																		
13.																		
14.																		
15.																		

RELINQUISHED BY: Rodney G. Struck	DATE: 9/11/02	RECEIVED BY: [signature]	DATE: 9-11-02
PRINT NAME: Rodney G. Struck FIRM: DEQ	TIME: 12:30 pm	PRINT NAME: Tammy Elston FIRM: NCA	TIME: 1400
RELINQUISHED BY: [signature]	DATE: 9-11-02	RECEIVED BY: Erica Dakan	DATE: 9/11/02
PRINT NAME: FIRM:	TIME:	PRINT NAME: Erica Dakan FIRM: NCA	TIME: 1515

ADDITIONAL REMARKS:

TEMP: 11.2°C

PAGE OF

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPMD #1	P2I0348-01	Water	09/12/02 10:00	09/12/02 18:43
SPMD #2	P2I0348-02	Water	09/12/02 10:55	09/12/02 18:43
SPMD #20	P2I0348-03	Water	09/12/02 13:40	09/12/02 18:43
SPMD #15	P2I0348-04	Water	09/12/02 15:00	09/12/02 18:43
SPMD #15 DUP	P2I0348-05	Water	09/12/02 15:00	09/12/02 18:43
SPMD #11	P2I0348-06	Water	09/12/02 16:00	09/12/02 18:43
SPMD #5	P2I0348-07	Water	09/12/02 17:10	09/12/02 18:43
SPMD #1 (Filtered)	P2I0348-08	Water	09/12/02 10:00	09/12/02 18:43
SPMD #2 (Filtered)	P2I0348-09	Water	09/12/02 10:55	09/12/02 18:43
SPMD #20 (Filtered)	P2I0348-10	Water	09/12/02 13:40	09/12/02 18:43
SPMD #15 (Filtered)	P2I0348-11	Water	09/12/02 15:00	09/12/02 18:43
SPMD #15 DUP (Filtered)	P2I0348-12	Water	09/12/02 15:00	09/12/02 18:43
SPMD #11 (Filtered)	P2I0348-13	Water	09/12/02 16:00	09/12/02 18:43
SPMD #5 (Filtered)	P2I0348-14	Water	09/12/02 17:10	09/12/02 18:43

This report is not complete without the analytical results for Arsenic III, that was subcontracted to Brooks Rand, Seattle, WA.

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NORTHWEST REGION

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			
Diesel Range Organics	ND	0.0253	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01
Heavy Oil Range Hydrocarbons	ND	0.0506	"	"	"	"	"	"	A-01
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Diesel Range Organics	ND	0.0249	mg/l	1	NWTPH-Dx	09/13/02	10/22/02	2100533	A-01
Heavy Oil Range Hydrocarbons	ND	0.0498	"	"	"	"	"	"	A-01

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #1 (P2I0348-01) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	ND	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.00376**	0.00200	"	"	"	"	"	"	
Zinc	**0.00767**	0.00500	"	"	"	"	"	"	
SPMD #2 (P2I0348-02) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	ND	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.00207**	0.00200	"	"	"	"	"	"	
Zinc	**0.00509**	0.00500	"	"	"	"	"	"	
SPMD #20 (P2I0348-03) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	ND	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.00362**	0.00200	"	"	"	"	"	"	
Zinc	**0.00710**	0.00500	"	"	"	"	"	"	
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	ND	0.00100	"	"	"	"	09/18/02	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	**0.00300**	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.00951**	0.00200	"	"	"	"	"	"	
Zinc	**0.0221**	0.00500	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #11 (P2I0348-06) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	**0.00101**	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.0256**	0.00200	"	"	"	"	"	"	
Zinc	**0.0169**	0.00500	"	"	"	"	"	"	
SPMD #5 (P2I0348-07) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/17/02	09/19/02	2090676	
Chromium	ND	0.00100	"	"	"	"	09/18/02	"	
Copper	**0.00584**	0.00200	"	"	"	"	"	"	
Zinc	**0.00602**	0.00500	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Dissolved Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #1 (P2I0348-01) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00257**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #2 (P2I0348-02) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	**0.00121**	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00177**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #20 (P2I0348-03) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00191**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00141**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00147**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Dissolved Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #11 (P2I0348-06) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00217**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
SPMD #5 (P2I0348-07) Water					Sampled: 09/12/02	Received: 09/12/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	09/23/02	09/23/02	2090904	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	**0.00154**	0.00100	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
Acenaphthene	ND	1.27	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	
Acenaphthylene	ND	1.27	"	"	"	"	"	"	
Anthracene	ND	1.27	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.27	"	"	"	"	"	"	
Benzo (a) pyrene	ND	1.27	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.27	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.27	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.27	"	"	"	"	"	"	
Benzoic Acid	ND	12.7	"	"	"	"	"	"	
Benzyl alcohol	ND	2.53	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	1.27	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	1.27	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	1.27	"	"	"	"	"	"	
4-Chloroaniline	ND	5.06	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	2.53	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	1.27	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	2.53	"	"	"	"	"	"	
2-Chloronaphthalene	ND	1.27	"	"	"	"	"	"	
2-Chlorophenol	ND	1.27	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	1.27	"	"	"	"	"	"	
Chrysene	ND	1.27	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.27	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	1.27	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	1.27	"	"	"	"	"	"	
Dibenzofuran	ND	1.27	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.27	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.27	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.27	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.27	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	1.27	"	"	"	"	"	"	
Diethyl phthalate	ND	1.27	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	2.53	"	"	"	"	"	"	
Dimethyl phthalate	ND	1.27	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	2.53	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	6.33	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	1.27	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	1.27	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.53	"	"	"	"	"	"	
Fluoranthene	ND	1.27	"	"	"	"	"	"	

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
PMD #15 (P210348-04) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
Fluorene	ND	1.27	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	
Hexachlorobenzene	ND	1.27	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.53	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	2.53	"	"	"	"	"	"	
Hexachloroethane	ND	2.53	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.27	"	"	"	"	"	"	
Isophorone	ND	1.27	"	"	"	"	"	"	
2-Methylnaphthalene	ND	1.27	"	"	"	"	"	"	
2-Methylphenol	ND	2.53	"	"	"	"	"	"	
3-,4-Methylphenol	ND	1.27	"	"	"	"	"	"	
Naphthalene	ND	1.27	"	"	"	"	"	"	
2-Nitroaniline	ND	1.27	"	"	"	"	"	"	
3-Nitroaniline	ND	2.53	"	"	"	"	"	"	
4-Nitroaniline	ND	2.53	"	"	"	"	"	"	
Nitrobenzene	ND	1.27	"	"	"	"	"	"	
2-Nitrophenol	ND	1.27	"	"	"	"	"	"	
4-Nitrophenol	ND	6.33	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	2.53	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	1.27	"	"	"	"	"	"	
Pentachlorophenol	ND	2.53	"	"	"	"	"	"	
Phenanthrene	ND	1.27	"	"	"	"	"	"	
Phenol	ND	1.27	"	"	"	"	"	"	
Pyrene	ND	1.27	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.27	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	1.27	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	1.27	"	"	"	"	"	"	

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
Acenaphthene	ND	1.24	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	
Acenaphthylene	ND	1.24	"	"	"	"	"	"	
Anthracene	ND	1.24	"	"	"	"	"	"	
Benzo (a) anthracene	ND	1.24	"	"	"	"	"	"	
Benzo (a) pyrene	ND	1.24	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	1.24	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1.24	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1.24	"	"	"	"	"	"	
Benzoic Acid	ND	12.4	"	"	"	"	"	"	
Benzyl alcohol	ND	2.49	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	1.24	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	1.24	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	1.24	"	"	"	"	"	"	
4-Chloroaniline	ND	4.98	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	2.49	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	1.24	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	2.49	"	"	"	"	"	"	
2-Chloronaphthalene	ND	1.24	"	"	"	"	"	"	
2-Chlorophenol	ND	1.24	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	1.24	"	"	"	"	"	"	
Chrysene	ND	1.24	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	1.24	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	1.24	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	1.24	"	"	"	"	"	"	
Dibenzofuran	ND	1.24	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	1.24	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	1.24	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	1.24	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	1.24	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	1.24	"	"	"	"	"	"	
Diethyl phthalate	ND	1.24	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	2.49	"	"	"	"	"	"	
Dimethyl phthalate	ND	1.24	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	2.49	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	6.22	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	1.24	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	1.24	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	2.49	"	"	"	"	"	"	
Fluoranthene	ND	1.24	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
Fluorene	ND	1.24	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	
Hexachlorobenzene	ND	1.24	"	"	"	"	"	"	
Hexachlorobutadiene	ND	2.49	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	2.49	"	"	"	"	"	"	
Hexachloroethane	ND	2.49	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	1.24	"	"	"	"	"	"	
Isophorone	ND	1.24	"	"	"	"	"	"	
2-Methylnaphthalene	ND	1.24	"	"	"	"	"	"	
2-Methylphenol	ND	2.49	"	"	"	"	"	"	
3-,4-Methylphenol	ND	1.24	"	"	"	"	"	"	
Naphthalene	ND	1.24	"	"	"	"	"	"	
2-Nitroaniline	ND	1.24	"	"	"	"	"	"	
3-Nitroaniline	ND	2.49	"	"	"	"	"	"	
4-Nitroaniline	ND	2.49	"	"	"	"	"	"	
Nitrobenzene	ND	1.24	"	"	"	"	"	"	
2-Nitrophenol	ND	1.24	"	"	"	"	"	"	
4-Nitrophenol	ND	6.22	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	2.49	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	1.24	"	"	"	"	"	"	
Pentachlorophenol	ND	2.49	"	"	"	"	"	"	
Phenanthrene	ND	1.24	"	"	"	"	"	"	
Phenol	ND	1.24	"	"	"	"	"	"	
Pyrene	ND	1.24	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	1.24	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	1.24	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	1.24	"	"	"	"	"	"	

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Tentatively Identified Compounds per GC/MS (estimated concentrations)

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
No TICS identified	ND	2.53	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			**A-01b**
No TICS identified	ND	2.49	ug/l	1	EPA 8270C	09/18/02	10/10/02	2100425	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #1 (P2I0348-01) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0236	ug/l	1	EPA 8270m	09/17/02	09/26/02	2090671	
Acenaphthylene	ND	0.0236	"	"	"	"	"	"	
Anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0236	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0236	"	"	"	"	"	"	
Chrysene	ND	0.0236	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0472	"	"	"	"	"	"	
Fluoranthene	ND	0.0236	"	"	"	"	"	"	
Fluorene	ND	0.0236	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0236	"	"	"	"	"	"	
Naphthalene	ND	0.0236	"	"	"	"	"	"	
Pentachlorophenol	ND	0.236	"	"	"	"	"	"	
Phenanthrene	ND	0.0236	"	"	"	"	"	"	
Pyrene	ND	0.0236	"	"	"	"	"	"	
Surr: Fluorene-d10	*61.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*67.2 %*	*30-150*							
Surr: Pyrene-d10	*60.3 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*7.81 %*	*10-125*							*S-09*
SPMD #2 (P2I0348-02) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0238	ug/l	1	EPA 8270m	09/17/02	09/26/02	2090671	
Acenaphthylene	ND	0.0238	"	"	"	"	"	"	
Anthracene	ND	0.0238	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0238	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0238	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0238	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0238	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0238	"	"	"	"	"	"	
Chrysene	ND	0.0238	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0476	"	"	"	"	"	"	
Fluoranthene	ND	0.0238	"	"	"	"	"	"	
Fluorene	ND	0.0238	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0238	"	"	"	"	"	"	
Naphthalene	ND	0.0238	"	"	"	"	"	"	
Pentachlorophenol	ND	0.238	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #2 (P2I0348-02) Water					Sampled: 09/12/02	Received: 09/12/02			
Phenanthrene	ND	0.0238	ug/l	1	EPA 8270m	09/17/02	09/26/02	2090671	
Pyrene	ND	0.0238	"	"	"	"	"	"	
Surr: Fluorene-d10	*48.7 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*56.6 %*	*30-150*							
Surr: Pyrene-d10	*50.4 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*27.7 %*	*10-125*							
SPMD #20 (P2I0348-03) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0240	ug/l	1	EPA 8270m	09/17/02	09/26/02	2090671	
Acenaphthylene	ND	0.0240	"	"	"	"	"	"	
Anthracene	ND	0.0240	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0240	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0240	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0240	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0240	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0240	"	"	"	"	"	"	
Chrysene	ND	0.0240	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0481	"	"	"	"	"	"	
Fluoranthene	ND	0.0240	"	"	"	"	"	"	
Fluorene	ND	0.0240	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0240	"	"	"	"	"	"	
Naphthalene	ND	0.0240	"	"	"	"	"	"	
Pentachlorophenol	ND	0.240	"	"	"	"	"	"	
Phenanthrene	ND	0.0240	"	"	"	"	"	"	
Pyrene	ND	0.0240	"	"	"	"	"	"	
Surr: Fluorene-d10	*61.1 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*66.0 %*	*30-150*							
Surr: Pyrene-d10	*59.6 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*40.2 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0253	ug/l	1	EPA 8270m	09/18/02	09/26/02	2090710	
Acenaphthylene	ND	0.0253	"	"	"	"	"	"	
Anthracene	ND	0.0253	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0253	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0253	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0253	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0253	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0253	"	"	"	"	"	"	
Chrysene	ND	0.0253	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0506	"	"	"	"	"	"	
Fluoranthene	ND	0.0253	"	"	"	"	"	"	
Fluorene	ND	0.0253	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0253	"	"	"	"	"	"	
Naphthalene	ND	0.0253	"	"	"	"	"	"	
Pentachlorophenol	ND	0.253	"	"	"	"	"	"	
Phenanthrene	ND	0.0253	"	"	"	"	"	"	
Pyrene	ND	0.0253	"	"	"	"	"	"	
Surr: Fluorene-d10	*58.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*83.5 %*	*30-150*							
Surr: Pyrene-d10	*64.1 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*56.9 %*	*10-125*							
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0249	ug/l	1	EPA 8270m	09/18/02	09/26/02	2090710	
Acenaphthylene	ND	0.0249	"	"	"	"	"	"	
Anthracene	ND	0.0249	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0249	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0249	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0249	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0249	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0249	"	"	"	"	"	"	
Chrysene	ND	0.0249	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0498	"	"	"	"	"	"	
Fluoranthene	**0.0313**	0.0249	"	"	"	"	"	"	
Fluorene	ND	0.0249	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0249	"	"	"	"	"	"	
Naphthalene	ND	0.0249	"	"	"	"	"	"	
Pentachlorophenol	ND	0.249	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Phenanthrene	ND	0.0249	ug/l	1	EPA 8270m	09/18/02	09/26/02	2090710	
Pyrene	ND	0.0249	"	"	"	"	"	"	
Surr: Fluorene-d10	*68.5 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*85.5 %*	*30-150*							
Surr: Pyrene-d10	*67.3 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*50.8 %*	*10-125*							
SPMD #11 (P2I0348-06) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0239	ug/l	1	EPA 8270m	09/18/02	09/26/02	2090710	
Acenaphthylene	ND	0.0239	"	"	"	"	"	"	
Anthracene	ND	0.0239	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0239	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0239	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0239	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0239	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0239	"	"	"	"	"	"	
Chrysene	ND	0.0239	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0478	"	"	"	"	"	"	
Fluoranthene	ND	0.0239	"	"	"	"	"	"	
Fluorene	ND	0.0239	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0239	"	"	"	"	"	"	
Naphthalene	ND	0.0239	"	"	"	"	"	"	
Pentachlorophenol	ND	0.239	"	"	"	"	"	"	
Phenanthrene	ND	0.0239	"	"	"	"	"	"	
Pyrene	ND	0.0239	"	"	"	"	"	"	
Surr: Fluorene-d10	*64.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*77.8 %*	*30-150*							
Surr: Pyrene-d10	*63.5 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*55.2 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #5 (P2I0348-07) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0236	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0236	"	"	"	"	"	"	
Anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0236	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0236	"	"	"	"	"	"	
Chrysene	ND	0.0236	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0472	"	"	"	"	"	"	
Fluoranthene	ND	0.0236	"	"	"	"	"	"	
Fluorene	ND	0.0236	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0236	"	"	"	"	"	"	
Naphthalene	ND	0.0236	"	"	"	"	"	"	
Pentachlorophenol	ND	0.236	"	"	"	"	"	"	
Phenanthrene	ND	0.0236	"	"	"	"	"	"	
Pyrene	ND	0.0236	"	"	"	"	"	"	
Surr: Fluorene-d10	*54.3 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*72.3 %*	*30-150*							
Surr: Pyrene-d10	*53.6 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*43.1 %*	*10-125*							
SPMD #1 (Filtered) (P2I0348-08) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0236	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0236	"	"	"	"	"	"	
Anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0236	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0236	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0236	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0236	"	"	"	"	"	"	
Chrysene	ND	0.0236	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0472	"	"	"	"	"	"	
Fluoranthene	ND	0.0236	"	"	"	"	"	"	
Fluorene	ND	0.0236	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0236	"	"	"	"	"	"	
Naphthalene	ND	0.0236	"	"	"	"	"	"	
Pentachlorophenol	ND	0.236	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #1 (Filtered) (P210348-08) Water					Sampled: 09/12/02	Received: 09/12/02			
Phenanthrene	ND	0.0236	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Pyrene	ND	0.0236	"	"	"	"	"	"	
Surr: Fluorene-d10	*60.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*82.3 %*	*30-150*							
Surr: Pyrene-d10	*56.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*46.7 %*	*10-125*							
SPMD #2 (Filtered) (P210348-09) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0248	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0248	"	"	"	"	"	"	
Anthracene	ND	0.0248	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0248	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0248	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0248	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0248	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0248	"	"	"	"	"	"	
Chrysene	ND	0.0248	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0495	"	"	"	"	"	"	
Fluoranthene	ND	0.0248	"	"	"	"	"	"	
Fluorene	ND	0.0248	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0248	"	"	"	"	"	"	
Naphthalene	ND	0.0248	"	"	"	"	"	"	
Pentachlorophenol	ND	0.248	"	"	"	"	"	"	
Phenanthrene	ND	0.0248	"	"	"	"	"	"	
Pyrene	ND	0.0248	"	"	"	"	"	"	
Surr: Fluorene-d10	*65.2 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*77.4 %*	*30-150*							
Surr: Pyrene-d10	*62.6 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*56.1 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	Reported:
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #20 (Filtered) (P2I0348-10) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0242	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0242	"	"	"	"	"	"	
Anthracene	ND	0.0242	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0242	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0242	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0242	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0242	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0242	"	"	"	"	"	"	
Chrysene	ND	0.0242	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0483	"	"	"	"	"	"	
Fluoranthene	ND	0.0242	"	"	"	"	"	"	
Fluorene	ND	0.0242	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0242	"	"	"	"	"	"	
Naphthalene	ND	0.0242	"	"	"	"	"	"	
Pentachlorophenol	ND	0.242	"	"	"	"	"	"	
Phenanthrene	ND	0.0242	"	"	"	"	"	"	
Pyrene	ND	0.0242	"	"	"	"	"	"	
Surr: Fluorene-d10	*61.4 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*78.9 %*	*30-150*							
Surr: Pyrene-d10	*56.3 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*48.8 %*	*10-125*							
SPMD #15 (Filtered) (P2I0348-11) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0256	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0256	"	"	"	"	"	"	
Anthracene	ND	0.0256	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0256	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0256	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0256	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0256	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0256	"	"	"	"	"	"	
Chrysene	ND	0.0256	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0513	"	"	"	"	"	"	
Fluoranthene	ND	0.0256	"	"	"	"	"	"	
Fluorene	ND	0.0256	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0256	"	"	"	"	"	"	
Naphthalene	ND	0.0256	"	"	"	"	"	"	
Pentachlorophenol	ND	0.256	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #15 (Filtered) (P2I0348-11) Water					Sampled: 09/12/02	Received: 09/12/02			
Phenanthrene	ND	0.0256	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Pyrene	ND	0.0256	"	"	"	"	"	"	
Surr: Fluorene-d10	*61.2 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*73.8 %*	*30-150*							
Surr: Pyrene-d10	*57.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*40.2 %*	*10-125*							
SPMD #15 DUP (Filtered) (P2I0348-12) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0270	ug/l	1	EPA 8270m	09/18/02	09/27/02	2090710	
Acenaphthylene	ND	0.0270	"	"	"	"	"	"	
Anthracene	ND	0.0270	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0270	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0270	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0270	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0270	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0270	"	"	"	"	"	"	
Chrysene	ND	0.0270	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0541	"	"	"	"	"	"	
Fluoranthene	**0.0595**	0.0270	"	"	"	"	"	"	
Fluorene	ND	0.0270	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0270	"	"	"	"	"	"	
Naphthalene	ND	0.0270	"	"	"	"	"	"	
Pentachlorophenol	ND	0.270	"	"	"	"	"	"	
Phenanthrene	ND	0.0270	"	"	"	"	"	"	
Pyrene	**0.0423**	0.0270	"	"	"	"	"	"	
Surr: Fluorene-d10	*57.3 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*62.1 %*	*30-150*							
Surr: Pyrene-d10	*63.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*50.7 %*	*10-125*							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	Reported:
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #11 (Filtered) (P2I0348-13) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0238	ug/l	1	EPA 8270m	09/19/02	09/27/02	2090765	
Acenaphthylene	ND	0.0238	"	"	"	"	"	"	
Anthracene	ND	0.0238	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0238	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0238	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0238	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0238	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0238	"	"	"	"	"	"	
Chrysene	ND	0.0238	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0476	"	"	"	"	"	"	
Fluoranthene	ND	0.0238	"	"	"	"	"	"	
Fluorene	ND	0.0238	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0238	"	"	"	"	"	"	
Naphthalene	ND	0.0238	"	"	"	"	"	"	
Pentachlorophenol	ND	0.238	"	"	"	"	"	"	
Phenanthrene	ND	0.0238	"	"	"	"	"	"	
Pyrene	ND	0.0238	"	"	"	"	"	"	
Surr: Fluorene-d10	*66.2 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*75.0 %*	*30-150*							
Surr: Pyrene-d10	*63.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*56.3 %*	*10-125*							
SPMD #5 (Filtered) (P2I0348-14) Water					Sampled: 09/12/02	Received: 09/12/02			
Acenaphthene	ND	0.0240	ug/l	1	EPA 8270m	09/19/02	09/27/02	2090765	
Acenaphthylene	ND	0.0240	"	"	"	"	"	"	
Anthracene	ND	0.0240	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.0240	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.0240	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.0240	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.0240	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.0240	"	"	"	"	"	"	
Chrysene	ND	0.0240	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.0481	"	"	"	"	"	"	
Fluoranthene	ND	0.0240	"	"	"	"	"	"	
Fluorene	ND	0.0240	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.0240	"	"	"	"	"	"	
Naphthalene	ND	0.0240	"	"	"	"	"	"	
Pentachlorophenol	ND	0.240	"	"	"	"	"	"	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #5 (Filtered) (P2I0348-14) Water					Sampled: 09/12/02	Received: 09/12/02			
Phenanthrene	ND	0.0240	ug/l	1	EPA 8270m	09/19/02	09/27/02	2090765	
Pyrene	ND	0.0240	"	"	"	"	"	"	
Surr: Fluorene-d10	*68.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*76.6 %*	*30-150*							
Surr: Pyrene-d10	*65.1 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*53.6 %*	*10-125*							

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Conventional Chemistry Parameters per APHA/EPA Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
SPMD #1 (P2I0348-01) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.68**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**19.0**	10.0	"	"	EPA 160.2	09/13/02	09/16/02	2090523	
SPMD #2 (P2I0348-02) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.55**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**87.0**	10.0	"	"	EPA 160.2	09/13/02	09/16/02	2090523	
SPMD #20 (P2I0348-03) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.43**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**19.0**	10.0	"	"	EPA 160.2	09/16/02	09/17/02	2090573	
SPMD #15 (P2I0348-04) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.38**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	ND	10.0	"	"	EPA 160.2	09/16/02	09/17/02	2090573	
SPMD #15 DUP (P2I0348-05) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.48**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**53.0**	10.0	"	"	EPA 160.2	09/16/02	09/17/02	2090573	
SPMD #11 (P2I0348-06) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.42**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**24.0**	10.0	"	"	EPA 160.2	09/16/02	09/17/02	2090573	
SPMD #5 (P2I0348-07) Water					Sampled: 09/12/02	Received: 09/12/02			
Dissolved Organic Carbon	**1.48**	1.00	mg/l	1	EPA 415.1	09/25/02	09/26/02	2091015	
Total Suspended Solids	**22.0**	10.0	"	"	EPA 160.2	09/16/02	09/17/02	2090573	

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100533 - EPA 3510 Fuels										
Blank (2100533-BLK1)				Prepared: 09/13/02 Analyzed: 10/22/02						
Diesel Range Organics	ND	0.0500	mg/l							A-01
Heavy Oil Range Hydrocarbons	ND	0.100	"							A-01

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Total Metals per EPA 6000/7000 Series Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090676 - EPA 200/3005										
Blank (2090676-BLK1)				Prepared: 09/17/02 Analyzed: 09/19/02						
Arsenic	ND	0.00100	mg/l							
Chromium	ND	0.00100	"							
Copper	ND	0.00200	"							
Zinc	ND	0.00500	"							
LCS (2090676-BS1)				Prepared: 09/17/02 Analyzed: 09/19/02						
Arsenic	0.0999	0.00100	mg/l	0.100		99.9	80-120			
Chromium	0.107	0.00100	"	0.100		107	80-120			
Copper	0.106	0.00200	"	0.100		106	80-120			
Zinc	0.0983	0.00500	"	0.100		98.3	80-120			
Duplicate (2090676-DUP1)		Source: P2I0348-01		Prepared: 09/17/02 Analyzed: 09/19/02						
Arsenic	ND	0.00100	mg/l		ND				20	
Chromium	ND	0.00100	"		ND			3.39	20	
Copper	0.00374	0.00200	"		0.00376			0.533	20	
Zinc	0.00698	0.00500	"		0.00767			9.42	20	
Matrix Spike (2090676-MS1)		Source: P2I0348-01		Prepared: 09/17/02 Analyzed: 09/19/02						
Arsenic	0.103	0.00100	mg/l	0.100	ND	103	75-125			
Chromium	0.105	0.00100	"	0.100	ND	104	75-125			
Copper	0.107	0.00200	"	0.100	0.00376	103	75-125			
Zinc	0.107	0.00500	"	0.100	0.00767	99.3	75-125			
Matrix Spike (2090676-MS2)		Source: P2I0348-02		Prepared: 09/17/02 Analyzed: 09/19/02						
Arsenic	0.105	0.00100	mg/l	0.100	ND	105	75-125			
Chromium	0.106	0.00100	"	0.100	ND	106	75-125			
Copper	0.104	0.00200	"	0.100	0.00207	102	75-125			
Zinc	0.106	0.00500	"	0.100	0.00509	101	75-125			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Dissolved Metals per EPA 6000/7000 Series Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090904 - EPA 200/3005 Diss										
Blank (2090904-BLK1)				Prepared & Analyzed: 09/23/02						
Arsenic	ND	0.00100	mg/l							
Chromium	ND	0.00100	"							
Copper	ND	0.00100	"							
Zinc	ND	0.00500	"							
LCS (2090904-BS1)				Prepared & Analyzed: 09/23/02						
Arsenic	0.102	0.00100	mg/l	0.100		102	80-120			
Chromium	0.101	0.00100	"	0.100		101	80-120			
Copper	0.100	0.00100	"	0.100		100	80-120			
Zinc	0.0962	0.00500	"	0.100		96.2	80-120			
Duplicate (2090904-DUP1)		Source: P2I0405-05		Prepared & Analyzed: 09/23/02						
Arsenic	0.00210	0.00100	mg/l		0.00236			11.7	20	
Chromium	0.00100	0.00100	"		0.00104			3.92	20	
Copper	ND	0.00100	"		ND			0.00	20	
Zinc	0.0206	0.00500	"		0.0210			1.92	20	
Matrix Spike (2090904-MS1)		Source: P2I0405-05		Prepared & Analyzed: 09/23/02						
Arsenic	0.104	0.00100	mg/l	0.100	0.00236	102	75-125			
Chromium	0.101	0.00100	"	0.100	0.00104	100	75-125			
Copper	0.0998	0.00100	"	0.100	ND	99.1	75-125			
Zinc	0.117	0.00500	"	0.100	0.0210	96.0	75-125			
Matrix Spike (2090904-MS2)		Source: P2I0405-06		Prepared & Analyzed: 09/23/02						
Arsenic	0.107	0.00100	mg/l	0.100	0.00257	104	75-125			
Chromium	0.106	0.00100	"	0.100	0.00122	105	75-125			
Copper	0.102	0.00100	"	0.100	0.00134	101	75-125			
Zinc	0.111	0.00500	"	0.100	0.0128	98.2	75-125			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	Reported:
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						
Acenaphthene	ND	5.00	ug/l							
Acenaphthylene	ND	5.00	"							
Anthracene	ND	5.00	"							
Benzo (a) anthracene	ND	5.00	"							
Benzo (a) pyrene	ND	5.00	"							
Benzo (b) fluoranthene	ND	5.00	"							
Benzo (ghi) perylene	ND	5.00	"							
Benzo (k) fluoranthene	ND	5.00	"							
Benzoic Acid	ND	50.0	"							
Benzyl alcohol	ND	10.0	"							
4-Bromophenyl phenyl ether	ND	5.00	"							
Butylbenzyl phthalate	ND	5.00	"							
4-Chloro-3-methylphenol	ND	5.00	"							
4-Chloroaniline	ND	20.0	"							
Bis(2-chloroethoxy)methane	ND	10.0	"							
Bis(2-chloroethyl)ether	ND	5.00	"							
Bis(2-chloroisopropyl)ether	ND	10.0	"							
2-Chloronaphthalene	ND	5.00	"							
2-Chlorophenol	ND	5.00	"							
4-Chlorophenyl phenyl ether	ND	5.00	"							
Chrysene	ND	5.00	"							
Di-n-butyl phthalate	ND	5.00	"							
Di-n-octyl phthalate	ND	5.00	"							
Dibenzo (a,h) anthracene	ND	5.00	"							
Dibenzofuran	ND	5.00	"							
1,2-Dichlorobenzene	ND	5.00	"							
1,3-Dichlorobenzene	ND	5.00	"							
1,4-Dichlorobenzene	ND	5.00	"							
3,3'-Dichlorobenzidine	ND	5.00	"							
2,4-Dichlorophenol	ND	5.00	"							
Diethyl phthalate	ND	5.00	"							
2,4-Dimethylphenol	ND	10.0	"							
Dimethyl phthalate	ND	5.00	"							
4,6-Dinitro-2-methylphenol	ND	10.0	"							
2,4-Dinitrophenol	ND	25.0	"							
2,4-Dinitrotoluene	ND	5.00	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						
2,6-Dinitrotoluene	ND	5.00	ug/l							
Bis(2-ethylhexyl)phthalate	ND	10.0	"							
Fluoranthene	ND	5.00	"							
Fluorene	ND	5.00	"							
Hexachlorobenzene	ND	5.00	"							
Hexachlorobutadiene	ND	10.0	"							
Hexachlorocyclopentadiene	ND	10.0	"							
Hexachloroethane	ND	10.0	"							
Indeno (1,2,3-cd) pyrene	ND	5.00	"							
Isophorone	ND	5.00	"							
2-Methylnaphthalene	ND	5.00	"							
2-Methylphenol	ND	10.0	"							
3-,4-Methylphenol	ND	5.00	"							
Naphthalene	ND	5.00	"							
2-Nitroaniline	ND	5.00	"							
3-Nitroaniline	ND	10.0	"							
4-Nitroaniline	ND	10.0	"							
Nitrobenzene	ND	5.00	"							
2-Nitrophenol	ND	5.00	"							
4-Nitrophenol	ND	25.0	"							
N-Nitrosodi-n-propylamine	ND	10.0	"							
N-Nitrosodiphenylamine	ND	5.00	"							
Pentachlorophenol	ND	10.0	"							
Phenanthrene	ND	5.00	"							
Phenol	ND	5.00	"							
Pyrene	ND	5.00	"							
1,2,4-Trichlorobenzene	ND	5.00	"							
2,4,5-Trichlorophenol	ND	5.00	"							
2,4,6-Trichlorophenol	ND	5.00	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01b**
Acenaphthene	ND	1.25	ug/l							
Acenaphthylene	ND	1.25	"							
Anthracene	ND	1.25	"							
Benzo (a) anthracene	ND	1.25	"							
Benzo (a) pyrene	ND	1.25	"							
Benzo (b) fluoranthene	ND	1.25	"							
Benzo (ghi) perylene	ND	1.25	"							
Benzo (k) fluoranthene	ND	1.25	"							
Benzoic Acid	ND	12.5	"							
Benzyl alcohol	ND	2.50	"							
4-Bromophenyl phenyl ether	ND	1.25	"							
Butyl benzyl phthalate	ND	1.25	"							
4-Chloro-3-methylphenol	ND	1.25	"							
4-Chloroaniline	ND	5.00	"							
Bis(2-chloroethoxy)methane	ND	2.50	"							
Bis(2-chloroethyl)ether	ND	1.25	"							
Bis(2-chloroisopropyl)ether	ND	2.50	"							
2-Chloronaphthalene	ND	1.25	"							
2-Chlorophenol	ND	1.25	"							
4-Chlorophenyl phenyl ether	ND	1.25	"							
Chrysene	ND	1.25	"							
Di-n-butyl phthalate	ND	1.25	"							
Di-n-octyl phthalate	ND	1.25	"							
Dibenzo (a,h) anthracene	ND	1.25	"							
Dibenzofuran	ND	1.25	"							
1,2-Dichlorobenzene	ND	1.25	"							
1,3-Dichlorobenzene	ND	1.25	"							
1,4-Dichlorobenzene	ND	1.25	"							
3,3'-Dichlorobenzidine	ND	1.25	"							
2,4-Dichlorophenol	ND	1.25	"							
Diethyl phthalate	ND	1.25	"							
2,4-Dimethylphenol	ND	2.50	"							
Dimethyl phthalate	ND	1.25	"							
4,6-Dinitro-2-methylphenol	ND	2.50	"							
2,4-Dinitrophenol	ND	6.25	"							
2,4-Dinitrotoluene	ND	1.25	"							

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Semivolatile Organic Compounds per EPA Method 8270C - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01b**
2,6-Dinitrotoluene	ND	1.25	ug/l							
Bis(2-ethylhexyl)phthalate	ND	2.50	"							
Fluoranthene	ND	1.25	"							
Fluorene	ND	1.25	"							
Hexachlorobenzene	ND	1.25	"							
Hexachlorobutadiene	ND	2.50	"							
Hexachlorocyclopentadiene	ND	2.50	"							
Hexachloroethane	ND	2.50	"							
Indeno (1,2,3-cd) pyrene	ND	1.25	"							
Isophorone	ND	1.25	"							
2-Methylnaphthalene	ND	1.25	"							
2-Methylphenol	ND	2.50	"							
3-,4-Methylphenol	ND	1.25	"							
Naphthalene	ND	1.25	"							
2-Nitroaniline	ND	1.25	"							
3-Nitroaniline	ND	2.50	"							
4-Nitroaniline	ND	2.50	"							
Nitrobenzene	ND	1.25	"							
2-Nitrophenol	ND	1.25	"							
4-Nitrophenol	ND	6.25	"							
N-Nitrosodi-n-propylamine	ND	2.50	"							
N-Nitrosodiphenylamine	ND	1.25	"							
Pentachlorophenol	ND	2.50	"							
Phenanthrene	ND	1.25	"							
Phenol	ND	1.25	"							
Pyrene	ND	1.25	"							
1,2,4-Trichlorobenzene	ND	1.25	"							
2,4,5-Trichlorophenol	ND	1.25	"							
2,4,6-Trichlorophenol	ND	1.25	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Tentatively Identified Compounds per GC/MS (estimated concentrations) - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100425 - EPA 3520/600 Series										
Blank (2100425-BLK1)				Prepared: 09/13/02 Analyzed: 10/10/02						**A-01b**
No TICS identified	ND	10.0	ug/l							
Blank (2100425-BLK2)				Prepared: 09/18/02 Analyzed: 10/10/02						**A-01b**
No TICS identified	ND	2.50	ug/l							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	Reported:
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090671 - EPA 3510/600 Series										
Blank (2090671-BLK1)				Prepared: 09/17/02 Analyzed: 09/26/02						
Acenaphthene	ND	0.0250	ug/l							
Acenaphthylene	ND	0.0250	"							
Anthracene	ND	0.0250	"							
Benzo (a) anthracene	ND	0.0250	"							
Benzo (a) pyrene	ND	0.0250	"							
Benzo (b) fluoranthene	ND	0.0250	"							
Benzo (k) fluoranthene	ND	0.0250	"							
Benzo (ghi) perylene	ND	0.0250	"							
Chrysene	ND	0.0250	"							
Dibenzo (a,h) anthracene	ND	0.0500	"							
Fluoranthene	ND	0.0250	"							
Fluorene	ND	0.0250	"							
Indeno (1,2,3-cd) pyrene	ND	0.0250	"							
Naphthalene	ND	0.0250	"							
Pentachlorophenol	ND	0.250	"							
Phenanthrene	ND	0.0250	"							
Pyrene	ND	0.0250	"							
Surr: Fluorene-d10	*0.704*		"	*1.25*		*56.3*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.723*		"	*1.25*		*57.8*	*30-150*			
Surr: Pyrene-d10	*0.788*		"	*1.25*		*63.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.438*		"	*1.25*		*35.0*	*10-125*			
LCS (2090671-BS1)				Prepared: 09/17/02 Analyzed: 09/26/02						
Acenaphthene	0.461	0.0250	ug/l	1.25		36.9	27-133			
Benzo (a) pyrene	0.536	0.0250	"	1.25		42.9	41-139			
Pentachlorophenol	0.980	0.250	"	2.50		39.2	24-147			
Pyrene	0.523	0.0250	"	1.25		41.8	34-143			
Surr: Fluorene-d10	*0.528*		"	*1.25*		*42.2*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.617*		"	*1.25*		*49.4*	*30-150*			
Surr: Pyrene-d10	*0.569*		"	*1.25*		*45.5*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.576*		"	*1.25*		*46.1*	*10-125*			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090671 - EPA 3510/600 Series										
LCS Dup (2090671-BSD1)				Prepared: 09/17/02 Analyzed: 09/26/02						
Acenaphthene	0.550	0.0250	ug/l	1.25		44.0	27-133	17.6	50	
Benzo (a) pyrene	0.611	0.0250	"	1.25		48.9	41-139	13.1	50	
Pentachlorophenol	1.37	0.250	"	2.50		54.8	24-147	33.2	50	
Pyrene	0.712	0.0250	"	1.25		57.0	34-143	30.6	50	
Surr: Fluorene-d10	*0.638*		"	*1.25*		*51.0*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.812*		"	*1.25*		*65.0*	*30-150*			
Surr: Pyrene-d10	*0.762*		"	*1.25*		*61.0*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.640*		"	*1.25*		*51.2*	*10-125*			
Batch 2090710 - EPA 3520/600 Series										
Blank (2090710-BLK1)				Prepared: 09/18/02 Analyzed: 09/27/02						
Acenaphthene	ND	0.0250	ug/l							
Acenaphthylene	ND	0.0250	"							
Anthracene	ND	0.0250	"							
Benzo (a) anthracene	ND	0.0250	"							
Benzo (a) pyrene	ND	0.0250	"							
Benzo (b) fluoranthene	ND	0.0250	"							
Benzo (k) fluoranthene	ND	0.0250	"							
Benzo (ghi) perylene	ND	0.0250	"							
Chrysene	ND	0.0250	"							
Dibenzo (a,h) anthracene	ND	0.0500	"							
Fluoranthene	ND	0.0250	"							
Fluorene	ND	0.0250	"							
Indeno (1,2,3-cd) pyrene	ND	0.0250	"							
Naphthalene	ND	0.0250	"							
Pentachlorophenol	ND	0.250	"							
Phenanthrene	ND	0.0250	"							
Pyrene	ND	0.0250	"							
Surr: Fluorene-d10	*0.833*		"	*1.25*		*66.6*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.835*		"	*1.25*		*66.8*	*30-150*			
Surr: Pyrene-d10	*0.843*		"	*1.25*		*67.4*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.682*		"	*1.25*		*54.6*	*10-125*			

North Creek Analytical - Portland

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090710 - EPA 3520/600 Series										
LCS (2090710-BS1)				Prepared: 09/18/02 Analyzed: 09/27/02						
Acenaphthene	0.720	0.0250	ug/l	1.25		57.6	27-133			
Benzo (a) pyrene	0.708	0.0250	"	1.25		56.6	41-139			
Pentachlorophenol	1.64	0.250	"	2.50		65.6	24-147			
Pyrene	0.792	0.0250	"	1.25		63.4	34-143			
Surr: Fluorene-d10	*0.820*		"	*1.25*		*65.6*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.865*		"	*1.25*		*69.2*	*30-150*			
Surr: Pyrene-d10	*0.842*		"	*1.25*		*67.4*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.748*		"	*1.25*		*59.8*	*10-125*			
LCS Dup (2090710-BSD1)				Prepared: 09/18/02 Analyzed: 09/27/02						
Acenaphthene	0.769	0.0250	ug/l	1.25		61.5	27-133	6.58	50	
Benzo (a) pyrene	0.744	0.0250	"	1.25		59.5	41-139	4.96	50	
Pentachlorophenol	1.67	0.250	"	2.50		66.8	24-147	1.81	50	
Pyrene	0.837	0.0250	"	1.25		67.0	34-143	5.52	50	
Surr: Fluorene-d10	*0.864*		"	*1.25*		*69.1*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.834*		"	*1.25*		*66.7*	*30-150*			
Surr: Pyrene-d10	*0.897*		"	*1.25*		*71.8*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.780*		"	*1.25*		*62.4*	*10-125*			
Batch 2090765 - EPA 3510/600 Series										
Blank (2090765-BLK1)				Prepared: 09/19/02 Analyzed: 09/27/02						
Acenaphthene	ND	0.0250	ug/l							
Acenaphthylene	ND	0.0250	"							
Anthracene	ND	0.0250	"							
Benzo (a) anthracene	ND	0.0250	"							
Benzo (a) pyrene	ND	0.0250	"							
Benzo (b) fluoranthene	ND	0.0250	"							
Benzo (k) fluoranthene	ND	0.0250	"							
Benzo (ghi) perylene	ND	0.0250	"							
Chrysene	ND	0.0250	"							
Dibenzo (a,h) anthracene	ND	0.0500	"							
Fluoranthene	ND	0.0250	"							
Fluorene	ND	0.0250	"							
Indeno (1,2,3-cd) pyrene	ND	0.0250	"							
Naphthalene	ND	0.0250	"							

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090765 - EPA 3510/600 Series										
Blank (2090765-BLK1)				Prepared: 09/19/02 Analyzed: 09/27/02						
Pentachlorophenol	ND	0.250	ug/l							
Phenanthrene	ND	0.0250	"							
Pyrene	ND	0.0250	"							
Surr: Fluorene-d10	*0.715*		"	*1.25*		*57.2*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.213*		"	*1.25*		*17.0*	*30-150*			*A-01a*
Surr: Pyrene-d10	*0.860*		"	*1.25*		*68.8*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.570*		"	*1.25*		*45.6*	*10-125*			
LCS (2090765-BS1)				Prepared: 09/19/02 Analyzed: 09/27/02						
Acenaphthene	0.708	0.0250	ug/l	1.25		56.6	27-133			
Benzo (a) pyrene	0.657	0.0250	"	1.25		52.6	41-139			
Pentachlorophenol	1.13	0.250	"	2.50		45.2	24-147			
Pyrene	0.786	0.0250	"	1.25		62.9	34-143			
Surr: Fluorene-d10	*0.841*		"	*1.25*		*67.3*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.938*		"	*1.25*		*75.0*	*30-150*			
Surr: Pyrene-d10	*0.873*		"	*1.25*		*69.8*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.707*		"	*1.25*		*56.6*	*10-125*			
LCS Dup (2090765-BSD1)				Prepared: 09/19/02 Analyzed: 09/27/02						
Acenaphthene	0.733	0.0250	ug/l	1.25		58.6	27-133	3.47	50	
Benzo (a) pyrene	0.660	0.0250	"	1.25		52.8	41-139	0.456	50	
Pentachlorophenol	1.26	0.250	"	2.50		50.4	24-147	10.9	50	
Pyrene	0.803	0.0250	"	1.25		64.2	34-143	2.14	50	
Surr: Fluorene-d10	*0.864*		"	*1.25*		*69.1*	*25-125*			
Surr: 2,4,6-Tribromophenol	*0.976*		"	*1.25*		*78.1*	*30-150*			
Surr: Pyrene-d10	*0.902*		"	*1.25*		*72.2*	*23-150*			
Surr: Benzo (a) pyrene-d12	*0.718*		"	*1.25*		*57.4*	*10-125*			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2090523 - Wet Chem										
Blank (2090523-BLK1)				Prepared: 09/13/02	Analyzed: 09/16/02					
Total Suspended Solids	ND	10.0	mg/l							
LCS (2090523-BS1)				Prepared: 09/13/02	Analyzed: 09/16/02					
Total Suspended Solids	46.0	10.0	mg/l	50.0		92.0	80-120			
Duplicate (2090523-DUP1)		Source: P2I0320-01		Prepared: 09/13/02	Analyzed: 09/16/02					
Total Suspended Solids	12.0	10.0	mg/l		22.0			58.8	20	Q-14
Batch 2090573 - Wet Chem										
Blank (2090573-BLK1)				Prepared: 09/16/02	Analyzed: 09/17/02					
Total Suspended Solids	ND	10.0	mg/l							
LCS (2090573-BS1)				Prepared: 09/16/02	Analyzed: 09/17/02					
Total Suspended Solids	45.0	10.0	mg/l	50.0		90.0	80-120			
Duplicate (2090573-DUP1)		Source: P2I0292-01		Prepared: 09/16/02	Analyzed: 09/17/02					
Total Suspended Solids	90.0	10.0	mg/l		90.0			0.00	20	
Batch 2091015 - Wet Chem										
Blank (2091015-BLK1)				Prepared: 09/25/02	Analyzed: 09/26/02					
Dissolved Organic Carbon	ND	1.00	mg/l							
LCS (2091015-BS1)				Prepared: 09/25/02	Analyzed: 09/26/02					
Dissolved Organic Carbon	18.9	1.00	mg/l	20.0		94.5	85-115			

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DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Conventional Chemistry Parameters per APHA/EPA Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2091015 - Wet Chem										
Duplicate (2091015-DUP1)		**Source: P2I0340-07**		Prepared: 09/25/02	Analyzed: 09/26/02					
Dissolved Organic Carbon	15.1	1.00	mg/l		15.3			1.32	20	
Matrix Spike (2091015-MS1)		**Source: P2I0340-07**		Prepared: 09/25/02	Analyzed: 09/26/02					
Dissolved Organic Carbon	37.7	1.00	mg/l	25.0	15.3	89.6	0-200			

www.ncalabs.com

Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

DEQ-Portland	Project: McCormick & Baxter	
2020 SW 4th Suite 400	Project Number: 122136	**Reported:**
Portland, OR 97201	Project Manager: Rod Struck	10/24/02 15:34

Notes and Definitions

A-01	8270 SIM extract.
A-01a	Low surrogate recovery for this analyte, suspect lab contamination.
A-01b	SIM extracts.
Q-14	The Spike Recovery and/or RPD is outside of control limits due to a non-homogeneous sample matrix.
S-09	Surrogate recovery is outside control limits due to matrix interference.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%.
wet	Sample results reported on a wet weight basis (as received)
RPD	Relative Percent Difference

BROOKSRAND LLC
ENVIRONMENTAL RESEARCH&DEVELOPMENT

October 17, 2002

North Creek Analytical
Attn. Lisa Domenighini
9405 SW Nimbus Ave
Beaverton, OR 97008

RE: BRL Project # NOC007, tracking # 02BR511
North Creek Subcontract Order #: P2I0348

Dear Ms. Domenighini,

This report is for the arsenic (III) analyses of four samples received at BRL on 9/17/02. These samples have been assigned the BRL tracking # 02BR511 and this work will be billed against order # P2I0348.

All samples were received, stored, prepared and analyzed according to Brooks Rand LLC Standard Operating Procedures. Samples were initially analyzed as Batch 02-251 on 9/30/02. A corrective action was issued due to calibration blanks above the MDL and a spike recovery below the acceptance criteria. Samples were reanalyzed as Batch 02-251-1 on 10/9/02. One of two traps gave unacceptable calibration blanks, and therefore a corrective action was issued for the reanalysis of all samples analyzed using this particular trap. All other QA criteria were met. No qualification was required for samples analyzed on the trap that produced acceptable blanks.

The affected samples (P2I0348-04 and P2I0348-06) were reanalyzed as batch 02-251-2 on 10/14/02. One calibration blank was above the MDL but was less than 1/5th the level of the lowest sample and therefore no qualification of the data was required on this basis. All other QA criteria were met.

Sincerely,

Colin Davies

3958 6th Avenue NW • Seattle, WA 98107 • Phone (206) 632-6206 • Fax (206) 632-6017 • www.brooksrand.com • brl@brooksrand.com

Brooks Rand LLC

Summary of Results

North Creek Analytical

BRL Project #: NOC007
Tracking #: 02BR511

Sample/Sampling/Receiving Info

North Creek Analytical		BRL	
Sample Identification	**Sampling Date**	**Sample Number**	**Receiving Date**
P2I0348-04	9/12/02	02BR511 - 1	9/17/02
P2I0348-05	9/12/02	02BR511 - 2	9/17/02
P2I0348-06	9/12/02	02BR511 - 3	9/17/02
P2I0348-07	9/12/02	02BR511 - 4	9/17/02

BRL QA Report

Batch #: 02-251-1 *Method #:* BR-0021 (HGAA)

Analyte: As(III) *Matrix:* Water

BIAS *Criteria: Recovery=65-135%*

Matrix Spikes

Sample ID	*Spike Conc.*	*Measured Spike+Sample Conc.*	*Unit*	*Rec. %*	*Spike Duplicate Conc.*	*Duplicate Measured Spike+Sample Conc.*	*Unit*	*Dupl. Rec. %*	*Dupl. RPD %*
02BR525 - 1	285,714.00	396,236.00	µg/L	86.3%			µg/L		
02BR525 - 2	2,000.00	2,315.80	µg/L	68.8%			µg/L		

BLANKS

Method Blanks

MB #1 µg/L	*MB #2 µg/L*	*MB #3 µg/L*	*MB #4 µg/L*	*Average*	*Std. Dev. µg/L*	*Optimum MDL µg/L*	*PQL µg/L*
0.000	0.000			0.000	0.000	0.006	0.022

Thursday, October 10, 2002

Project Manager

BRL QA Report

Batch #: **02-251-2** ***Method #:*** **BR-0021 (HGAA)**

Analyte: **As(III)** ***Matrix:*** **Water**

BIAS ***Criteria: Recovery=80-120%***

Laboratory Control Samples

LCS ID	*Certified Value µg/L*	*Measured Value µg/L*	*Recovery %*
ICV (QCS)	10	8.86	88.6%

BLANKS

Method Blanks

MB #1 µg/L	*MB #2 µg/L*	*MB #3 µg/L*	*MB #4 µg/L*	*Average*	*Std. Dev. µg/L*	*Optimum MDL µg/L*	*PQL µg/L*
0.008	0.004	0.004	0.006	0.005	0.002	0.006	0.022

Thursday, October 17, 2002

Project Manager

Brooks Rand LLC Sample Receiving Log

Tracking # **02BR511**

Customer: North Creek Analytical
Contact: Mike Tesar
Project Ref. #: NOC007

Collection Date 9/12/02
QA Level Standard

Sample Condition Intact
Shipping container intact? Yes

Shipping container type: cooler
Shipping container temp: 3.3°C
Shipping container coolant:

Sample preservation: HCl
Acid lab # Field Preserved
Hg Concentration:
Sample storage area: BRL Refrigerator #2

Sample Turnaround Time:
Contract Turnaround Time: 30 days

Due Date: 10/17/02
Receiving Date: 9/17/02
Receiving Time: 10:10 AM

Logged-in by: Mary Van Ry
Log-in Date: 9/17/02
Log-in Time: 10:20 AM

Airbill present? Yes
Airbill # 1z 37e 867 03 4183
Carrier: UPS

Custody seal present? Yes
Custody seal intact? Yes
COC Present? Yes
COC Number: N/A

Analysis request form? No
COC/Sample tag agree? Yes

See SOW	No	See Project Manager	No
See Memo	No	See Lab Manager	No
Consult MSDS	No	See Contract Info	No

Comments:

Lab ID:	Sample Tag #	Container #	Size:	pH	Matrix/Sub-Matrix	Comments:
1	P2I0348--04		125 mL Bottle	<2	Water,	
Analysis / Method:		As(III)	BR-0021 (HGAA)			
2	P2I0348-05		125 mL Bottle	<2	Water,	
Analysis / Method:		As(III)	BR-0021 (HGAA)			
3	P2I0348-06		125 mL Bottle	<2	Water,	
Analysis / Method:		As(III)	BR-0021 (HGAA)			
4	P2I0348-07		125 mL Bottle	<2	Water,	
Analysis / Method:		As(III)	BR-0021 (HGAA)			

Mary [signature] 9/17/02
Sample Custodian signature Date

SUBCONTRACT ORDER

North Creek Analytical - Portland

P2I0348

SENDING LABORATORY:

North Creek Analytical - Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Lisa Domenighini

RECEIVING LABORATORY:

Brooks Rand Ltd
3950 6th Ave NW
Seattle, WA 98107
Phone :206 632-6206
Fax: 206 632-6017

none of the ambers are field filtered- even if labeled such per Heather B. 9/13; DUP sample added per HB; 2nd cooler temp=20.2

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: P2I0348-04	**Water**	**Sampled: 09/12/02 15:00**		
Subcontract Outside	09/26/02 17:00	03/11/03 15:00		As III to Brooks Rand
Sample ID: P2I0348-05	**Water**	**Sampled: 09/12/02 15:00**		**not listed as separate sample on COC**
Subcontract Outside	09/26/02 17:00	03/11/03 15:00		As III to Brooks Rand
Sample ID: P2I0348-06	**Water**	**Sampled: 09/12/02 16:00**		
Subcontract Outside	09/26/02 17:00	03/11/03 16:00		As III to Brooks Rand
Sample ID: P2I0348-07	**Water**	**Sampled: 09/12/02 17:10**		
Subcontract Outside	09/26/02 17:00	03/11/03 17:10		As III to Brooks Rand

Released By	Date	Received By	Date
[illegible]	9/16/02	[illegible]	10:10 9/17/02

nca™
North Creek Analytical, Inc.
Environmental Laboratory Network
www.ncalabs.com

[redacted] 720 [redacted] reek [redacted], Suit[redacted] Bothe[redacted] 98011 [redacted]
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776 (509) 924-9200 FA[redacted]-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FA[redacted]-9210
20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: P2I0348

CLIENT: Oregon Dep of Env. Quality
REPORT TO: Rod Struck
ADDRESS: 2020 SW 4th Suite 460 Portland, OR 97201
PHONE: FAX:
PROJECT NAME: McCormick + Baxter
PROJECT NUMBER:
SAMPLED BY: OSU

INVOICE TO: SAME
P.O. NUMBER:

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 7 5 4 3 2 1 <1 (STD.)
Petroleum Hydrocarbon Analyses: 5 4 3 2 1 <1 (STD.)
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	4-1L CDA 32700 Amb.	250 HDPE EPA HNO3 6020	250 HDPE no pres. TSS	250 HDPE EPA HNO3 FF 6020	250ml Amb. H2SO4 DOC 415.1	As 250ml								MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA WO ID
1.	SPMD #1 (AH)	9/12/02 10:00am	✓	✓	✓	✓	✓		45°	34'	30" /	122°	44'	22"		W	8	sunny, clear 65°F WT: 68F	
2.	SPMD #2 AH	9/12/02 10:55	✓	✓	✓	✓	✓		in	between	1 and 3					W	8	↓	
3.	SPMD #3 AH	9/12/02 10:55	no	grabs	pulled				45°	34'	29" /	122°	44'	22"		W		20°C	
4.	SPMD #20 AH	9/12/02 13:40	✓	✓	✓	✓	✓	[illegible] AH	45°	34'	47" /	122°	44	54"		W	8		
5.	SPMD #15 AH	9/12/02 15:00	✓	✓	✓	✓	✓	✓	45°	34'	46" N /	122°	44'	43"	W	W	9	21°C Dup. AT: 85°F	
6.	SPMD # 11 OK	9/12/02 16.00	✓	✓	✓	✓	✓	✓								W	9		
7.	SPMD # 5 OK	9/12/02 17.10	✓	✓	✓	✓	✓	✓								W	9		
8.																			
9.																			
10.																			
11.																			
12.																			
13.																			
14.																			
15.																			

Duplicate

RELINQUISHED BY: [signature] DATE: 1805
PRINT NAME: Kim A. Anderson FIRM: OSU TIME: 9-12-02
RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:
RELINQUISHED BY: Heather Brunelle DATE: 9-12-02
PRINT NAME: [signature] FIRM: E&E TIME: 1803
RECEIVED BY: [signature] DATE: 9-12-02
PRINT NAME: Jason Passanger FIRM: NCA TIME: 1843

ADDITIONAL REMARKS: CC Chart
TEMP: 10.2 20.2°C
PAGE OF

COC REV 3/99

C

Tide Charts and Transducer Plots

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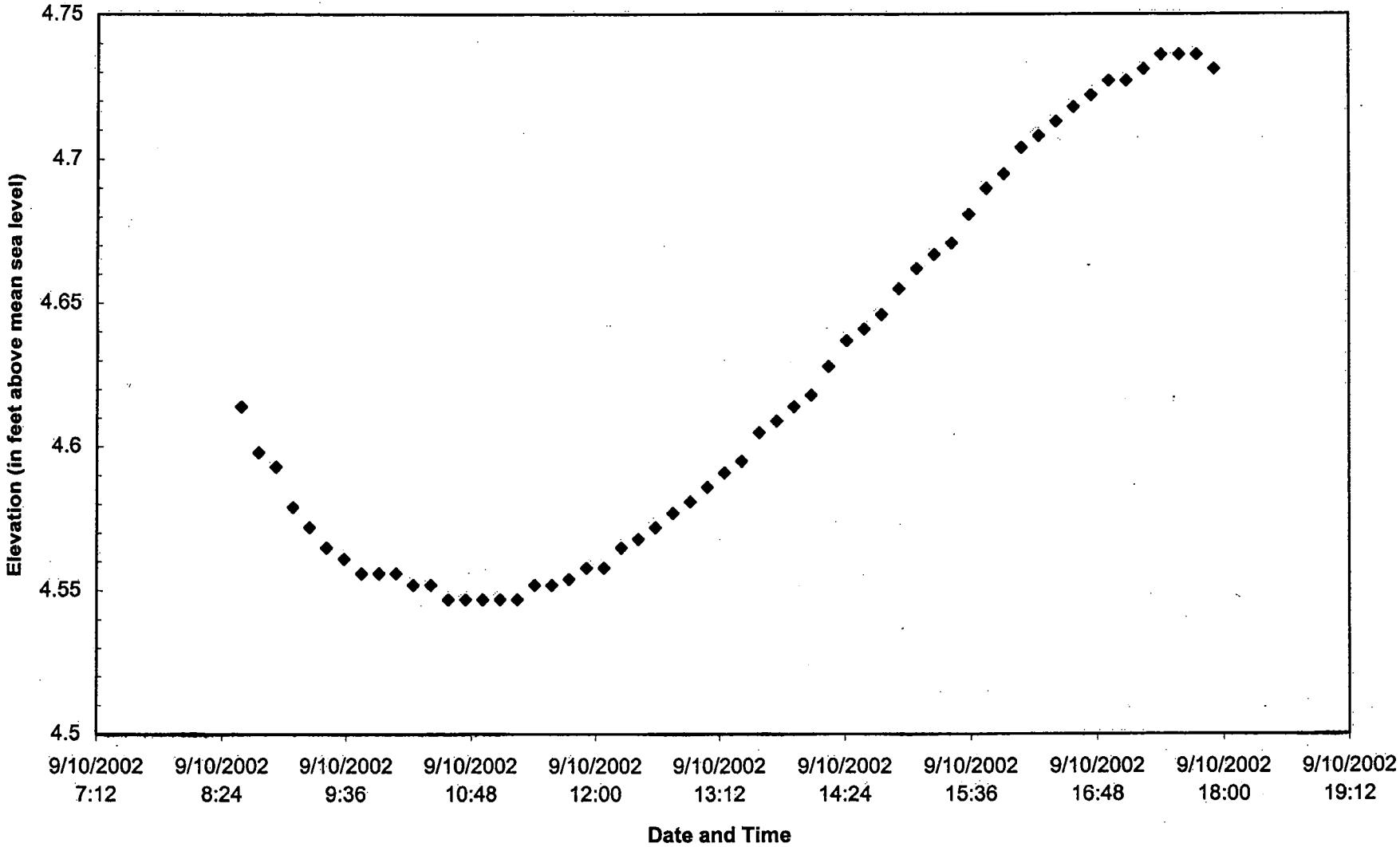
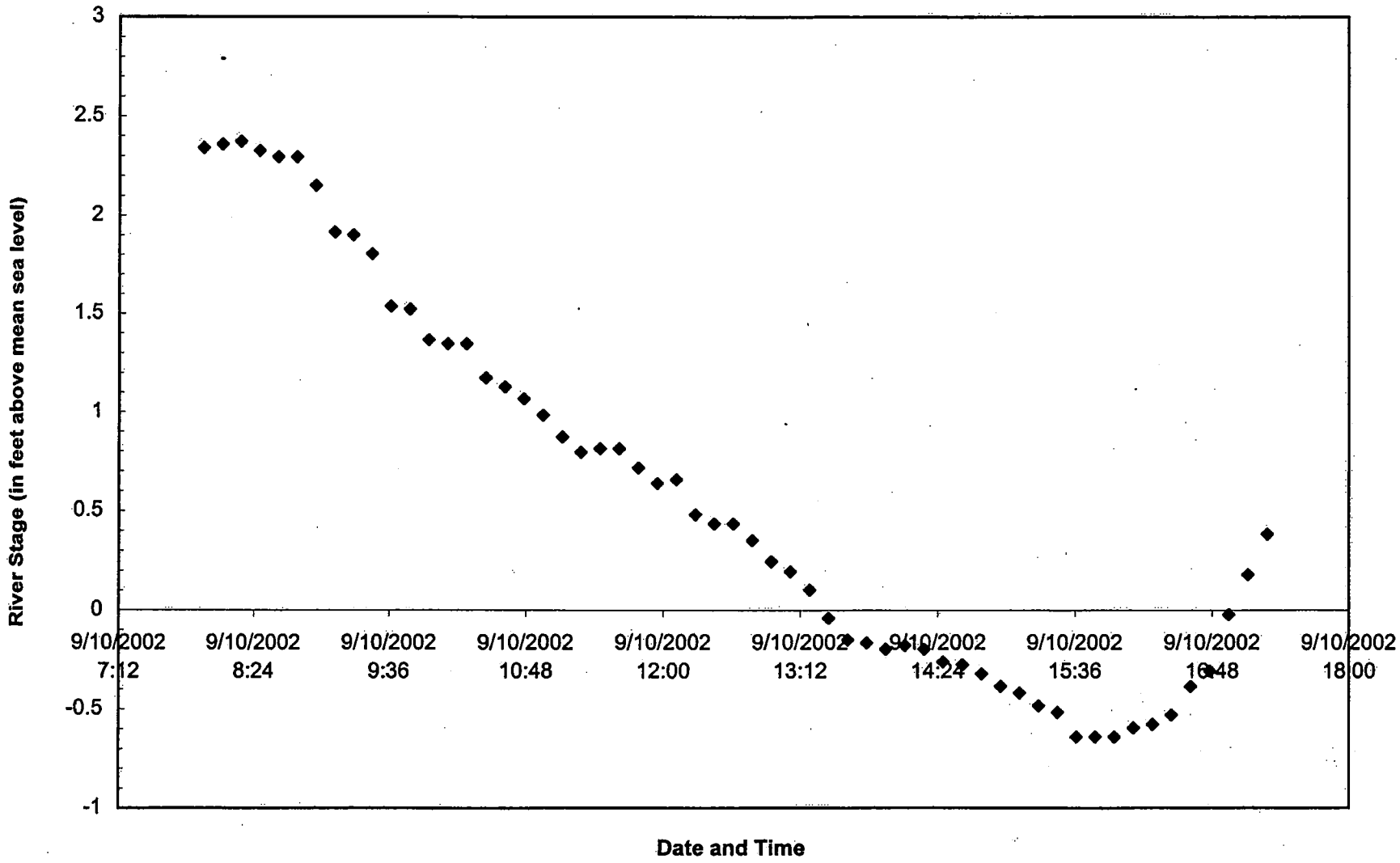
Monitoring Well MW35s - Groundwater Elevation (from transducer data)



Stilling Well adjacent to Railroad Bridge - River Stage (from transducer data)



D Site Summary for Semiannual Reporting Period

Table B-1

SUMMARY OF SEMIANNUAL SITE ACTIVITIES

July 1 through December 31, 2002

McCORMICK & BAXTER CREOSOTING COMPANY

PORTLAND, OREGON

DATE	ACTIVITY
7/1/2002	E&E oversees exposure of buried sewer line in FWDA by ADT.
7/2/2002	E&E oversees exposure of buried sewer line in FWDA by ADT.
7/8/2002	Site Inspection along perimeter fenceline Site inspection along Willamette River beaches Vegetation (Himalayan Blackberry) clearing by hand around wells and gates. Annual backflow testing performed by American Backflow Services at remaining device.
7/9/2002	Site Inspection along perimeter fenceline Site inspection along Willamette River beaches
7/10/2002	Preparation of ADT final invoice. Housekeeping at trailers 1 and 2 and TFA shop
7/11/2002	Site Inspection along perimeter fenceline Site inspection along Willamette River beaches Vegetation (Himalayan Blackberry) removal around site wells
7/12/2002	Locations for soil borings selected and cleared of utilities. New 4" stainless steel skimmer arrived and is deployed in FWDA.
7/15/2002	E & E oversees soil borings in support of barrier wall backside alignment
7/16/2002	E & E oversees soil borings in support of barrier wall backside alignment
7/19/2002	Site Inspection along perimeter fenceline Site inspection along Willamette River beaches
7/25/2002	E & E attempts to meet on-site with Warm Springs Tribe representative - no show.
7/29/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches Removal of grafitti from upper gate signage Housekeeping at trailers 1 and 2 and TFA shop Clean wells gauged.
7/30/2002	Gauged FWDA wells Gauged TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers
8/6/2002	Site inspection along perimeter fenceline Site inspection along Willamette River Beaches Small amounts of NAPL observed bubbling 20' offshore from former creosote dock Manual extraction of TFA wells Manual extraction of FWDA wells Housekeeping at Trailer 1 and 2 and TFA shop
8/7/2002	Vegetation (Himalayan Blackberry) removal around site wells Site inspection along perimeter fenceline. Clearing of debris dumped near main site entrance
8/15/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches No seepage reported Upper gate sign tagged with Grafitti again Vegetation removal from site access roads, gates. Site vehicle is running poorly, stalls easily and emits excessive smoke

Table B-1

SUMMARY OF SEMIANNUAL SITE ACTIVITIES

July 1 through December 31, 2002

McCORMICK & BAXTER CREOSOTING COMPANY

PORTLAND, OREGON

DATE	ACTIVITY
8/16/2002	Gauged FWDA wells Extraction of FWDA passive skimmers Gauged TFA wells Site meeting between ADT and ENE on site. E & E meets with Qwest Engineer Art Erikson about reconnecting service to the site. Extraction of TFA passive skimmers Plastic parts in valve of new skimmer are corroding from creosote exposure Site remediation will send free all-brass valves to replace defective plastic/brass valve
8/19/2002	New stainless steel 4" skimmer ordered to replace damaged plastic skimmer
8/22/2002	Upper gate has unauthorized padlock - hasp is too thick to cut with boltcutters secondary entrance off van houten used Bluff fire occurred recently - no apparent damage to site Main gate found open - apparently by fire department Site inspection along perimeter fenceline
8/23/2002	WCM deploys containment boom in Willamette Cove in response to low water & observed seepage. Clean wells gauged.
8/26/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - NAPL observed 20feet off former creosote dock Housekeeping at trailers 1 and 2 and TFA shop Invoice preparation
8/27/2002	Manual extraction of TFA wells Manual extraction of FWDA wells E & E stakes new wall alignments in FWDA Site inspection along perimeter fenceline Site inspection along Willamette River beaches - NAPL observed 20feet off former creosote dock
9/3/2002	Upper gate found open Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Site vehicle refueled using portable gas cans Site housekeeping in TFA, along access roads
9/4/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Vegetation removal from site access roads and wellheads Preparation and faxing of invoice from ADT to E & E
9/5/2002	DEQ Rod Struck on site to obtain samples in Willamette Cove and Wiillamette River beaches EPA research vessel operating offshore to track shoreline and offshore seeps in river Gauged FWDA wells Gauged TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers
9/6/2002	Small bluff fire occurred last night along UPRR tracks - no damage observed at site Removed used, bagged NAPL sorbent boom from Willamette Cove - placed in Haz Waste dumpster Site inspection along perimeter fenceline E & E rehabilitates and cleans transducers for DEQ use. EPA research vessel operating offshore to track shoreline and offshore seeps in river
9/10/2002	EPA, DEQ, and E & E on site to sample soil and place transducers in Willamette Cove area Manual extraction of TFA wells Manual extraction of FWDA wells Planning for transport and disposal of Hazardous Waste dumpster

Table B-1

SUMMARY OF SEMIANNUAL SITE ACTIVITIES

July 1 through December 31, 2002

McCORMICK & BAXTER CREOSOTING COMPANY

PORTLAND, OREGON

DATE	ACTIVITY
9/13/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Site inspection in Willamette Cove Removed used, bagged NAPL sorbent boom from Willamette Cove - placed in Haz Waste dumpster General site maintenance activity
9/16/2002	Power failure at McCormick - Alarm activated - E & E investigates site and resets alarm
9/23/2002	Extraction of TFA passive skimmers Extraction of FWDA passive skimmers Installed new stainless steel skimmer in EW-15s Moved usable skimmer from EW-15s to EW-23s Retired disfunctional skimmer from EW-23s to TFA shop Plastic and brass valve replaced with all-brass valve in EW-10s skimmer Site inspection along perimeter fenceline E & E conducts semi-annual groundwater monitoring on site On site meeting between ADT and E & E
9/24/2002	E & E conducts semi-annual groundwater monitoring on site
9/25/2002	Gauged FWDA wells Gauged TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers E & E conducts semi-annual groundwater monitoring on site
9/26/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - slight NAPL sheen observed off former dock Housekeeping at trailers 1 and 2 and TFA shop On site meeting between ADT and E & E - discuss scheduling and hours budgetiing
10/7/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Vegetation removal from site wellheads Phone meeting between ADT and E & E
10/8/2002	Site meeting between ADT and ENE on site - discuss upcoming bid walk arrangements Repleneshment of site expendable supplies Housekeeping at trailers 1 and 2 and TFA shop Site inspection along perimeter fenceline - noted hole cut in fence fabric on northern fenceline
10/9/2002	Extraction of FWDA passive skimmers Extraction of TFA passive skimmers Manual extraction of TFA wells Manual extraction of FWDA wells Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed
10/10/2002	Housekeeping and equipment maintenance completed.
10/14/2002	Prepare site, decon line, and administrative facilities for barrier wall bid walk
10/15/2002	Conduct mandatory bid walk for potential barrier wall installation contractors with DEQ
10/16/2002	Discovery of abandoned drums near Willamette Cove - DEQ/Metro notified and respond Conduct site walk on Willamette Cove Beach with Pacific Fence Co. to determine fence layout
10/18/2002	E&E on site to complete GPS survey of barrier wall alignment
10/20/2002	E&E on site to complete GPS survey of barrier wall alignment
10/21/2002	E&E on site to complete GPS survey of barrier wall alignment Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Site inspection on Willamette Cove beach, including NAPL boom Housekeeping at trailers 1 and 2 and TFA shop

Table B-1

SUMMARY OF SEMIANNUAL SITE ACTIVITIES

July 1 through December 31, 2002

McCORMICK & BAXTER CREOSOTING COMPANY

PORTLAND, OREGON

DATE	ACTIVITY
10/22/2002	Conduct second, optional bid walk for potential barrier wall installation contractors
10/29/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Gauged FWDA wells Gauged TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers
10/30/2002	Repackaging of Hazardous Waste dumpster into 1-cy overpacks Calloway and Ross on site for additional barrier wall measurements
11/1/2002	Pacific Fence Co. begins installation of Willamette Cove barrier fence. Clean wells gauged.
11/4/2002	Pacific Fence Co. completes installation of Willamette Cove barrier fence.
11/6/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Site inspection on Willamette Cove beach, including NAPL boom - slight sheen inside boom Inspected new Willamette Cove fence, and placed padlock on gate
11/7/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Site inspection on Willamette Cove beach, including NAPL boom Inspected Willamette Cove fence, and placed padlock on gate Extraction of FWDA passive skimmers Extraction of TFA passive skimmers Manual extraction of TFA wells Manual extraction of FWDA wells
11/8/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Inspected Willamette Cove fence and beach Housekeeping at trailers 1 and 2 and TFA shop E & E, NMFS, City of Portland on site to review FWDA barrier wall area Refueled site truck
11/14/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches - no NAPL seeps observed Inspected Willamette Cove fence Cleared brush from around backflow preventer shed, gates, and other areas TFA shop clean up and maintenance
11/20/2002	Gauged FWDA wells Gauged TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers
11/21/2002	Assisted DEQ Ken Cameron with obtaining LNAPL sample at MW-Rs for laboratory analysis Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence - some NAPL observed Housekeeping at trailers 1 and 2 and TFA shop
11/22/2002	UPRR train derailed at base of N. Edgewater - road temporarily blocked - Van Houten in use for now Manual extraction of FWDA wells Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence - some NAPL observed

Table B-1

SUMMARY OF SEMIANNUAL SITE ACTIVITIES

July 1 through December 31, 2002

McCORMICK & BAXTER CREOSOTING COMPANY

PORTLAND, OREGON

DATE	ACTIVITY
11/26/2002	Site inspection along perimeter fenceline Gauge FWDA wells Gauge TFA wells Extraction of FWDA passive skimmers Extraction of TFA passive skimmers
12/2/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence Repairs made to site warning signs Winterized water spigots and heater lines
12/3/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence N. Edgewater railroad track repair in progress - much debris along road
12/4/2002	Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence TFA shop maintenance and housekeeping Preparation and faxing of invoice from ADT to E & E
12/5/2002	Cleared access roads and gates of brush and debris from railroad repairs Organized site files in Trailer 1 Made appointment with Pacific Fence to complete repair work on Dec 10
12/12/2002	Waste manifests for 2 waste wranglers signed by DEQ
12/13/2002	2 Waste wranglers picked up by Prime Environmental Services for transport to Clean Harbors NAPL boom consolidated into new waste wranglers - approx 4 cubic yards of boom accumulated Slight NAPL odor detected in outside tap
12/14/2002	Site alarm reset after circuit breaker shut off - backup batteries had partially discharged Sample collected from outside tap water for PAH, PCP, and Metals analysis
12/16/2002	Clean wells gauged. Site inspection along perimeter fenceline Site inspection along Willamette River beaches Inspected Willamette Cove beach and fence

Key:

ADT	Advanced Disposal Technologies, Inc.
DEQ	Oregon Department of Environmental Quality
E & E	Ecology & Environment, Inc.
EW	extraction well
FWDA	Former Waste Disposal Area, McCormick & Baxter Creosoting Company Superfund Site
GPS	Global Positioning System
LNAPL	lighter-than-water NAPL
MW	monitoring well
NAPL	non-aqueous phase liquid
TFA	Tank Farm Area, McCormick & Baxter Creosoting Company Superfund Site
WCM	West Coast Marine Cleaning

E Laboratory Analytical Data for Semiannual Reporting Period

E & E Portland
OCT 24 2002
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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-35s-092302	P2I0811-01	Water	09/23/02 16:15	09/27/02 11:50
MW-25-092502	P2I0811-02	Water	09/25/02 09:54	09/27/02 11:50
MW-31-092502	P2I0811-03	Water	09/25/02 10:57	09/27/02 11:50
MW-18-092502	P2I0811-04	Water	09/25/02 12:17	09/27/02 11:50
MW-23-092502	P2I0811-05	Water	09/25/02 15:08	09/27/02 11:50
MW-2-092502	P2I0811-06	Water	09/25/02 16:13	09/27/02 11:50
MW-3-092602	P2I0811-07	Water	09/26/02 08:41	09/27/02 11:50
MW-05-092602	P2I0811-08	Water	09/26/02 09:47	09/27/02 11:50
MW-15-092602	P2I0811-09	Water	09/26/02 07:50	09/27/02 11:50
MW-5-092602	P2I0811-10	Water	09/26/02 11:28	09/27/02 11:50
MW-K-092602	P2I0811-11	Water	09/26/02 12:21	09/27/02 11:50
MW-4-092602	P2I0811-12	Water	09/26/02 13:33	09/27/02 11:50
MW-8-092602	P2I0811-13	Water	09/26/02 14:17	09/27/02 11:50
MW-LR-092602	P2I0811-14	Water	09/26/02 15:27	09/27/02 11:50
Rinsate-092602	P2I0811-15	Water	09/26/02 16:10	09/27/02 11:50
MW-13-092602	P2I0811-16	Water	09/26/02 16:33	09/27/02 11:50

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Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-35s-092302 (P2I0811-01) Water					Sampled: 09/23/02	Received: 09/27/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-25-092502 (P2I0811-02) Water					Sampled: 09/25/02	Received: 09/27/02			
Arsenic	**0.0157**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00107**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-31-092502 (P2I0811-03) Water					Sampled: 09/25/02	Received: 09/27/02			
Arsenic	**0.0126**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-18-092502 (P2I0811-04) Water					Sampled: 09/25/02	Received: 09/27/02			
Arsenic	**0.0243**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00180**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-23-092502 (P2I0811-05) Water					Sampled: 09/25/02	Received: 09/27/02			
Arsenic	**0.00262**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	

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ortland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
W-2-092502 (P2I0811-06) Water					Sampled: 09/25/02	Received: 09/27/02			
rsenic	ND	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00183**	0.00100	"	"	"	"	"	"	
pper	ND	0.00200	"	"	"	"	"	"	
nc	ND	0.00500	"	"	"	"	"	"	
W-3-092602 (P2I0811-07) Water					Sampled: 09/26/02	Received: 09/27/02			
senic	**0.00209**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00135**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
nc	ND	0.00500	"	"	"	"	"	"	
MW-05-092602 (P2I0811-08) Water					Sampled: 09/26/02	Received: 09/27/02			
c	**0.0103**	0.00100	mg/l	1	EPA 6020	10/07/02	10/10/02	2100225	
hromium	**0.00663**	0.00100	"	"	"	"	10/09/02	"	
Copper	**0.0239**	0.00200	"	"	"	"	"	"	
nc	**2.16**	0.0410	"	8.19	"	"	10/09/02	"	R-02
MW-15-092602 (P2I0811-09) Water					Sampled: 09/26/02	Received: 09/27/02			
rsenic	**0.00791**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
hromium	**0.00160**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
W-5-092602 (P2I0811-10) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.00747**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
hromium	**0.00137**	0.00100	"	"	"	"	"	"	
pper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	

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Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

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North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-K-092602 (P2I0811-11) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.00476**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00190**	0.00100	"	"	"	"	"	"	
Copper	**0.00296**	0.00200	"	"	"	"	"	"	
Zinc	**0.217**	0.00500	"	"	"	"	"	"	
MW-4-092602 (P2I0811-12) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.00747**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00164**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-8-092602 (P2I0811-13) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.118**	0.00825	mg/l	8.25	EPA 6020	10/07/02	10/08/02	2100225	R-06
Chromium	**0.00123**	0.00100	"	1	"	"	10/08/02	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
MW-LR-092602 (P2I0811-14) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.0109**	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	**0.00199**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	
Rinsate-092602 (P2I0811-15) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	ND	0.00100	mg/l	1	EPA 6020	10/07/02	10/08/02	2100225	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	**0.00655**	0.00500	"	"	"	"	"	"	

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Total Metals per EPA 6000/7000 Series Methods

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-13-092602 (P2I0811-16) Water					Sampled: 09/26/02	Received: 09/27/02			
Arsenic	**0.0184**	0.00100	mg/l	1	EPA 6020	10/07/02	10/09/02	2100225	
Chromium	**0.00278**	0.00100	"	"	"	"	"	"	
Copper	ND	0.00200	"	"	"	"	"	"	
Zinc	ND	0.00500	"	"	"	"	"	"	

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Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-35s-092302 (P2I0811-01) Water					Sampled: 09/23/02	Received: 09/27/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/30/02	10/09/02	2091138	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**1.96**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*66.7 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*62.1 %*	*30-150*							
Surr: Pyrene-d10	*65.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*65.0 %*	*10-125*							
MW-25-092502 (P2I0811-02) Water					Sampled: 09/25/02	Received: 09/27/02			
Acenaphthene	**89.3**	5.00	ug/l	50	EPA 8270m	09/30/02	10/09/02	2091138	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	R-03
Anthracene	**0.857**	0.100	"	1	"	"	10/09/02	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.356**	0.100	"	"	"	"	"	"	
Fluorene	**36.3**	5.00	"	50	"	"	10/09/02	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/09/02	"	
Naphthalene	**795**	50.0	"	500	"	"	10/10/02	"	
Pentachlorophenol	ND	1.00	"	1	"	"	10/09/02	"	

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Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-25-092502 (P2I0811-02) Water					Sampled: 09/25/02	Received: 09/27/02			
Phenanthrene	**6.51**	0.100	ug/l	1	EPA 8270m	09/30/02	10/09/02	2091138	
Pyrene	**0.357**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*62.9 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*56.7 %*	*10-125*							
MW-31-092502 (P2I0811-03) Water					Sampled: 09/25/02	Received: 09/27/02			
Acenaphthene	**57.2**	5.00	ug/l	50	EPA 8270m	09/30/02	10/09/02	2091138	
Acenaphthylene	**0.722**	0.100	"	1	"	"	10/09/02	"	
Anthracene	**1.49**	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.713**	0.100	"	"	"	"	"	"	
Fluorene	**29.7**	5.00	"	50	"	"	10/09/02	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/09/02	"	
Naphthalene	**97.1**	5.00	"	50	"	"	10/09/02	"	
Pentachlorophenol	ND	1.00	"	1	"	"	10/09/02	"	
Phenanthrene	**8.77**	0.100	"	"	"	"	"	"	
Pyrene	**0.511**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*66.9 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*63.1 %*	*30-150*							
Surr: Pyrene-d10	*65.3 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*65.3 %*	*10-125*							

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North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-18-092502 (P2I0811-04) Water					Sampled: 09/25/02	Received: 09/27/02			
Acenaphthene	**111**	10.0	ug/l	100	EPA 8270m	09/30/02	10/09/02	2091138	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	R-03
Anthracene	**4.19**	0.100	"	1	"	"	10/09/02	"	
Benzo (a) anthracene	**0.110**	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**2.71**	0.100	"	"	"	"	"	"	
Fluorene	**49.2**	10.0	"	100	"	"	10/09/02	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/09/02	"	
Naphthalene	**5850**	250	"	2500	"	"	10/10/02	"	
Pentachlorophenol	**205**	100	"	100	"	"	10/09/02	"	
Phenanthrene	**42.7**	10.0	"	"	"	"	"	"	
Pyrene	**1.67**	0.100	"	1	"	"	10/09/02	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*61.0 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*58.5 %*	*10-125*							
MW-23-092502 (P2I0811-05) Water					Sampled: 09/25/02	Received: 09/27/02			
Acenaphthene	ND	0.100	ug/l	1	EPA 8270m	09/30/02	10/09/02	2091138	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	**0.127**	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.306**	0.100	"	"	"	"	"	"	
Fluorene	**0.139**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**0.103**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-05-092602 (P2I0811-08) Water					Sampled: 09/26/02	Received: 09/27/02			
Phenanthrene	ND	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*64.8 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*64.0 %*	*30-150*							
Surr: Pyrene-d10	*63.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*47.6 %*	*10-125*							
MW-15-092602 (P2I0811-09) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**203**	10.0	ug/l	100	EPA 8270m	10/02/02	10/09/02	2100060	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	R-03
Anthracene	ND	10.0	"	"	"	"	"	"	R-03
Benzo (a) anthracene	**0.712**	0.100	"	1	"	"	10/08/02	"	
Benzo (a) pyrene	**0.181**	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	**0.347**	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	**0.143**	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	**0.502**	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**11.6**	10.0	"	100	"	"	10/09/02	"	
Fluorene	**135**	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/08/02	"	
Naphthalene	**1610**	100	"	1000	"	"	10/09/02	"	
Pentachlorophenol	ND	100	"	100	"	"	10/09/02	"	R-03
Phenanthrene	**81.8**	10.0	"	"	"	"	"	"	
Pyrene	**4.13**	0.100	"	1	"	"	10/08/02	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*62.4 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*65.0 %*	*10-125*							

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-5-092602 (P2I0811-10) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**215**	10.0	ug/l	100	EPA 8270m	10/02/02	10/09/02	2100060	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	R-03
Anthracene	ND	10.0	"	"	"	"	"	"	R-03
Benzo (a) anthracene	**0.739**	0.100	"	1	"	"	10/08/02	"	
Benzo (a) pyrene	**0.175**	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	**0.328**	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	**0.139**	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	**0.539**	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**12.3**	10.0	"	100	"	"	10/09/02	"	
Fluorene	**150**	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/08/02	"	
Naphthalene	**1620**	100	"	1000	"	"	10/09/02	"	
Pentachlorophenol	ND	100	"	100	"	"	10/09/02	"	R
Phenanthrene	**84.7**	10.0	"	"	"	"	"	"	
Pyrene	**4.30**	0.100	"	1	"	"	10/08/02	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*62.1 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*63.0 %*	*10-125*							
MW-K-092602 (P2I0811-11) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**0.127**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	**0.112**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**0.536**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-K-092602 (P2I0811-11) Water					Sampled: 09/26/02	Received: 09/27/02			
Phenanthrene	**0.140**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*64.6 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*65.0 %*	*30-150*							
Surr: Pyrene-d10	*63.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*63.8 %*	*10-125*							
MW-4-092602 (P2I0811-12) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**1.59**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	**0.330**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**0.430**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	**0.357**	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*62.0 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*64.9 %*	*30-150*							
Surr: Pyrene-d10	*60.7 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*62.0 %*	*10-125*							

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Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-8-092602 (P2I0811-13) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**171**	10.0	ug/l	100	EPA 8270m	10/02/02	10/09/02	2100060	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	R-03
Anthracene	ND	10.0	"	"	"	"	"	"	R-03
Benzo (a) anthracene	**1.44**	0.100	"	1	"	"	10/08/02	"	
Benzo (a) pyrene	**0.458**	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	**0.730**	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	**0.462**	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	**0.103**	0.100	"	"	"	"	"	"	
Chrysene	**1.11**	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**10.3**	10.0	"	100	"	"	10/09/02	"	
Fluorene	**80.4**	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	**0.123**	0.100	"	1	"	"	10/08/02	"	
Naphthalene	**8770**	250	"	2500	"	"	10/09/02	"	
Pentachlorophenol	**233**	100	"	100	"	"	10/09/02	"	
Phenanthrene	**49.8**	10.0	"	"	"	"	"	"	
Pyrene	**3.72**	0.100	"	1	"	"	10/08/02	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*60.2 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*64.8 %*	*10-125*							
MW-LR-092602 (P2I0811-14) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**47.7**	5.00	ug/l	50	EPA 8270m	10/02/02	10/09/02	2100060	
Acenaphthylene	ND	5.00	"	"	"	"	"	"	R-03
Anthracene	**0.956**	0.100	"	1	"	"	10/08/02	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.864**	0.100	"	"	"	"	"	"	
Fluorene	**13.7**	5.00	"	50	"	"	10/09/02	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	1	"	"	10/08/02	"	
Naphthalene	**3090**	100	"	1000	"	"	10/10/02	"	
Pentachlorophenol	**114**	50.0	"	50	"	"	10/09/02	"	

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North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-LR-092602 (P2I0811-14) Water					Sampled: 09/26/02	Received: 09/27/02			
Phenanthrene	**3.25**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Pyrene	**0.680**	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*NR*	*25-125*							*S-01*
Surr: 2,4,6-Tribromophenol	*NR*	*30-150*							*S-01*
Surr: Pyrene-d10	*61.9 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*63.1 %*	*10-125*							
Rinsate-092602 (P2I0811-15) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**0.165**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	**0.147**	0.100	"	"	"	"	"	"	
Fluorene	**0.127**	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**1.58**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	**0.164**	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*60.5 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*58.8 %*	*30-150*							
Surr: Pyrene-d10	*58.8 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*60.5 %*	*10-125*							

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333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-13-092602 (P2I0811-16) Water					Sampled: 09/26/02	Received: 09/27/02			
Acenaphthene	**0.565**	0.100	ug/l	1	EPA 8270m	10/02/02	10/08/02	2100060	
Acenaphthylene	ND	0.100	"	"	"	"	"	"	
Anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.100	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.100	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.100	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	0.100	"	"	"	"	"	"	
Chrysene	ND	0.100	"	"	"	"	"	"	
Dibenzo (a,h) anthracene	ND	0.200	"	"	"	"	"	"	
Fluoranthene	ND	0.100	"	"	"	"	"	"	
Fluorene	ND	0.100	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.100	"	"	"	"	"	"	
Naphthalene	**0.955**	0.100	"	"	"	"	"	"	
Pentachlorophenol	ND	1.00	"	"	"	"	"	"	
Phenanthrene	ND	0.100	"	"	"	"	"	"	
Pyrene	ND	0.100	"	"	"	"	"	"	
Surr: Fluorene-d10	*68.6 %*	*25-125*							
Surr: 2,4,6-Tribromophenol	*69.8 %*	*30-150*							
Surr: Pyrene-d10	*66.5 %*	*23-150*							
Surr: Benzo (a) pyrene-d12	*67.4 %*	*10-125*							

CHAIN OF CUSTODY RECORD

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Where Scientific Excellence and Efficiency Meet

Cooler No: 1 of 2
Lab:
Page: ____ of ____

PROJECT No: 749.0004 27.00
SITE NAME: McCormick & Baxter
LOCATION: (Include State) OR
CLIENT: E&E
PROJECT MANAGER: John Montgomery
OFFICE No: 503.248.5600 Pdx
FIELD TEAM LEADER: R. Whitchurch
PHONE No: 503.248.5600
SAMPLERS: (PRINT) J Spiegel / R. Whitchurch

CONTAINER TYPE AND PRESERVATIVE: Poly Nitric acid; Amber Not preserved; Amber Not preserved

REQUESTED ANALYSIS: As, Cr, Cu, Zn Total Metals; SVOCs 8270 - SIM; Dioxins/Furans Method 1613

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☒ RUSH ____ days OTHER ____ (RUSH)

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	As, Cr, Cu, Zn Total Metals	SVOCs 8270 - SIM	Dioxins/Furans Method 1613					OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
~~9/23/02~~	~~1615~~	~~MW-355-092302~~	~~W~~			~~2~~	~~✓~~	~~✓~~									
~~9/25/02~~	~~0954~~	~~MW-25-092302~~	~~W~~			~~2~~	~~✓~~	~~✓~~									JS 9/27/02
9/25/02	0954	MW-25-092502	W			2	✓	✓									
9/25/02	1057	MW-31-092502	W			3	✓	✓	✓								
9/25/02	1217	MW-18-092502	W			2	✓	✓									
9/25/02	1508	MW-23-092502	W			2	✓	✓									
9/25/02	1613	MW-2-092502	W			2	✓	✓									
9/26/02	0844	MW-3-092602	W			2	✓	✓									
			JS 9/27/02														

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	9/27/02 1029	[signature]	9-27-02 10:30		
Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	BL/Airbill Number:	
[signature]	9-27-02	Erica Dakin	9/27 1150		

Temperature Blank Info. Enclosed: Yes No

(FOR LAB USE ONLY) Date: 9/27 Time: 1150 Temperature: 8.3°C °C

4.7°C

Distribution: White - Lab original Yellow - Field team leader

0881297

PDL0811

CHAIN OF CUSTODY RECORD

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Cooler No: 2 of 2
Lab:
Page: ____ of ____

PROJECT No: 749.0604 27 00
SITE NAME: McCormick & Baxter
LOCATION: (Include State) OR
CLIENT: E&E
PROJECT MANAGER: John Montgomery
OFFICE No: 503 248 5600
FIELD TEAM LEADER: R. Whitchurch
PHONE No: 248 5600
SAMPLERS: (PRINT) J. Spiegel / R. Whitchurch

CONTAINER TYPE AND PRESERVATIVE: poly, Nitric Acid; Amber Ice; Amber Ice

REQUESTED ANALYSIS: As, Cr, Cu, Zn, Total Metals; SVOC's 8270-Sim; Dioxins/Furans Method 1613

TURNAROUND TIME: 24-HOUR ☐ 48-HOUR ☐ 1-WEEK ☐ STANDARD ☒ (RUSH) ~~RUSH~~ ____ ~~days~~ OTHER ____

(FOR LAB USE ONLY) Lab Job No: Report type: Batch QC: Yes No

DATE	TIME	SAMPLE ID	SAMPLE MATRIX	CHECK FOR MS/MSD	SAMPLE TYPE	No. OF CONTAINERS	As, Cr, Cu, Zn, Total Metals	SVOC's 8270-Sim	Dioxins/Furans Method 1613	OVA/HNU READINGS (PPM)	BEGINNING DEPTH (FEET BGS)	ENDING DEPTH (FEET BGS)	REMARKS
9/26/02	0947	MW-05-092602	W	✓		6	✓	✓					
9/26/02	0750	MW-15-092602	W			2	✓	✓					
9/26/02	1128	MW-5-092602	W			2	✓	✓					
9/26/02	1221	MW-K-092602	W			2	✓	✓					
9/26/02	1333	MW-4-092602	W			2	✓	✓					
9/26/02	1417	MW-8-092602	W			2	✓	✓					
9/26/02	1527	MW-LR-092602	W			3	✓	✓	✓				
9/26/02	1610	RinsATE-092602	W			2	✓	✓					
9/26/02	1633	MW-13-092602	W			2	✓	✓					
			JS 9/27/02										

Relinquished By: (Signature)	Date/Time:	Received By: (Signature)	Date/Time:	Ship Via:	Date:
[signature]	9/27/02 10:29	[signature]	9-27-02 10:30		
Relinquished By: (Signature) [signature]	Date/Time: 9-27-02	Received By: (Signature) Erica Dalton	Date/Time: 9/27 1150	BL/Airbill Number:	

Temperature Blank Info. Enclosed: Yes No
(FOR LAB USE ONLY) Date: ____ Time: ____ Temperature: 8.3°C °C

Distribution: White - Lab original Yellow - Field team leader

4.7°C

0881297

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Total Metals per EPA 6000/7000 Series Methods - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100225 - EPA 200/3005										
Blank (2100225-BLK1)				Prepared: 10/07/02 Analyzed: 10/10/02						
Arsenic	ND	0.00100	mg/l							
Chromium	ND	0.00100	"							
Copper	ND	0.00200	"							
Zinc	ND	0.00500	"							
LCS (2100225-BS1)				Prepared: 10/07/02 Analyzed: 10/10/02						
Arsenic	0.106	0.00100	mg/l	0.100		106	80-120			
Chromium	0.105	0.00100	"	0.100		105	80-120			
Copper	0.101	0.00200	"	0.100		101	80-120			
Zinc	0.108	0.00500	"	0.100		108	80-120			
Duplicate (2100225-DUP1)		Source: P2I0811-08		Prepared: 10/07/02 Analyzed: 10/10/02						
Arsenic	0.00984	0.00100	mg/l		0.0103			4.57	20	
Chromium	0.00681	0.00100	"		0.00663			2.68	20	
Copper	0.0247	0.00200	"		0.0239			3.29	20	
Zinc	2.06	0.0404	"		2.16			4.74	20	R-02
Matrix Spike (2100225-MS1)		Source: P2I0811-08		Prepared: 10/07/02 Analyzed: 10/10/02						
Arsenic	0.110	0.00100	mg/l	0.100	0.0103	99.7	75-125			
Chromium	0.106	0.00100	"	0.100	0.00663	99.4	75-125			
Copper	0.118	0.00200	"	0.100	0.0239	94.1	75-125			
Zinc	2.02	0.0402	"	0.100	2.16	-140	75-125			Q-03,R-02
Matrix Spike Dup (2100225-MSD1)		Source: P2I0811-08		Prepared: 10/07/02 Analyzed: 10/08/02						
Arsenic	0.107	0.00100	mg/l	0.100	0.0103	96.7	75-125	2.76	20	
Chromium	0.111	0.00100	"	0.100	0.00663	104	75-125	4.61	20	
Copper	0.120	0.00200	"	0.100	0.0239	96.1	75-125	1.68	20	
Zinc	2.11	0.0392	"	0.100	2.16	-50.0	75-125	4.36	20	Q-03,R-02

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorophenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2091138 - EPA 3510/600 Series										
Blank (2091138-BLK1)				Prepared: 09/30/02 Analyzed: 10/09/02						
Acenaphthene	ND	0.100	ug/l							
Acenaphthylene	ND	0.100	"							
Anthracene	ND	0.100	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (a) pyrene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.100	"							
Benzo (k) fluoranthene	ND	0.100	"							
Benzo (ghi) perylene	ND	0.100	"							
Chrysene	ND	0.100	"							
Dibenzo (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	0.100	"							
Fluorene	ND	0.100	"							
Indeno (1,2,3-cd) pyrene	ND	0.100	"							
Naphthalene	ND	0.100	"							
Pentachlorophenol	ND	1.00	"							
Phenanthrene	ND	0.100	"							
Pyrene	ND	0.100	"							
Surr: Fluorene-d10	*1.57*		"	*2.50*		*62.8*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.25*		"	*2.50*		*50.0*	*30-150*			
Surr: Pyrene-d10	*1.62*		"	*2.50*		*64.8*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.62*		"	*2.50*		*64.8*	*10-125*			
LCS (2091138-BS1)				Prepared: 09/30/02 Analyzed: 10/10/02						
Acenaphthene	1.74	0.100	ug/l	2.50		69.6	27-133			
Benzo (a) pyrene	1.40	0.100	"	2.50		56.0	41-139			
Pentachlorophenol	1.41	1.00	"	5.00		28.2	24-147			
Pyrene	1.48	0.100	"	2.50		59.2	34-143			
Surr: Fluorene-d10	*1.80*		"	*2.50*		*72.0*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.78*		"	*2.50*		*71.2*	*30-150*			
Surr: Pyrene-d10	*1.66*		"	*2.50*		*66.4*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.80*		"	*2.50*		*72.0*	*10-125*			

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2091138 - EPA 3510/600 Series										
LCS Dup (2091138-BSD1)				Prepared: 09/30/02 Analyzed: 10/10/02						
Acenaphthene	1.81	0.100	ug/l	2.50		72.4	27-133	3.94	50	
Benzo (a) pyrene	1.61	0.100	"	2.50		64.4	41-139	14.0	50	
Pentachlorophenol	1.09	1.00	"	5.00		21.8	24-147	25.6	50	A-03
Pyrene	1.64	0.100	"	2.50		65.6	34-143	10.3	50	
Surr: Fluorene-d10	*2.04*		"	*2.50*		*81.6*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.98*		"	*2.50*		*79.2*	*30-150*			
Surr: Pyrene-d10	*1.82*		"	*2.50*		*72.8*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.95*		"	*2.50*		*78.0*	*10-125*			
Batch 2100060 - EPA 3510/600 Series										
Blank (2100060-BLK1)				Prepared: 10/02/02 Analyzed: 10/09/02						
[illegible]aphthene	ND	0.100	ug/l							
Acenaphthylene	ND	0.100	"							
Anthracene	ND	0.100	"							
Benzo (a) anthracene	ND	0.100	"							
Benzo (a) pyrene	ND	0.100	"							
Benzo (b) fluoranthene	ND	0.100	"							
Benzo (k) fluoranthene	ND	0.100	"							
Benzo (ghi) perylene	ND	0.100	"							
Chrysene	ND	0.100	"							
Dibenzo (a,h) anthracene	ND	0.200	"							
Fluoranthene	ND	0.100	"							
Fluorene	ND	0.100	"							
Indeno (1,2,3-cd) pyrene	ND	0.100	"							
Naphthalene	ND	0.100	"							
Pentachlorophenol	ND	1.00	"							
Phenanthrene	ND	0.100	"							
Pyrene	ND	0.100	"							
Surr: Fluorene-d10	*1.69*		"	*2.50*		*67.6*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.49*		"	*2.50*		*59.6*	*30-150*			
Surr: Pyrene-d10	*1.78*		"	*2.50*		*71.2*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.79*		"	*2.50*		*71.6*	*10-125*			

[illegible]h Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Crystal Jones, Project Manager

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Polynuclear Aromatic Compounds and Pentachlorphenol per EPA 8270M-SIM - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2100060 - EPA 3510/600 Series										
LCS (2100060-BS1)				Prepared: 10/02/02	Analyzed: 10/08/02					
Acenaphthene	1.50	0.100	ug/l	2.50		60.0	27-133			
Benzo (a) pyrene	1.32	0.100	"	2.50		52.8	41-139			
Pentachlorophenol	2.52	1.00	"	5.00		50.4	24-147			
Pyrene	1.34	0.100	"	2.50		53.6	34-143			
Surr: Fluorene-d10	*1.60*		"	*2.50*		*64.0*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.70*		"	*2.50*		*68.0*	*30-150*			
Surr: Pyrene-d10	*1.56*		"	*2.50*		*62.4*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.72*		"	*2.50*		*68.8*	*10-125*			
Matrix Spike (2100060-MS1)		**Source: P2I0811-08**		Prepared: 10/02/02	Analyzed: 10/08/02					
Acenaphthene	1.51	0.100	ug/l	2.44	ND	61.9	27-133			
Benzo (a) pyrene	0.968	0.100	"	2.44	ND	39.7	41-139			Q-01
Pentachlorophenol	2.65	1.00	"	4.88	ND	54.3	24-147			
Pyrene	1.29	0.100	"	2.44	ND	52.9	34-143			
Surr: Fluorene-d10	*1.61*		"	*2.44*		*66.0*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.67*		"	*2.44*		*68.4*	*30-150*			
Surr: Pyrene-d10	*1.50*		"	*2.44*		*61.5*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.31*		"	*2.44*		*53.7*	*10-125*			
Matrix Spike Dup (2100060-MSD1)		**Source: P2I0811-08**		Prepared: 10/02/02	Analyzed: 10/08/02					
Acenaphthene	1.57	0.100	ug/l	2.45	ND	64.1	27-133	3.90	50	
Benzo (a) pyrene	0.996	0.100	"	2.45	ND	40.7	41-139	2.85	50	Q-01
Pentachlorophenol	2.80	1.00	"	4.90	ND	57.1	24-147	5.50	50	
Pyrene	1.35	0.100	"	2.45	ND	55.1	34-143	4.55	50	
Surr: Fluorene-d10	*1.69*		"	*2.45*		*69.0*	*25-125*			
Surr: 2,4,6-Tribromophenol	*1.69*		"	*2.45*		*69.0*	*30-150*			
Surr: Pyrene-d10	*1.59*		"	*2.45*		*64.9*	*23-150*			
Surr: Benzo (a) pyrene-d12	*1.34*		"	*2.45*		*54.7*	*10-125*			

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Ecology & Environment	Project: McCormick and Baxter	
333 SW Fifth Avenue, Suite 608	Project Number: 749.OQ04.27.00	**Reported:**
Portland, OR 97204	Project Manager: John Montgomery	10/15/02 11:03

Notes and Definitions

A-03	The recovery for this parameter is below acceptance limits. Data for the batch is validated by acceptable blank spike PCP recovery.
Q-01	The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
Q-03	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
R-02	The reporting limit for this analyte was raised due to the high analyte concentration present in the sample.
R-03	The reporting limit for this analyte was raised due to matrix interference.
S-01	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. MRLs are adjusted if %Solids are less than 50%.
wet	Sample results reported on a wet weight basis (as received)
RPD	Relative Percent Difference

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October 30, 2002

John Montgomery
Ecology & Environment
333 SW Fifth Avenue
Suite 608
Portland, OR 97204

RE: Dioxin results for McCormick & Baxter

Enclosed are the dioxin results from Pace Analytical for water samples collected on 9/25/02. Sample Ids correspond as follows:

Client ID	NCA ID	Pace ID
MW-31-092502	P2I0811-03	103899464
MW-18-092502	P2I0811-04	103899472

Please let me know if you have any questions.

Sincerely,

Crystal Jones
Project Manager

F

Complete Analytical Tables for September 2002 Sampling Event

Table 1a Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-51 (5A)
Date Sampled	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/6/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*
NWTPH-Dx										
TPH Diesel Range	--	--	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--	--	--
PAHs (8250-SIM)	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*
2-Chloronaphthalene	<0.036	<0.037	<0.039	<0.037	<0.036	<0.038	<0.037	<0.038	<0.037	<0.037
9H-Fluorene	<0.018	<0.019	<0.020	<0.019	<0.018	**10.0**	<0.019	<0.019	<0.019	<0.019
Acenaphthene	<0.018	<0.019	<0.020	<0.019	<0.018	**9.8**	<0.019	**0.013 J**	<0.019	<0.019
Acenaphthylene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.042**	<0.019	<0.019	<0.019	<0.019
Anthracene	<0.018	<0.019	<0.020	<0.019	<0.018	**3.8**	<0.019	<0.019	<0.019	<0.019
Benzo[a]anthracene	<0.036	<0.037	<0.039	<0.037	<0.036	**1.5**	<0.037	**0.0051 J**	**0.0041 J**	<0.037
Benzo[a]pyrene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.44**	<0.037	<0.038	<0.037	<0.037
Benzo[g,h,i]perylene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.087**	<0.019	<0.019	<0.019	<0.019
Benzo[b]fluoranthene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.77**	<0.019	<0.019	<0.019	<0.019
Benzo[k]fluoranthene	<0.018	<0.019	<0.020	<0.019	<0.018	**0.39**	<0.019	<0.019	<0.019	<0.019
Chrysene	<0.036	<0.037	<0.039	<0.037	<0.036	**1.2**	<0.037	**0.0067 J**	**0.0039 J**	<0.037
Dibenz[a,h]anthracene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.093 J**	<0.037	<0.038	<0.037	<0.037
Dibenzofuran	<0.018	<0.019	<0.020	<0.019	<0.018	**5.7**	<0.019	<0.019	<0.019	<0.019
Fluoranthene	<0.018	**0.0084 J**	**0.032**	**0.0071 J**	**0.0041 J**	**11.9**	**0.0083 J**	**0.024**	**0.018 J**	**0.0043 J**
Fluorene	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	<0.036	<0.037	<0.039	<0.037	<0.036	**0.13**	<0.037	<0.038	<0.037	<0.037
Naphthalene	<0.018	<0.019	<0.020	<0.019	<0.018	**3.3**	<0.019	<0.019	<0.019	<0.019
Naphthalene, 1-methyl-	<0.018	<0.019	<0.020	<0.019	<0.018	**1.3**	<0.019	<0.019	<0.019	<0.019
Naphthalene, 2-methyl-	<0.018	<0.019	<0.020	<0.019	<0.018	**1.3**	<0.019	<0.019	<0.019	<0.019
Phenanthrene	<0.018	**0.0098 J**	**0.013 J**	<0.019	<0.018	**22.7**	<0.019	<0.019	**0.0087 J**	<0.019
Pyrene	<0.018	<0.019	**0.016 J**	<0.019	<0.018	**5.3**	<0.019	**0.013 J**	**0.011 J**	<0.019
Retene	<0.018	<0.019	<0.020	<0.019	<0.018	<0.019	<0.019	<0.019	<0.019	<0.019
SVOCs (EPA 8270C)										
Acenaphthene	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--	--	--	--

Table 1a Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-7	SED-8	SED-9	SED-51 (5A)
Date Sampled	9/5/2002	9/5/2002	9/6/2002	9/6/2002	9/5/2002	9/6/2002	9/5/2002	9/5/2002	9/6/2002	9/5/2002
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--
SVOCs (EPA 8270C)										
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	<0.018	<0.019	**0.079**	<0.019	<0.018	**0.078**	**0.051**	**0.025**	<0.019	**0.025**

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	UNFILTERED						
	SPMD-1 grab	*SPMD-2 grab*	*SPMD-5 grab*	*SPMD-11 grab*	*SPMD-15 grab*	*SPMD-15 grab (duplicate)*	*SPMD-20 grab*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
NWTPH-Dx					*(mg/L)*	*(mg/L)*	
TPH Diesel Range	--	--	--	--	<0.0253	<0.0249	--
TPH Heavy Oil Range	--	--	--	--	<0.0506	<0.0498	--
PAHs (8250-SIM)	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*
2-Chloronaphthalene	--	--	--	--	--	--	--
9H-Fluorene	--	--	--	--	--	--	--
Acenaphthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Acenaphthylene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Anthracene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]anthracene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[a]pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[g,h,i]perylene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[b]fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Benzo[k]fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Chrysene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Dibenz[a,h]anthracene	<0.0472	<0.0476	<0.0472	<0.0478	<0.0506	<0.0498	<0.0481
Dibenzofuran	--	--	--	--	--	--	--
Fluoranthene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	0.0313	<0.0240
Fluorene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Ideno[1,2,3-cd]pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Naphthalene, 1-methyl-	--	--	--	--	--	--	--
Naphthalene, 2-methyl-	--	--	--	--	--	--	--
Phenanthrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Pyrene	<0.0236	<0.0238	<0.0236	<0.0239	<0.0253	<0.0249	<0.0240
Retene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Acenaphthene	--	--	--	--	<1.27	<1.24	--
Acenaphthylene	--	--	--	--	<1.27	<1.24	--
Anthracene	--	--	--	--	<1.27	<1.24	--
Benzo[a]anthracene	--	--	--	--	<1.27	<1.24	--
Benzo[a]pyrene	--	--	--	--	<1.27	<1.24	--
Benzo[g,h,i]perylene	--	--	--	--	<1.27	<1.24	--
Benzo[b]fluoranthene	--	--	--	--	<1.27	<1.24	--
Benzo[k]fluoranthene	--	--	--	--	<1.27	<1.24	--
Benzoic Acid	--	--	--	--	<12.7	<12.4	--
Benzyl Alcohol	--	--	--	--	<2.53	<2.49	--
4-Bromophenyl phenyl ether	--	--	--	--	<1.27	<1.24	--
Butyl benzyl phthalate	--	--	--	--	<1.27	<1.24	--
4-Chloro-3-methylphenol	--	--	--	--	<1.27	<1.24	--
4-Chloroaniline	--	--	--	--	<5.06	<4.98	--
Bis(2-chloroethoxy)methane	--	--	--	--	<2.53	<2.49	--
Bis(2-chloroethyl)ether	--	--	--	--	<1.27	<1.24	--
Bis(2-chloroisopropyl)ether	--	--	--	--	<2.53	<2.49	--
2-Chlorophthalene	--	--	--	--	<1.27	<1.24	--
2-Chlorophenol	--	--	--	--	<1.27	<1.24	--

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	UNFILTERED						
	SPMD-1 grab	*SPMD-2 grab*	*SPMD-5 grab*	*SPMD-11 grab*	*SPMD-15 grab*	*SPMD-15 grab (duplicate)*	*SPMD-20 grab*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
4-Chlorophenyl phenyl ether	--	--	--	--	<1.27	<1.24	--
Chrysene	--	--	--	--	<1.27	<1.24	--
SVOCs (EPA 8270C)							
Di-n-butyl phthalate	--	--	--	--	<1.27	<1.24	--
Di-n-octyl phthalate	--	--	--	--	<1.27	<1.24	--
Dibenz[a,h]anthracene	--	--	--	--	<1.27	<1.24	--
Dibenzofuran	--	--	--	--	<1.27	<1.24	--
1,2-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
1,3-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
1,4-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
3,3'-Dichlorobenzene	--	--	--	--	<1.27	<1.24	--
2,4-Dichlorophenol	--	--	--	--	<1.27	<1.24	--
Diethyl phthalate	--	--	--	--	<1.27	<1.24	--
2,4-Dimethylphenol	--	--	--	--	<2.53	<2.49	--
Dimethyl phthalate	--	--	--	--	<1.27	<1.24	--
4,6-Dinitro-2-methylphenol	--	--	--	--	<2.53	<2.49	--
2,4-Dinitrophenol	--	--	--	--	<6.33	<6.22	--
2,4-Dnintrotoluene	--	--	--	--	<1.27	<1.24	--
2,6-Dinitrotoluene	--	--	--	--	<1.27	<1.24	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	<2.53	<2.49	--
Fluoranthene	--	--	--	--	<1.27	<1.24	--
Fluorene	--	--	--	--	<1.27	<1.24	--
Hexachlorobenzene	--	--	--	--	<1.27	<1.24	--
Hexachlorobutadiene	--	--	--	--	<2.53	<2.49	--
Hexachlorocyclopentadiene	--	--	--	--	<2.53	<2.49	--
Hexachloroethane	--	--	--	--	<2.53	<2.49	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	<1.27	<1.24	--
Isophorone	--	--	--	--	<1.27	<1.24	--
2-Methylnaphthalene	--	--	--	--	<1.27	<1.24	--
2-Methylphenol	--	--	--	--	<2.53	<2.49	--
3-,4-Methylphenol	--	--	--	--	<1.27	<1.24	--
Naphthalene	--	--	--	--	<1.27	<1.24	--
2-Nitroaniline	--	--	--	--	<1.27	<1.24	--
3-Nitroaniline	--	--	--	--	<2.53	<2.49	--
4-Nitroaniline	--	--	--	--	<2.53	<2.49	--
Nitrobenzene	--	--	--	--	<1.27	<1.24	--
2-Nitrophenol	--	--	--	--	<1.27	<1.24	--
4-Nitrophenol	--	--	--	--	<6.33	<6.22	--
N-Nitrosodi-n-propylamine	--	--	--	--	<2.53	<2.49	--
N-Nitrosodiphenylamine	--	--	--	--	<1.27	<1.24	--
Pentachlorophenol	--	--	--	--	<2.53	<2.49	--
Phenanthrene	--	--	--	--	<1.27	<1.24	--
Phenol	--	--	--	--	<1.27	<1.24	--
Pyrene	--	--	--	--	<1.27	<1.24	--
1,2,4-Trichlorobenzene	--	--	--	--	<1.27	<1.24	--
2,4,5-Trichlorophenol	--	--	--	--	<1.27	<1.24	--
2,4,6-Trichlorophenol	--	--	--	--	<1.27	<1.24	--
Pentachlorophenol	<0.236	<0.238	<0.236	<0.239	<0.253	<0.249	<0.240

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	FILTERED						
	SPMD-1 (filtered)	*SPMD-2 (filtered)*	*SPMD-5 (filtered)*	*SPMD-11 (filtered)*	*SPMD-15 (filtered)*	*SPMD-15 (duplicate) (filtered)*	*SPMD-20 (filtered)*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
NWTPH-Dx							
TPH Diesel Range	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--
PAHs (8250-SIM)	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*	*(ug/L)*
2-Chloronaphthalene	--	--	--	--	--	--	--
9H-Fluorene	--	--	--	--	--	--	--
Acenaphthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Acenaphthylene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Anthracene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]anthracene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[a]pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[g,h,i]perylene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[b]fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Benzo[k]fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Chrysene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Dibenz[a,h]anthracene	<0.0472	<0.0495	<0.0481	<0.0476	<0.0513	<0.0541	<0.0483
Dibenzofuran	--	--	--	--	--	--	--
Fluoranthene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0595**	<0.0242
Fluorene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Ideno[1,2,3-cd]pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Naphthalene, 1-methyl-	--	--	--	--	--	--	--
Naphthalene, 2-methyl-	--	--	--	--	--	--	--
Phenanthrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	<0.0270	<0.0242
Pyrene	<0.0236	<0.0248	<0.0240	<0.0238	<0.0256	**0.0423**	<0.0242
Retene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Acenaphthene	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--

Table 1a Surface Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	FILTERED						
	SPMD-1 (filtered)	*SPMD-2 (filtered)*	*SPMD-5 (filtered)*	*SPMD-11 (filtered)*	*SPMD-15 (filtered)*	*SPMD-15 (duplicate) (filtered)*	*SPMD-20 (filtered)*
Date Sampled	*9/12/2002 10:00*	*9/12/02 10:55*	*9/12/2002 17:10*	*9/12/2002 16:00*	*9/12/2002 15:00*	*9/12/2002 15:00*	*9/12/2002 13:40*
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--
SVOCs (EPA 8270C)							
Di-n-butyl phthalate	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--
Pentachlorophenol	<0.236	<0.248	<0.240	<0.238	<0.256	<0.270	<0.242

-- Not analyzed
MRL Method Reporting Limit
J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*SED-1 (mg/L)*	*SED-2 (mg/L)*	*SED-3 (mg/L)*	*SED-4 (mg/L)*	*SED-5 (mg/L)*	*SED-6 (mg/L)*	*SED-7 (mg/L)*	*SED-8 (mg/L)*	*SED-9 (mg/L)*	*SED-51 (5A) (mg/L)*
Date Analyzed	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/6/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*
Arsenic	*	*	*	*	*	*	*	*	*	*
Chromium	*	*	*	*	*	*	*	*	*	*
Copper	*	*	*	*	*	*	*	*	*	*
Zinc	*	*	*	*	*	*	*	*	*	*
Total Suspended Solids	**10.0**	**12.0**	**4.40**	**4.42**	**9.68**	**24.8**	**8.40**	**41.6**	**29.4**	--
	(ng/L)	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*	*(ng/L)*
Mercury	**237**	**1370**	**187**	**89.0**	**249**	**201**	**1480**	**403**	**929**	**855**

* Results pending

-- Not analyzed

J reported value is an estimate

Surface water grab samples collected by EPA dive team in September 2002. Samples collected approximately 1 foot off river bottom. Samples analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*Analyzed 9/18/2002*						
	SPMD-1 grab (mg/L)	*SPMD-2 grab (mg/L)*	*SPMD-5 grab (mg/L)*	*SPMD-11 grab (mg/L)*	*SPMD-15 grab (mg/L)*	*SPMD-15 grab (duplicate) (mg/L)*	*SPMD-20 grab (mg/L)*
Date Analyzed	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*	*9/18/2002*
Arsenic	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium	<0.00100	<0.00100	<0.00100	**0.00101**	<0.00100	**0.00300**	<0.00100
Copper	**0.00376**	**0.00207**	**0.00584**	**0.0256**	<0.00200	**0.00951**	**0.00362**
Zinc	**0.00767**	**0.00509**	**0.00602**	**0.0169**	<0.00500	**0.0221**	**0.00710**
Total Suspended Solids							
Mercury	--	--	--	--	--	--	--

-- Not analyzed

J reported value is an estimate

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 1b Surface Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*Analyzed 9/23/2002*						
	SPMD-1 grab (mg/L)	*SPMD-2 grab (mg/L)*	*SPMD-5 grab (mg/L)*	*SPMD-11 grab (mg/L)*	*SPMD-15 grab (mg/L)*	*SPMD-15 grab (duplicate) (mg/L)*	*SPMD-20 grab (mg/L)*
Date Analyzed	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*	*9/23/2002*
Arsenic	<0.00100	**0.00121**	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Chromium	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100
Copper	**0.00257**	**0.00177**	**0.00154**	**0.00217**	**0.00141**	**0.00147**	**0.00191**
Zinc	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
Total Suspended Solids							
Mercury	--	--	--	--	--	--	--

-- Not analyzed

Surface water samples were collected by OSU on behalf of DEQ on September 12, 2002. Samples were collected from approximately 1 foot off the river bottom. Samples were analyzed by North Creek Analytical Inc., Portland, Oregon under contract to DEQ. Laboratory data sheets are provided in Appendix B.

Table 2a Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*SED-1 (ug/kg)*	*SED-2 (ug/kg)*	*SED-3 (ug/kg)*	*SED-4 (ug/kg)*	*SED-5 (ug/kg)*	*SED-6 (ug/kg)*	*SED-7 (ug/kg)*	*SED-8 (ug/kg)*
Date Sampled	*9/5/2002*	*9/5/2002*	*9/6/2002*	*9/6/2002*	*9/5/2002*	*9/6/2002*	*9/5/2002*	*9/5/2002*
NWTPH-Dx								
TPH Diesel Range	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--
PAHs (8250-SIM)								
2-Chloronaphthalene	<208	<8.0	<206 J	<7.2	<93.2	<9.1	<12.2	<10.7
9H-Fluorene	44900	7.0	616 J	656	1600	431	1530	41.3 J
Acenaphthene	48800	3.4 J	1720 J	274	2130	405	1370	18.6 J
Acenaphthylene	161	2.4 J	113 J	19.7	<46.6	14.8	29.3	6.7 J
Anthracene	23300	6.7	157 J	526	466	213	1480	31.8 J
Benzo[a]anthracene	13200	29.5	36 J	787	380	333	844	90.7 J
Benzo[a]pyrene	4930	17.1	16.0 J	298	146	181	452	55.9 J
Benzo[g,h,i]perylene	1120	11.9	<11.9 J	93.3	47.9	68.2	207	32 J
Benzo[b]fluoranthene	6300	25.1	16.4 J	632	250	373	558	99.9 J
Benzo[k]fluoranthene	4740 J	16.9 J	10.1 J	419	178 J	199	327 J	69.3 J
Chrysene	12700	33.3	35.4 J	999	408	339	861	92.2 J
Dibenz[a,h]anthracene	243 J	1.3 J	<23.8 J	64.3 J	<93.2	40.3 J	93.0 J	17.6 J
Dibenzofuran	2310	5.3	589 J	262	543	250	694	27.2 J
Fluoranthene	57700	65.9	306 J	5250 J	1300	1020	3790	203 J
Ideno[1,2,3-cd]pyrene	1590	12.5	<23.8 J	139	63.7 J	92.4	218	37.9 J
Naphthalene	3180	12.2	241000 J	310	832	495	810	41.4 J
Naphthalene, 1-methyl-	18800	2.2 J	3860 J	79.1	189	88.1	314	8.9 J
Naphthalene, 2-methyl-	1890	5.0	5910 J	129	292	162	508	16.6 J
Phenanthrene	94300	18.8	956 J	2450	2280	668	4310	61.5 J
Pyrene	31000	48.1	223 J	2290	683	525 J	1990	148 J
Retene	55500	69.6	43300 J	71.4	4450	57.7	399	93.7 J
Pentachlorophenol	27	<1.6	360	20	3.7	58	630	24

-- Not analyzed

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 2a Sediment Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*SED-9 (ug/kg)*	*SED-51 (5A) (ug/kg)*	*EPA (SH) 6 (ug/kg)*	*MHBA1-1 (mg/kg)*	*MHBA1-3 (mg/kg)*	*MHBA2-1 (mg/kg)*	*MHBA2-2 (mg/kg)*
Date Sampled	*9/6/2002*	*9/5/2002*	*9/10/2002*	*9/5/2002 13:10*	*9/5/2002 12:28*	*9/5/2002 13:00*	*9/5/2002 12:48*
NWTPH-Dx							
TPH Diesel Range	--	--	--	<25.0	**27.30**	<25.0	<25.0
TPH Heavy Oil Range	--	--	--	<50.0	<50.0	<50.0	<50.0
PAHs (8250-SIM)							
2-Chloronaphthalene	<12.7	<9.0	<77.9	--	--	--	--
9H-Fluorene	**779**	**355 J**	**14900**	--	--	--	--
Acenaphthene	**902**	**440 J**	**14800**	--	--	--	--
Acenaphthylene	**30.1**	**5.3 J**	**81.4**	--	--	--	--
Anthracene	**358**	**110 J**	**8420**	--	--	--	--
Benzo[a]anthracene	**485**	**201 J**	**3380**	--	--	--	--
Benzo[a]pyrene	**230**	**84 J**	**763**	--	--	--	--
Benzo[g,h,i]perylene	**82.1**	**25.1 J**	**139**	--	--	--	--
Benzo[b]fluoranthene	**383**	**130 J**	**1010**	--	--	--	--
Benzo[k]fluoranthene	**235**	**86.8 J**	**840**	--	--	--	--
Chrysene	**565**	**190 J**	**2750**	--	--	--	--
Dibenz[a,h]anthracene	**17.2 J**	**14.6 J**	**126**	--	--	--	--
Dibenzofuran	**489**	**152 J**	**11600**	--	--	--	--
Fluoranthene	**2850**	**892 J**	**20300**	--	--	--	--
Ideno[1,2,3-cd]pyrene	**110**	**32.8 J**	**221**	--	--	--	--
Naphthalene	**2100**	**651 J**	**3990**	--	--	--	--
Naphthalene, 1-methyl-	**479**	**91.0 J**	**4970**	--	--	--	--
Naphthalene, 2-methyl-	**1130**	**175 J**	**5640**	--	--	--	--
Phenanthrene	**2180**	**887 J**	**35000**	--	--	--	--
Pyrene	**1240 J**	**399 J**	**9600**	--	--	--	--
Retene	**237**	**12500 J**	**139**	--	--	--	--
Pentachlorophenol	**26**	**2.8**	**130**	--	--	--	--

-- Not analyzed

Sediment samples with the prefix MHBA were collected by DEQ on September 5, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed at North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.

Table 2b Sediment Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample ID	Date Sampled	Total Organic Carbor	Mercury
SED-1	*9/5/2002*	*(mg/Kg)*	*(mg/Kg)*
SED-2	*9/5/2002*	**27000**	**0.238**
SED-3	*9/6/2002*	**360**	**0.0251**
SED-4	*9/6/2002*	**260000**	**0.0435**
SED-5	*9/5/2002*	**2800**	<0.020
SED-6	*9/6/2002*	**6100**	**0.0360**
SED-7	*9/5/2002*	**6500**	**0.627**
SED-8	*9/5/2002*	**13000**	**0.0617**
SED-9	*9/6/2002*	**16000**	**0.0733**
SED-51 (5A)	*9/5/2002*	**15000**	**0.109**
EPA (SH) 6	*9/10/2002*	--	**0.0272**

-- Not analyzed

Sediment samples with the prefix SED were collected by EPA dive team on September 5 and 6, 2002. The sample with the prefix EPA (SH) was collected by EPA shoreline team on September 10 ,2002. Samples were collected from approximately 1 foot below the sediment surface. Samples were analyzed by EPA, Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3a Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-3	SED-4	SED-5	SED-7	SED-51 (5A)	Beach B-1 (EPA-SH-1)	EPA (SH) 2	EPA (SH) 3	EPA (SH) 4	EPA (SH) 5
Date Sampled	9/6/02	9/6/02	9/5/02	9/5/02	9/5/02	9/10/02	9/10/02	9/10/02	9/10/02	9/10/02
NWTPH-Dx										
TPH Diesel Range	--	--	--	--	--	--	--	--	--	--
TPH Heavy Oil Range	--	--	--	--	--	--	--	--	--	--
PAHs (8250-SIM)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
2-Chloronaphthalene	<0.13	<0.037	<0.038	<0.039	<0.058	<0.040	<0.040	<0.043	<0.043	<0.041
9H-Fluorene	**39.0**	**1.9**	**6.7**	**0.30**	**18.4**	<0.020	**11.0**	**0.02 J**	**0.077**	**0.89**
Acenaphthene	**104**	**6.6**	**25.4**	**8.5**	**65.5**	<0.020	**19.3**	**0.048**	**3.4**	**9.5**
Acenaphthylene	**0.24**	<0.019	**0.024**	<0.020	**0.046**	<0.020	**0.067**	<0.021	<0.021	**0.062**
Anthracene	**3.5**	**0.42**	**0.35**	**0.048**	**0.98**	<0.020	**0.17**	**0.012 J**	**0.042**	**0.11**
Benzo[a]anthracene	**0.23**	**0.39**	**0.040**	**0.011 J**	**0.21**	<0.040	**0.014 J**	<0.043	<0.043	**0.017 J**
Benzo[a]pyrene	**0.049**	**0.033 J**	<0.038	<0.039	**0.061**	<0.040	<0.040	<0.043	<0.043	<0.041
Benzo[g,h,i]perylene	**0.0089 J**	<0.019	<0.019	<0.020	**0.037**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[b]fluoranthene	**0.058**	**0.069**	<0.019	<0.020	**0.075**	<0.020	<0.020	<0.021	<0.021	<0.020
Benzo[k]fluoranthene	**0.043**	**0.034**	<0.019	<0.020	**0.056**	<0.020	<0.020	<0.021	<0.021	<0.020
Chrysene	**0.19**	**0.34**	**0.037 J**	**0.01 J**	**0.17**	<0.040	**0.013 J**	<0.043	<0.043	**0.014 J**
Dibenz[a,h]anthracene	<0.037	<0.037	<0.038	<0.039	<0.038	<0.040	<0.040	<0.043	<0.043	<0.041
Dibenzofuran	**28.3**	**0.066**	**5.3**	**0.18**	**14.9**	<0.020	**4.2**	<0.021	**0.052**	**0.55**
Fluoranthene	**3.1**	**3.3**	**0.48**	**0.077**	**1.7**	<0.020	**0.17**	**0.0096 J**	**0.018 J**	**0.17**
Fluorene	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	<0.037	<0.037	<0.038	<0.039	**0.036 J**	<0.040	<0.040	<0.043	<0.043	<0.041
Naphthalene	**2.8**	<0.074	**0.17**	**0.46**	**0.35**	<0.030	<0.056	<0.039	<0.021	**1.2**
Naphthalene, 1-methyl-	**63.2**	**0.030**	**18.4**	**0.62**	**51.5**	<0.020	**0.20**	<0.021	<0.021	**1.0**
Naphthalene, 2-methyl-	**6.4**	**0.017 J**	**2.1**	**0.37**	**3.5**	<0.020	<0.020	<0.021	<0.021	**0.29**
Phenanthrene	**33.3**	**5.1**	**3.4**	**0.27**	**11.1**	<0.020	**0.043**	**0.017 J**	**0.019 J**	**0.26**
Pyrene	**1.6**	**1.8**	**0.20**	**0.041**	**0.73**	<0.020	**0.16**	**0.069**	**0.035**	**0.070**
Retene	**0.35**	<0.019	**0.79**	**0.012 J**	**5.4**	<0.020	<0.020	<0.021	<0.021	<0.020
SVOCs (EPA 8270C)										
Acenaphthene	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]anthracene	--	--	--	--	--	--	--	--	--	--
Benzo[a]pyrene	--	--	--	--	--	--	--	--	--	--
Benzo[g,h,i]perylene	--	--	--	--	--	--	--	--	--	--
Benzo[b]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzo[k]fluoranthene	--	--	--	--	--	--	--	--	--	--
Benzoic Acid	--	--	--	--	--	--	--	--	--	--
Benzyl Alcohol	--	--	--	--	--	--	--	--	--	--
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--
Butyl benzyl phthalate	--	--	--	--	--	--	--	--	--	--
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	--	--	--
4-Chloroaniline	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroethyl)ether	--	--	--	--	--	--	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	--	--	--	--	--	--	--	--
2-Chlorophthalene	--	--	--	--	--	--	--	--	--	--
2-Chlorophenol	--	--	--	--	--	--	--	--	--	--
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	--	--	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	SED-3	SED-4	SED-5	SED-7	SED-51 (5A)	Beach B-1 (EPA-SH-1)	EPA (SH) 2	EPA (SH) 3	EPA (SH) 4	EPA (SH) 5
Date Sampled	9/6/02	9/6/02	9/5/02	9/5/02	9/5/02	9/10/02	9/10/02	9/10/02	9/10/02	9/10/02
SVOCs (EPA 8270C)										
Chrysene	--	--	--	--	--	--	--	--	--	--
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	--	--
Dibenz[a,h]anthracene	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
3,3'-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4-Dichlorophenol	--	--	--	--	--	--	--	--	--	--
Diethyl phthalate	--	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	--	--	--	--	--	--	--	--	--	--
Dimethyl phthalate	--	--	--	--	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	--	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	--	--	--	--	--	--	--	--	--	--
2,4-Dnintrotoluene	--	--	--	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	--	--	--	--	--	--	--	--	--	--
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	--	--	--	--	--	--	--	--	--	--
Ideno[1,2,3-cd]pyrene	--	--	--	--	--	--	--	--	--	--
Isophorone	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	--	--	--
3-,4-Methylphenol	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--
2-Nitroaniline	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	--	--	--	--	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--	--	--	--
Nitrobenzene	--	--	--	--	--	--	--	--	--	--
2-Nitrophenol	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-propylamine	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	--	--	--
Pentachlorophenol	<0.019	<0.019	<0.019	<0.020	<0.019	<0.020	<0.020	<0.021	<0.021	<0.020

-- Not Analyzed; * Results pending

J reported value is an estimate

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	EPA (SH) 7	EPA (SH) 8	CreoDock N. Drum	CreoDock North-Flux	CreoDock S. Drum	FWDA -Flux	WC1-Flux	WC-Blue-Flux
Date Sampled	9/10/02	9/10/02	9/10/2002 17:10	9/11/2002 7:10	9/10/2001 15:27	9/10/2002 15:15	9/10/2002 14:10	9/11/2002 8:15
NWTPH-Dx			(mg/L)	(mg/L)		(mg/L)	(mg/L)	
TPH Diesel Range	--	--	**0.208**	0.201	--	0.0610	1.10	--
TPH Heavy Oil Range	--	--	<0.0966	<0.102	--	<0.0957	0.128	--
PAHs (8250-SIM)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
2-Chloronaphthalene	<0.041	<25.0	--	--	--	--	--	--
9H-Fluorene	**0.047**	**18900**	--	--	--	--	--	--
Acenaphthene	**10.3**	**23800**	**14.7**	**18.1**	<0.100	<0.100	**71.8**	**0.564**
Acenaphthylene	**0.11**	**141**	<1.00	**0.217**	**0.151**	<0.100	<2.50	**0.188**
Anthracene	**0.20**	**10200**	<1.00	**0.222**	<0.100	<0.100	**4.62**	<0.100
Benzo[a]anthracene	**0.011 J**	**2090**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[a]pyrene	<0.041	**699**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[g,h,i]perylene	<0.020	**115**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[b]fluoranthene	<0.020	**969**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Benzo[k]fluoranthene	<0.020	**599**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Chrysene	**0.024 J**	**2270**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Dibenz[a,h]anthracene	<0.041	**95.2 J**	<2.00	<0.200	<0.200	<0.200	<5.00	<0.200
Dibenzofuran	**5.7**	**14500**	--	--	--	--	--	--
Fluoranthene	**0.26**	**13600**	<1.00	**0.227**	<0.100	<0.100	**6.05**	**0.405**
Fluorene	--	--	**1.59**	**1.64**	<0.100	<0.100	**31.8**	<0.100
Ideno[1,2,3-cd]pyrene	<0.041	**181**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene	**0.21**	**421000**	<1.00	<0.100	<0.100	<0.100	<2.50	<0.100
Naphthalene, 1-methyl-	**0.033**	**25800**	--	--	--	--	--	--
Naphthalene, 2-methyl-	**0.019 J**	**43300**	--	--	--	--	--	--
Phenanthrene	**0.090**	**32000**	<1.00	**0.637**	<0.100	<0.100	<2.50	<0.100
Pyrene	**0.097**	**6170 J**	<1.00	**0.120**	<0.100	<0.100	**3.44**	**0.251**
Retene	<0.020	**74.7**	--	--	--	--	--	--
SVOCs (EPA 8270C)								
Acenaphthene	--	--	**17.3**	**22.1**	--	<5.00	**70.7**	--
Acenaphthylene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Anthracene	--	--	<5.00	<5.00	--	<5.00	**5.31**	--
Benzo[a]anthracene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[a]pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[g,h,i]perylene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[b]fluoranthene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzo[k]fluoranthene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Benzoic Acid	--	--	<50.0	<50.0	--	<50.0	<50.0	--
Benzyl Alcohol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
4-Bromophenyl phenyl ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Butyl benzyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chloro-3-methylphenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chloroaniline	--	--	<20.0	<20.0	--	<20.0	<20.0	--
Bis(2-chloroethoxy)methane	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Bis(2-chloroethyl)ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Bis(2-chloroisopropyl)ether	--	--	<10.0	<10.0	--	<10.0	<10.0	--
2-Chlorophthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Chlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Chlorophenyl phenyl ether	--	--	<5.00	<5.00	--	<5.00	<5.00	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	EPA (SH) 7	EPA (SH) 8	CreoDock N. Drum	CreoDock North-Flux	CreoDock S. Drum	FWDA -Flux	WC1-Flux	WC-Blue-Flux
Date Sampled	9/10/02	9/10/02	9/10/2002 17:10	9/11/2002 7:10	9/10/2001 15:27	9/10/2002 15:15	9/10/2002 14:10	9/11/2002 8:15
SVOCs (EPA 8270C)								
Chrysene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Di-n-butyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Di-n-octyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Dibenz[a,h]anthracene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Dibenzofuran	--	--	<5.00	<5.00	--	<5.00	**29.1**	--
1,2-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,3-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,4-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
3,3'-Dichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4-Dichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Diethyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4-Dimethylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Dimethyl phthalate	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4,6-Dinitro-2-methylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
2,4-Dinitrophenol	--	--	<25.0	<25.0	--	<25.0	<25.0	--
2,4-Dnintrotoluene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,6-Dinitrotoluene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Bis(2-ethylhexyl)phthalate	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Fluoranthene	--	--	<5.00	<5.00	--	<5.00	**7.13**	--
Fluorene	--	--	<5.00	<5.00	--	<5.00	**41.7**	--
Hexachlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Hexachlorobutadiene	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Hexachlorocyclopentadiene	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Hexachloroethane	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Ideno[1,2,3-cd]pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Isophorone	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Methylnaphthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Methylphenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
3-,4-Methylphenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Naphthalene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Nitroaniline	--	--	<5.00	<5.00	--	<5.00	<5.00	--
3-Nitroaniline	--	--	<10.0	<10.0	--	<10.0	<10.0	--
4-Nitroaniline	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Nitrobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2-Nitrophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
4-Nitrophenol	--	--	<25.0	<25.0	--	<25.0	<25.0	--
N-Nitrosodi-n-propylamine	--	--	<10.0	<10.0	--	<10.0	<10.0	--
N-Nitrosodiphenylamine	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pentachlorophenol	--	--	<10.0	<10.0	--	<10.0	<10.0	--
Phenanthrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Phenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pyrene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
1,2,4-Trichlorobenzene	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4,5-Trichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
2,4,6-Trichlorophenol	--	--	<5.00	<5.00	--	<5.00	<5.00	--
Pentachlorophenol	**0.36**	**2.5**	--	--	--	--	--	--

Table 3a Pore Water Sample Results (continued)
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	*EPA (SH) 7*	*EPA (SH) 8*	*CreoDock N. Drum*	*CreoDock North-Flux*	*CreoDock S. Drum*	*FWDA -Flux*	*WC1-Flux*	*WC-Blue-Flux*
Date Sampled	*9/10/02*	*9/10/02*	*9/10/2002 17:10*	*9/11/2002 7:10*	*9/10/2001 15:27*	*9/10/2002 15:15*	*9/10/2002 14:10*	*9/11/2002 8:15*
Tentatively Identified Compounds (GC/MS estimated concentrations)								
1-Methylnaphthanlene			ND	ND	--	ND	**19.8**	--
2,3-dihydro-1H-Iden-1-ol			ND	ND	--	ND	**38.3**	--
2,3-Dihydro-1H-Idene			ND	ND	--	ND	**45.5**	--
Carazole			ND	ND	--	ND	**13.9**	--
dimethylnaphtalene isomer @ 16.18			ND	ND	--	ND	**15.6**	--
dimethylnaphtalene isomer @ 16.39			ND	ND	--	ND	**19.5**	--
Trimethlybenzene isomer unknown @ 18.45			ND	ND	--	ND	**11.2**	--
unknown aromatic hydrocarbon @ 12.44			ND	ND	--	ND	**12.6**	--
unknown substituted aromatic hydrocarbon			ND	ND	--	ND	**19.2**	--
			ND	ND	--	ND	**29.3**	--

-- Not Analyzed; * Results pending
J reported value is an estimate
ND Not Detected

Pore water samples with prefix SED were collected by EPA dive team on September 5 and 6, 2002. Samples with prefix EPA (SH) were collected by EPA shoreline team on September 10, 2002. Samples were collected from approximately 1 foot below the sediment surface. Samples analyzed by EPA Region 10, Manchester Environmental Laboratory, Port Orchard, Washington. Laboratory data sheets are provided in Appendix B.

Table 3b Pore Water Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

Sample ID	Mercury *(ng/L)*
SED-3	2.47
SED-4	0.947
SED-5	6.16
SED-7	4.19
SED-51 (5A)	9.94
Beach B-1 (EPA-SH-1)	1.29
EPA (SH) 2	0.501
EPA (SH) 3	0.867
EPA (SH) 4	1.02
EPA (SH) 5	5.87
EPA (SH) 7	1.12
EPA (SH) 8	--
CreoDock N. Drum	--
CreoDock North-Flux	--
CreoDock S. Drum	--
FWDA -Flux	--
WC1-Flux	--
WC-Blue-Flux	--

-- Not analyzed

Table 4 Groundwater Sample Results
McCormick & Baxter Creosoting Company
Portland, Oregon

ANALYTE	ODEQ (SH-1) (ug/L)	ODEQ (SH-2) (ug/L)	ODEQ (SH-3) (ug/L)	ODEQ (SH-4) (ug/L)	ODEQ (SH-5) (ug/L)	ODEQ (SH-6) (ug/L)	ODEQ (SH-7) (ug/L)	ODEQ (SH-8) (ug/L)	ODEQ (SH-9) (ug/L)
Date Sampled	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*	*9/11/2002*
PAHs (8250-SIM)									
2-Chloronaphthalene	<21.7	<0.041	<0.039	<0.041	<0.22	<0.041	<0.34	<0.040	<0.14
9H-Fluorene	**8340**	**1.4**	**0.070**	**22.5**	**0.21**	**0.025**	**152**	**106**	**91.1**
Acenaphthene	**10100**	**1.3**	**0.040**	**42.1**	**1.5**	**3.0**	**222**	**163**	**118**
Acenaphthylene	**87.7**	<0.020	<0.020	**0.24**	<0.11	**0.025**	**0.57**	**0.44**	**0.35**
Anthracene	**4140**	**0.59**	**0.13**	**1.6**	**0.26**	**0.078**	**19.6**	**17.6**	**14.1**
Benzo[a]anthracene	**720**	**0.030**	**0.042**	**0.12**	<0.22	**0.026**	**0.28**	**0.36**	**0.76**
Benzo[a]pyrene	**180**	<0.041	<0.039	**0.018**	<0.22	**0.069**	**0.019**	**0.031**	**0.097**
Benzo[g,h,i]perylene	**29.2**	<0.020	**0.019**	<0.020	**0.071**	**0.054**	<0.020	<0.020	**0.012**
Benzo[b]fluoranthene	**264**	<0.020	**0.050**	**0.028**	<0.11	**0.046**	**0.022**	**0.046**	**0.15**
Benzo[k]fluoranthene	**157**	<0.020	**0.054**	**0.023**	<0.11	**0.032**	**0.024**	**0.040**	**0.099**
Chrysene	**533**	**0.048**	**0.075**	**0.095**	**0.11**	**0.023**	**0.21**	**0.29**	**0.62**
Dibenz[a,h]anthracene	**20.0**	<0.041	<0.039	<0.041	<0.22	<0.041	<0.040	<0.040	<0.040
Dibenzofuran	**5810**	**0.80**	**0.047**	**11.0**	**0.084**	<0.020	**134**	**94.3**	**70.0**
Fluoranthene	**4910**	**0.67**	**0.46**	**1.9**	**1.2**	**0.028**	**12.7**	**12.6**	**15.8**
Ideno[1,2,3-cd]pyrene	**46.0**	<0.041	**0.021**	<0.041	<0.22	**0.046**	<0.040	<0.040	**0.020**
Naphthalene	**62900**	**8.8**	<0.15	**1.4**	**0.38**	<0.069	**958**	**397**	**703**
Naphthalene, 1-methyl-	**14200**	**1.0**	**0.017**	**13.8**	<0.11	**0.10**	**269**	**205**	**170**
Naphthalene, 2-methyl-	**18000**	**1.9**	**0.027**	**1.5**	**0.068**	**0.022**	**259**	**166**	**167**
Phenanthrene	**11600**	**3.6**	**0.47**	**12.8**	**1.1**	**0.031**	**151**	**125**	**104**
Pyrene	**2110**	**0.30**	**0.21**	**0.89**	**0.52**	**0.025**	**5.2**	**5.7**	**6.2**
Retene	**12.3**	<0.020	<0.020	<0.020	<0.11	<0.020	<0.020	<0.020	<0.020
Pentachlorophenol	**1.1**	**0.021**	**0.20**	<0.020	<0.022	<0.020	<0.020	<0.020	<0.020

Groundwater samples were collected by DEQ using MHE samplers on September 11, 2002. Samples were analyzed by North Creek Analytical, Inc. Portland, Oregon. Laboratory data sheets are provided in Appendix B.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 LABORATORY
7411 Beach Dr. East
Port Orchard, Washington 98366

MEMORANDUM

DATE: May 21, 2003

TO: Rene Fuentes, Project Manager

FROM: Katie Adams, Chemist, USEPA Region 10 Kat B Ad
Manchester Environmental Laboratory

SUBJECT: Peer Review and Verification of the Total Metals analysis for McCormick and Baxter, TEC-274B

The following is a peer review and verification of the total metals analysis of 30 water and 11 soil samples from the McCormick and Baxter Site. The analyses were done following USEPA and laboratory guidelines by ESAT chemists at the USEPA Manchester Environmental Laboratory, Port Orchard, WA. The analytes reviewed in this report are Al, Sb, As, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Pb, Mg, Mn, Na, Ni, Se, Ag, Tl, V, and Zn.

This review was conducted for the following samples:

Samples

Water:	02364300	02364301	02364302	02364303	02364304
	02364305	02364306	02364307	02364308	02364309
	02364310	02364311	02364312	02364313	02364314
	02374200	02374201	02374202	02374203	02374204
	02374206	02374211	02374212	02374213	02374214
	02374215	02374216	02374217	02374218	02374219
Soil:	02362500	02362501	02362502	02362503	02362504
	02362505	02362506	02362507	02362508	02362509
	02374205				

Data Qualifications

The following comments refer to the quality control specifications outlined in the National Functional Guidelines for Inorganic Data Review, and the *Quality Assurance Plan for the USEPA Region 10 Manchester Environmental Laboratory, Rev. 3.* The qualifications recommended herein are based on the information provided for the review.

1.0 Timeliness - Acceptable

The technical (40 CFR part 136) holding time from the date of collection for metals in water is 180 days, except mercury (28days). The holding time for metals in soils is not established, but Manchester Laboratory applies 180 days to these samples as well. Sample collection began on 09/05/2002. The metals analyses were completed on 02/26/2003, 174 days later. No qualification was required based on holding time criteria.

2.0 Sample Preparation - Acceptable

The water samples were prepared for total metals analysis by EPA Method 200.2 on 01/14/2003 and 01/16/2003.

Recycled Paper

The soil samples were prepared for total metals analysis by EPA Method 200.2 on 01/16/2003. All sample preparation was in accordance with Manchester Laboratory protocols. No qualification was required based on sample preparation.

3.0 Calibrations - Acceptable

ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) analysis was conducted on the soil samples on 02/06/2003, and on the water samples on 01/28/2003 and 01/29/2003. The analytes reported from this technique were Al, Sb, Ba, Be, Ca, Cd, Cr, Co, Cu, Fe, K, Mg, Mn, Na, Ni, Ag, V, and Zn (for soils), and Al, Ba, Be, Ca, Fe, K, Mg, Mn, and Na (for waters). The instrument was standardized using one blank and a single calibration standard for each element.

ICP-MS (Inductively Coupled Plasma - Mass Spectrometry) analysis was conducted on the water samples on 02/26/2003 for Sb, As, Cd, Cr, Co, Cu, Pb, Mn, Ni, Se, Ag, Tl, V, and Zn.. The instrument was calibrated with a blank and a series of at least three standards for each element.

GFAAS (Graphite Furnace Atomic Absorption Spectroscopy) analysis was conducted on the soil samples between 01/22/2003 and 01/30/2003 for As, Se, Tl, and Pb. The instrument was calibrated with a blank and a series of at least three standards for each element.

Calibrations were completed as required and met acceptance criteria; no qualification is required on this basis.

4.0 Reference Control Samples/Calibration Verification - Acceptable

Calibration verification standards are required before and after sample analysis and after every ten samples during analysis. Metal recoveries must be within 90-110%.

All ICP-AES, ICP-MS, and GFAAS calibration verification (initial and continuing) samples met the recovery criteria for the analytes of interest. No qualification was required on this basis.

Laboratory control samples are digested and analyzed along with the samples to verify the efficiency of laboratory procedures. All recoveries met the performance acceptance limits for control sample analysis; therefore no qualifiers were required on this basis.

5.0 Blanks

Procedural blanks were prepared with the samples to show potential contamination from the digestion or analytical procedure. If an analyte was found in the associated blank, the sample results were qualified if the analyte concentration was less than ten times the analytical value in the blank.

The blank digested with the soil samples contained trace levels of calcium, and one of the blanks digested with the water samples contained trace levels of sodium. The sodium result for sample 02374200 was qualified J, estimated, based on the criteria above. No additional qualification was required on the basis of blank contamination.

6.0 ICP-AES Interference Check Samples

Interference check samples were analyzed by ICP-AES to verify interelement and background correction factors. Two checks, one with iron and one with titanium, suggested that the levels of these two elements in the samples could contribute a slight bias to the results for vanadium, copper, magnesium, sodium, chromium, manganese, and cadmium in the soil samples. All sample results were examined to determine if any results might be affected by more than 10 percent by any of these interferences. The levels of all of these analytes in the samples were sufficiently high that the slight bias would not significantly affect sample results, with the exception of cadmium. All cadmium results were recalculated with a project-specific interelement correction factor to correct the bias

observed in the check standard. No data qualification is required based on ICP-AES interference check sample analysis.

7.0 Duplicate Analysis

Duplicate analysis was performed on samples 02362506 (soils) and 02364313 and 02374201 (waters). All results which were above the Low Range Standard (LRS) limit were within the ±20% RPD criterion, with the exception of the aluminum results for sample 02364313, which had an RPD of 64%. The aluminum results for samples 02364313, 02364313DU, 02364300, 02364301, 02364302, 02364303, 02364304, 02364305, 02364306, 02364307, 02364308, 02364309, 02364310, 02364311, 02364312 and 02364314 were qualified J, estimated, to indicate that the results may be affected by sample inhomogeneity. No additional qualification was required based on duplicate analysis.

8.0 Field Duplicate Analysis - Not Applicable

Field duplicate analysis was not shown in the field collection documentation.

9.0 Matrix Spike/Matrix Spike Duplicate Analysis

Matrix spike/matrix spike duplicate (MS/MSD) sample analyses are done to provide information about the effect of the sample matrix on digestion and measurement methods. The laboratory requires that matrix spike recoveries for digested samples be within the limits of 75-125%. Post spike recoveries are required to be within 85-115% of the spike added to the sample. A post spike recovery in the acceptance range is an indication of the analytical performance but does not represent analyte recovery from the digestion process.

If the spike amount added is less than one quarter of the sample concentration, the recovery is reported "NA" and the result is not qualified. The recoveries are also reported "NA" for calcium, magnesium, potassium, and sodium because spikes for these elements are not required by the method. Also, if the spike recovery is above 125% or the post spike is above 115%, and the sample result is below the detection limit of the analyte, the result is not qualified.

The matrix spikes associated with samples 02362506 (soils) and 02364313 and 02374201 (waters) were within the acceptance limits for the elements of interest, with the exception of antimony for the soil sample 02362506 (71%/79%). All antimony results for the soil samples were qualified J, estimated, to indicate that the results may be biased low due to losses during digestion. No additional qualifiers were required based on matrix spike recovery.

10.0 ICP-AES and ICP-MS Serial Dilution

Samples 02362506 (soils) and 02364313 and 02374201 (waters) were analyzed by serial dilution to check for potential interferences in the ICP-AES and ICP-MS analyses. In cases where the elements of interest exceeded the minimum concentration criterion (10 times the quantitation limit), the results agreed within 10% difference, as required. No qualification was required on this basis.

11.0 Reporting Limits

Sample results that fall below the reporting limit (RL) are assigned the value of the instrument reporting limit and the 'U' qualifier is attached.

Low Range Standards (LRS) are required to show a linear calibration in the low end of the curve. LRS standards were run at the required frequency and met laboratory acceptance limits. The LRS for vanadium during ICP-MS analysis was analyzed at two different levels, 1 ug/L, and 5 ug/L. The LRS at 1 ug/L was outside the acceptance limits for some of the analyses, but the 5 ug/L recoveries were all acceptable. Therefore, the quantitation limit for vanadium was increased from 1 ug/L to 5 ug/L for these samples.

Sample results which fall between the detection limit and the quantitation limits are reported to two significant figures, and results above the quantitation limit are reported to three significant figures. No qualification was required on this basis.

12.0 Overall Assessment of the Data

This review of the data is based on the criteria outlined in the *National Functional Guidelines for Inorganic Data Review (02/94)*. The (U) qualifier was added to results below the reporting limit.

In addition to the qualifiers discussed in the preceding sections, the nickel results for the following samples were qualified J, estimated: 02364313, 02364313DU, 02364311, 02364312, 02374214, 02374217, and 02374218. These samples displayed some disagreement between the isotopes monitored by ICP-MS, suggesting that the presence of an unknown interference might be affecting the nickel results.

The sodium result for sample 02374200 was qualified J, estimated, due to trace levels of blank contamination.

The aluminum results for samples 02364313, 02364313DU, 02364300, 02364301, 02364302, 02364303, 02364304, 02364305, 02364306, 02364307, 02364308, 02364309, 02364310, 02364311, 02364312 and 02364314 were qualified J, estimated, due to high duplicate RPD.

All antimony results for the soil samples were qualified J, estimated, due to a low matrix spike recovery.

The cobalt results for samples 02364313, 02364313DU, 02364300, 02364301, 02364302, 02364303, 02364304, 02364305, 02364306, 02364307, 02364308, 02364309, 02364310, 02364311, 02364312 and 02364314 were qualified J, estimated, due to high serial dilution comparison results.

No other qualification was required based on this review.

Definitions of laboratory qualifiers are attached.

Below are the definitions for the qualifiers used in the Inorganic area when qualifying data from Inorganic analysis.

DATA QUALIFIERS

U	-	The analyte was not detected at or above the reported value.
J	-	The identification of the analyte is acceptable; the reported value is an estimate.
UJ	-	The analyte was not detected at or above the reported value. The reported value is an estimate.
NA	-	Not Applicable, the parameter was not analyzed for, or there is no analytical result for this parameter. No value is reported with this qualification.

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362500
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**4.05**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**11.9**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**12700**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**119**	**mg/kg**	
	7440417	**Beryllium**	**0.41**	**mg/kg**	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	**Calcium**	**4100**	**mg/kg**	
	7440473	**Chromium**	**29.2**	**mg/kg**	
	7440484	**Cobalt**	**12.7**	**mg/kg**	
	7440508	**Copper**	**40.9**	**mg/kg**	
	7439896	**Iron**	**25900**	**mg/kg**	
	7439954	**Magnesium**	**4460**	**mg/kg**	
	7439965	**Manganese**	**423**	**mg/kg**	
	7440020	**Nickel**	**21.7**	**mg/kg**	
	7440097	**Potassium**	**565**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**464**	**mg/kg**	
	7440622	**Vanadium**	**68.3**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	95.6	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362501
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	**2.61**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**13.0**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**9810**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**83.9**	**mg/kg**	
	7440417	**Beryllium**	**0.30**	**mg/kg**	
	7440439	**Cadmium**	**8.48**	**mg/kg**	
	7440702	**Calcium**	**3360**	**mg/kg**	
	7440473	**Chromium**	**17.4**	**mg/kg**	
	7440484	**Cobalt**	**11.9**	**mg/kg**	
	7440508	**Copper**	**21.0**	**mg/kg**	
	7439896	**Iron**	**24200**	**mg/kg**	
	7439954	**Magnesium**	**3920**	**mg/kg**	
	7439965	**Manganese**	**266**	**mg/kg**	
	7440020	**Nickel**	**17.4**	**mg/kg**	
	7440097	**Potassium**	**450**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**361**	**mg/kg**	
	7440622	**Vanadium**	**66.6**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	73.4	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362502
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**2.36**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**13.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**7970**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**84.1**	**mg/kg**	
	7440417	**Beryllium**	**0.29**	**mg/kg**	
	7440439	**Cadmium**	**1.03**	**mg/kg**	
	7440702	**Calcium**	**3080**	**mg/kg**	
	7440473	**Chromium**	**13.7**	**mg/kg**	
	7440484	**Cobalt**	**11.8**	**mg/kg**	
	7440508	**Copper**	**20.5**	**mg/kg**	
	7439896	**Iron**	**22400**	**mg/kg**	
	7439954	**Magnesium**	**3330**	**mg/kg**	
	7439965	**Manganese**	**246**	**mg/kg**	
	7440020	**Nickel**	**14.1**	**mg/kg**	
	7440097	**Potassium**	**384**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**295**	**mg/kg**	
	7440622	**Vanadium**	**57.0**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	67.1	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362503
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	**4.28**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**41.5**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.75	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**21000**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**149**	**mg/kg**	
	7440417	**Beryllium**	**0.610**	**mg/kg**	
	7440439	**Cadmium**	**0.67**	**mg/kg**	
	7440702	**Calcium**	**5410**	**mg/kg**	
	7440473	**Chromium**	**29.6**	**mg/kg**	
	7440484	**Cobalt**	**14.1**	**mg/kg**	
	7440508	**Copper**	**57.0**	**mg/kg**	
	7439896	**Iron**	**35100**	**mg/kg**	
	7439954	**Magnesium**	**5630**	**mg/kg**	
	7439965	**Manganese**	**589**	**mg/kg**	
	7440020	**Nickel**	**19.9**	**mg/kg**	
	7440097	**Potassium**	**802**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**555**	**mg/kg**	
	7440622	**Vanadium**	**85.9**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	259	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**3.42**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**12.8**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.75	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**16700**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**137**	**mg/kg**	
	7440417	**Beryllium**	**0.520**	**mg/kg**	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	**Calcium**	**5090**	**mg/kg**	
	7440473	**Chromium**	**23.1**	**mg/kg**	
	7440484	**Cobalt**	**13.7**	**mg/kg**	
	7440508	**Copper**	**40.6**	**mg/kg**	
	7439896	**Iron**	**28800**	**mg/kg**	
	7439954	**Magnesium**	**5270**	**mg/kg**	
	7439965	**Manganese**	**379**	**mg/kg**	
	7440020	**Nickel**	**18.0**	**mg/kg**	
	7440097	**Potassium**	**694**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**531**	**mg/kg**	
	7440622	**Vanadium**	**75.8**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	80.2	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description: SED-9

Collected: 9/ 6/02
Matrix: Solid
Sample Number: 02362505
Type: Reg sample

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	4.96	mg/kg	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	22.2	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	12900	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	134	mg/kg	
	7440417	Beryllium	0.48	mg/kg	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	Calcium	4890	mg/kg	
	7440473	Chromium	22.1	mg/kg	
	7440484	Cobalt	13.0	mg/kg	
	7440508	Copper	53.7	mg/kg	
	7439896	Iron	26700	mg/kg	
	7439954	Magnesium	4900	mg/kg	
	7439965	Manganese	468	mg/kg	
	7440020	Nickel	16.3	mg/kg	
	7440097	Potassium	596	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	388	mg/kg	
	7440622	Vanadium	67.1	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	150	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	5.8	mg/kg	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	19.4	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	10100	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	95.6	mg/kg	
	7440417	**Beryllium**	0.33	mg/kg	
	7440439	**Cadmium**	1.69	mg/kg	
	7440702	**Calcium**	3300	mg/kg	
	7440473	**Chromium**	16.5	mg/kg	
	7440484	**Cobalt**	10.3	mg/kg	
	7440508	**Copper**	23.9	mg/kg	
	7439896	**Iron**	29500	mg/kg	
	7439954	**Magnesium**	3350	mg/kg	
	7439965	**Manganese**	299	mg/kg	
	7440020	**Nickel**	14.3	mg/kg	
	7440097	**Potassium**	476	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	353	mg/kg	
	7440622	**Vanadium**	66.2	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	71.7	mg/kg	

02362506 Reg sample

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	5.7	mg/kg	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	21.9	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	9780	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	92.0	mg/kg	
	7440417	Beryllium	0.33	mg/kg	
	7440439	Cadmium	1.84	mg/kg	
	7440702	Calcium	3300	mg/kg	
	7440473	Chromium	20.1	mg/kg	
	7440484	Cobalt	11.1	mg/kg	
	7440508	Copper	24.3	mg/kg	
	7439896	Iron	29900	mg/kg	
	7439954	Magnesium	3620	mg/kg	
	7439965	Manganese	305	mg/kg	
	7440020	Nickel	15.0	mg/kg	
	7440097	Potassium	441	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	339	mg/kg	
	7440622	Vanadium	65.8	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	74.8	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Post Spike
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : Metals, ICP-SAS			
Method :			
Prep Method:			
Analytes : 7440360 Antimony	96	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: 02362506
Type: Matrix Spike

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	82	%Rec	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead			NA
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	86	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	77	%Rec	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum			NA
	7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7440360	Antimony	71	%Rec	
	7440393	Barium	89	%Rec	
	7440417	Beryllium	90	%Rec	
	7440439	Cadmium	94	%Rec	
	7440473	Chromium	88	%Rec	
	7440484	Cobalt	92	%Rec	
	7440508	Copper	95	%Rec	
	7439965	Manganese	76	%Rec	
	7440020	Nickel	91	%Rec	
	7440224	Silver	97	%Rec	
	7440622	Vanadium	82	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	90	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: 02362506
Type: Matrix Spike Dupl

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	82	%Rec	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead			NA
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	86	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	100	%Rec	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum			NA
	7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7440360	Antimony	79	%Rec	
	7440393	Barium	89	%Rec	
	7440417	Beryllium	91	%Rec	
	7440439	Cadmium	93	%Rec	
	7440473	Chromium	91	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	96	%Rec	
	7439965	Manganese	92	%Rec	
	7440020	Nickel	94	%Rec	
	7440224	Silver	99	%Rec	
	7440622	Vanadium	88	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	97	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362507
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**7.5**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**13.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**5260**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**66.1**	**mg/kg**	
	7440417	**Beryllium**	**0.19**	**mg/kg**	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	**Calcium**	**3490**	**mg/kg**	
	7440473	**Chromium**	**10.3**	**mg/kg**	
	7440484	**Cobalt**	**6.12**	**mg/kg**	
	7440508	**Copper**	**15.6**	**mg/kg**	
	7439896	**Iron**	**22000**	**mg/kg**	
	7439954	**Magnesium**	**3140**	**mg/kg**	
	7439965	**Manganese**	**261**	**mg/kg**	
	7440020	**Nickel**	**10.3**	**mg/kg**	
	7440097	**Potassium**	**750**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**401**	**mg/kg**	
	7440622	**Vanadium**	**46.3**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	58.8	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362508
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**8.1**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**14.4**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**9400**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**102**	**mg/kg**	
	7440417	**Beryllium**	**0.35**	**mg/kg**	
	7440439	**Cadmium**	**8.41**	**mg/kg**	
	7440702	**Calcium**	**3200**	**mg/kg**	
	7440473	**Chromium**	**16.4**	**mg/kg**	
	7440484	**Cobalt**	**12.9**	**mg/kg**	
	7440508	**Copper**	**30.3**	**mg/kg**	
	7439896	**Iron**	**34000**	**mg/kg**	
	7439954	**Magnesium**	**3860**	**mg/kg**	
	7439965	**Manganese**	**336**	**mg/kg**	
	7440020	**Nickel**	**15.1**	**mg/kg**	
	7440097	**Potassium**	**419**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**268**	**mg/kg**	
	7440622	**Vanadium**	**65.0**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	83.3	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362509
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**2.79**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**4.41**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**7470**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**73.0**	**mg/kg**	
	7440417	**Beryllium**	**0.27**	**mg/kg**	
	7440439	**Cadmium**	**10.0**	**mg/kg**	
	7440702	**Calcium**	**3300**	**mg/kg**	
	7440473	**Chromium**	**11.9**	**mg/kg**	
	7440484	**Cobalt**	**11.1**	**mg/kg**	
	7440508	**Copper**	**15.1**	**mg/kg**	
	7439896	**Iron**	**22400**	**mg/kg**	
	7439954	**Magnesium**	**3100**	**mg/kg**	
	7439965	**Manganese**	**247**	**mg/kg**	
	7440020	**Nickel**	**13.3**	**mg/kg**	
	7440097	**Potassium**	**398**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**392**	**mg/kg**	
	7440622	**Vanadium**	**58.4**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	47.7	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	323	ug/L	J
7440393	**Barium**	9.10	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	6610	ug/L	
7439896	**Iron**	383	ug/L	
7439954	**Magnesium**	2360	ug/L	
7440097	**Potassium**	1100	ug/L	
7440235	**Sodium**	7460	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	**Cadmium**	0.19	ug/L	
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	0.31	ug/L	
7440508	**Copper**	20.9	ug/L	
7439921	**Lead**	1.85	ug/L	
7439965	**Manganese**	39.4	ug/L	
7440020	**Nickel**	2.44	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	4.1	ug/L	
7440666	**Zinc**	7.40	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364301
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**395**	**ug/L**	J
7440393	**Barium**	**9.50**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**6860**	**ug/L**	
7439896	**Iron**	**462**	**ug/L**	
7439954	**Magnesium**	**2450**	**ug/L**	
7440097	**Potassium**	**1200**	**ug/L**	
7440235	**Sodium**	**7510**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**0.64**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.33**	**ug/L**	
7440508	**Copper**	**3.9**	**ug/L**	
7439921	**Lead**	**0.42**	**ug/L**	
7439965	**Manganese**	**42.6**	**ug/L**	
7440020	**Nickel**	**1.26**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**4.3**	**ug/L**	
7440666	**Zinc**	**4.9**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364302
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**359**	**ug/L**	**J**
7440393	**Barium**	**9.10**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**6640**	**ug/L**	
7439896	**Iron**	**430**	**ug/L**	
7439954	**Magnesium**	**2340**	**ug/L**	
7440097	**Potassium**	**1100**	**ug/L**	
7440235	**Sodium**	**7250**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.31**	**ug/L**	
7440508	**Copper**	**19.2**	**ug/L**	
7439921	**Lead**	**0.36**	**ug/L**	
7439965	**Manganese**	**39.0**	**ug/L**	
7440020	**Nickel**	**1.27**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**3.9**	**ug/L**	
7440666	**Zinc**	**5.2**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description: SED-1

Collected: 9/ 5/02
Matrix: Liquid
Sample Number: 02364303
Type: Reg sample

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**454**	**ug/L**	**J**
7440393	**Barium**	**10.1**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**6760**	**ug/L**	
7439896	**Iron**	**540**	**ug/L**	
7439954	**Magnesium**	**2420**	**ug/L**	
7440097	**Potassium**	**1200**	**ug/L**	
7440235	**Sodium**	**7320**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.39**	**ug/L**	
7440508	**Copper**	**2.0**	**ug/L**	
7439921	**Lead**	**0.47**	**ug/L**	
7439965	**Manganese**	**43.4**	**ug/L**	
7440020	**Nickel**	**0.91**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**3.9**	**ug/L**	
7440666	**Zinc**	**4.7**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364304
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	2990	ug/L	J
7440393	Barium	27.3	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	7520	ug/L	
7439896	Iron	3170	ug/L	
7439954	Magnesium	2930	ug/L	
7440097	Potassium	1300	ug/L	
7440235	Sodium	7500	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.94	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	2.1	ug/L	
7440484	Cobalt	1.69	ug/L	
7440508	Copper	5.5	ug/L	
7439921	Lead	1.68	ug/L	
7439965	Manganese	92.3	ug/L	
7440020	Nickel	2.94	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	9.58	ug/L	
7440666	Zinc	12.5	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364305
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	1920	ug/L	J
7440393	Barium	20.3	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	7200	ug/L	
7439896	Iron	2120	ug/L	
7439954	Magnesium	2710	ug/L	
7440097	Potassium	1200	ug/L	
7440235	Sodium	7420	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.68	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	
7440484	Cobalt	1.2	ug/L	
7440508	Copper	5.0	ug/L	
7439921	Lead	3.23	ug/L	
7439965	Manganese	80.2	ug/L	
7440020	Nickel	2.22	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	6.98	ug/L	
7440666	Zinc	18.1	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**428**	**ug/L**	**J**
7440393	**Barium**	**9.90**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**6750**	**ug/L**	
7439896	**Iron**	**551**	**ug/L**	
7439954	**Magnesium**	**2390**	**ug/L**	
7440097	**Potassium**	**1100**	**ug/L**	
7440235	**Sodium**	**7380**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**0.67**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.37**	**ug/L**	
7440508	**Copper**	**2.7**	**ug/L**	
7439921	**Lead**	**0.77**	**ug/L**	
7439965	**Manganese**	**44.7**	**ug/L**	
7440020	**Nickel**	**0.97**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**3.8**	**ug/L**	
7440666	**Zinc**	**4.4**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364307
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	144	ug/L	J
7440393	Barium	7.80	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	6660	ug/L	
7439896	Iron	202	ug/L	
7439954	Magnesium	2340	ug/L	
7440097	Potassium	1200	ug/L	
7440235	Sodium	7540	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	Cobalt	0.20	ug/L	
7440508	Copper	2.4	ug/L	
7439921	Lead	1.2	ug/L	
7439965	Manganese	31.3	ug/L	
7440020	Nickel	1.2	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	3.1	ug/L	
7440666	Zinc	4.3	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364308
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**911**	**ug/L**	**J**
7440393	**Barium**	**14.2**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**6780**	**ug/L**	
7439896	**Iron**	**1460**	**ug/L**	
7439954	**Magnesium**	**2470**	**ug/L**	
7440097	**Potassium**	**1200**	**ug/L**	
7440235	**Sodium**	**7670**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**1.1**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.63**	**ug/L**	
7440508	**Copper**	**3.1**	**ug/L**	
7439921	**Lead**	**2.05**	**ug/L**	
7439965	**Manganese**	**97.8**	**ug/L**	
7440020	**Nickel**	**1.53**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**5.6**	**ug/L**	
7440666	**Zinc**	**8.79**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364309
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	376	ug/L	J
7440393	**Barium**	9.20	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	6720	ug/L	
7439896	**Iron**	439	ug/L	
7439954	**Magnesium**	2380	ug/L	
7440097	**Potassium**	1100	ug/L	
7440235	**Sodium**	7290	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	0.32	ug/L	
7440508	**Copper**	8.45	ug/L	
7439921	**Lead**	0.56	ug/L	
7439965	**Manganese**	41.4	ug/L	
7440020	**Nickel**	1.2	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	3.6	ug/L	
7440666	**Zinc**	7.53	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364310
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7 POREWATER		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	5060	ug/L	J
7440393	Barium	74.4	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	16900	ug/L	
7439896	Iron	17600	ug/L	
7439954	Magnesium	6150	ug/L	
7439965	Manganese	1350	ug/L	
7440097	Potassium	5320	ug/L	
7440235	Sodium	94300	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	41.9	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	4.2	ug/L	
7440484	Cobalt	6.49	ug/L	
7440508	Copper	8.62	ug/L	
7439921	Lead	1.43	ug/L	
7440020	Nickel	7.54	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	18.2	ug/L	
7440666	Zinc	22.0	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364311
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5 POREWATER		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	551	ug/L	J
7440393	Barium	108	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	41000	ug/L	
7439896	Iron	57100	ug/L	
7439954	Magnesium	12100	ug/L	
7439965	Manganese	3800	ug/L	
7440097	Potassium	6100	ug/L	
7440235	Sodium	53300	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	52.3	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	Cobalt	1.1	ug/L	
7440508	Copper	1.6	ug/L	
7439921	Lead	0.93	ug/L	
7440020	Nickel	1.80	ug/L	J
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.7	ug/L	
7440666	Zinc	8.64	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364312
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (OR 5A) POREWATER		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**891**	**ug/L**	**J**
7440393	**Barium**	**112**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**41400**	**ug/L**	
7439896	**Iron**	**57500**	**ug/L**	
7439954	**Magnesium**	**12200**	**ug/L**	
7439965	**Manganese**	**3820**	**ug/L**	
7440097	**Potassium**	**6100**	**ug/L**	
7440235	**Sodium**	**53200**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**52.5**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**1.29**	**ug/L**	
7440508	**Copper**	**2.0**	**ug/L**	
7439921	**Lead**	**1.1**	**ug/L**	
7440020	**Nickel**	**2.13**	**ug/L**	**J**
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**2.7**	**ug/L**	
7440666	**Zinc**	**10.7**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD) POREWATER		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	148	ug/L	J
7440393	Barium	115	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	75400	ug/L	
7439896	Iron	51900	ug/L	
7439954	Magnesium	24900	ug/L	
7439965	Manganese	8030	ug/L	
7440097	Potassium	5240	ug/L	
7440235	Sodium	15600	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	39.4	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	Cobalt	2.31	ug/L	
7440508	Copper	1.3	ug/L	U
7439921	Lead	0.74	ug/L	
7440020	Nickel	2.04	ug/L	J
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.2	ug/L	
7440666	Zinc	2.9	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: 02364313
Type: Duplicate

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	**7429905**	**Aluminum**	**76**	**ug/L**	**J**
	7440393	**Barium**	**113**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**72600**	**ug/L**	
	7439896	**Iron**	**50700**	**ug/L**	
	7439954	**Magnesium**	**24400**	**ug/L**	
	7439965	**Manganese**	**7720**	**ug/L**	
	7440097	**Potassium**	**5170**	**ug/L**	
	7440235	**Sodium**	**15500**	**ug/L**	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**39.1**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**2.28**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.33**	**ug/L**	
	7440020	**Nickel**	**1.91**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: 02364313
Type: Matrix Spike

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7439965	Manganese			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	103	%Rec	
	7440393	Barium	99	%Rec	
	7440417	Beryllium	97	%Rec	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	101	%Rec	
	7440382	Arsenic	97	%Rec	
	7440439	Cadmium	98	%Rec	
	7440473	Chromium	98	%Rec	
	7440484	Cobalt	93	%Rec	
	7440508	Copper	92	%Rec	
	7439921	Lead	96	%Rec	
	7440020	Nickel	92	%Rec	
	7782492	Selenium	95	%Rec	
	7440224	Silver	102	%Rec	
	7440280	Thallium	96	%Rec	
	7440622	Vanadium	97	%Rec	
	7440666	Zinc	89	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: 02364313
Type: Matrix Spike Dupl

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7439965	Manganese			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	104	%Rec	
	7440393	Barium	97	%Rec	
	7440417	Beryllium	97	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	102	%Rec	
	7440382	Arsenic	99	%Rec	
	7440439	Cadmium	100	%Rec	
	7440473	Chromium	99	%Rec	
	7440484	Cobalt	92	%Rec	
	7440508	Copper	95	%Rec	
	7439921	Lead	96	%Rec	
	7440020	Nickel	95	%Rec	
	7782492	Selenium	96	%Rec	
	7440224	Silver	103	%Rec	
	7440280	Thallium	96	%Rec	
	7440622	Vanadium	98	%Rec	
	7440666	Zinc	93	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description: SED-3 POREWATER

Collected: 9/ 6/02
Matrix: Liquid
Sample Number: 02364314
Type: Reg sample

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7429905	**Aluminum**	138	ug/L	J
	7440393	**Barium**	52.6	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	48100	ug/L	
	7439896	**Iron**	16000	ug/L	
	7439954	**Magnesium**	12400	ug/L	
	7439965	**Manganese**	4220	ug/L	
	7440097	**Potassium**	5110	ug/L	
	7440235	**Sodium**	75800	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	22.0	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	0.30	ug/L	
	7440508	**Copper**	1.6	ug/L	
	7439921	**Lead**	0.97	ug/L	
	7440020	**Nickel**	1.49	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	**Zinc**	17.7	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	BEACH B-1 (EPA-SH-1)		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	20	ug/L	U
7440393	Barium	0.50	ug/L	U
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**15.4**	**ug/L**	
7439896	Iron	10	ug/L	U
7439954	Magnesium	20	ug/L	U
7440097	Potassium	700	ug/L	U
7440235	**Sodium**	**85.1**	**ug/L**	**J**

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.014**	**ug/L**	
7440508	Copper	1.3	ug/L	U
7439921	Lead	0.13	ug/L	U
7439965	**Manganese**	**0.70**	**ug/L**	
7440020	Nickel	0.38	ug/L	U
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 2		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**116**	**ug/L**	
7440393	**Barium**	**8.90**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**4070**	**ug/L**	
7439896	**Iron**	**5050**	**ug/L**	
7439954	**Magnesium**	**1330**	**ug/L**	
7439965	**Manganese**	**431**	**ug/L**	
7440097	**Potassium**	**1500**	**ug/L**	
7440235	**Sodium**	**8260**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**6.0**	**ug/L**	
7440439	**Cadmium**	**0.13**	**ug/L**	
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.12**	**ug/L**	
7440508	Copper	1.3	ug/L	U
7439921	**Lead**	**0.14**	**ug/L**	
7440020	**Nickel**	**0.48**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**6.1**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.12**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.13**	**ug/L**	
	7440020	**Nickel**	**0.40**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: 02374201
Type: Matrix Spike

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	98	%Rec	
	7440417	Beryllium	96	%Rec	
	7439896	Iron	97	%Rec	
	7439965	Manganese	100	%Rec	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	100	%Rec	
	7440382	Arsenic	96	%Rec	
	7440439	Cadmium	99	%Rec	
	7440473	Chromium	94	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	96	%Rec	
	7439921	Lead	103	%Rec	
	7440020	Nickel	96	%Rec	
	7782492	Selenium	97	%Rec	
	7440224	Silver	102	%Rec	
	7440280	Thallium	95	%Rec	
	7440622	Vanadium	91	%Rec	
	7440666	Zinc	100	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: 02374201
Type: Matrix Spike Dupl

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	106	%Rec	
	7440393	Barium	98	%Rec	
	7440417	Beryllium	97	%Rec	
	7439896	Iron	99	%Rec	
	7439965	Manganese	97	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	99	%Rec	
	7440382	Arsenic	97	%Rec	
	7440439	Cadmium	97	%Rec	
	7440473	Chromium	94	%Rec	
	7440484	Cobalt	93	%Rec	
	7440508	Copper	96	%Rec	
	7439921	Lead	103	%Rec	
	7440020	Nickel	95	%Rec	
	7782492	Selenium	97	%Rec	
	7440224	Silver	101	%Rec	
	7440280	Thallium	99	%Rec	
	7440622	Vanadium	92	%Rec	
	7440666	Zinc	101	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374202
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 3		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	715	ug/L	
7440393	**Barium**	15.0	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	3220	ug/L	
7439896	**Iron**	5500	ug/L	
7439954	**Magnesium**	1250	ug/L	
7439965	**Manganese**	201	ug/L	
7440097	**Potassium**	1200	ug/L	
7440235	**Sodium**	8760	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	6.64	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	1.1	ug/L	
7440508	**Copper**	1.4	ug/L	
7439921	**Lead**	0.36	ug/L	
7440020	**Nickel**	1.40	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	6.2	ug/L	
7440666	**Zinc**	3.2	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374203
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 4		

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**430**	**ug/L**	
	7440393	**Barium**	**22.2**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6420**	**ug/L**	
	7439896	**Iron**	**17800**	**ug/L**	
	7439954	**Magnesium**	**2240**	**ug/L**	
	7439965	**Manganese**	**743**	**ug/L**	
	7440097	**Potassium**	**1500**	**ug/L**	
	7440235	**Sodium**	**8720**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**4.9**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.25**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.67**	**ug/L**	
	7440020	**Nickel**	**0.76**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**2.1**	**ug/L**	
	7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374204
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 5		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	2820	ug/L	
7440393	**Barium**	44.7	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	11500	ug/L	
7439896	**Iron**	32500	ug/L	
7439954	**Magnesium**	4060	ug/L	
7439965	**Manganese**	1200	ug/L	
7440097	**Potassium**	1900	ug/L	
7440235	**Sodium**	10300	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	8.84	ug/L	
7440439	**Cadmium**	0.14	ug/L	
7440473	**Chromium**	1.6	ug/L	
7440484	**Cobalt**	2.15	ug/L	
7440508	**Copper**	5.7	ug/L	
7439921	**Lead**	4.47	ug/L	
7440020	**Nickel**	3.12	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	7.31	ug/L	
7440666	**Zinc**	11.8	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02374205
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 6 (SEDIMENT)		

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**4.79**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**15.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**5810**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**68.3**	**mg/kg**	
	7440417	**Beryllium**	**0.24**	**mg/kg**	
	7440439	**Cadmium**	**9.6**	**mg/kg**	
	7440702	**Calcium**	**2720**	**mg/kg**	
	7440473	**Chromium**	**10.6**	**mg/kg**	
	7440484	**Cobalt**	**9.77**	**mg/kg**	
	7440508	**Copper**	**13.8**	**mg/kg**	
	7439896	**Iron**	**21300**	**mg/kg**	
	7439954	**Magnesium**	**2900**	**mg/kg**	
	7439965	**Manganese**	**208**	**mg/kg**	
	7440020	**Nickel**	**12.0**	**mg/kg**	
	7440097	**Potassium**	**329**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**223**	**mg/kg**	
	7440622	**Vanadium**	**50.7**	**mg/kg**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

			Result	Units	Qlfr
Analytes	: 7440666	Zinc	53.5	mg/kg	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374206
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 7		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**54**	**ug/L**	
7440393	**Barium**	**6.30**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**4910**	**ug/L**	
7439896	**Iron**	**897**	**ug/L**	
7439954	**Magnesium**	**1640**	**ug/L**	
7439965	**Manganese**	**200**	**ug/L**	
7440097	**Potassium**	**1600**	**ug/L**	
7440235	**Sodium**	**4600**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**1.80**	**ug/L**	
7440508	**Copper**	**1.9**	**ug/L**	
7439921	Lead	0.13	ug/L	U
7440020	**Nickel**	**2.17**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374211
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -1		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	18900	ug/L	
7440382	Arsenic	395	ug/L	
7440393	Barium	329	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	59700	ug/L	
7439896	Iron	140000	ug/L	
7439954	Magnesium	19500	ug/L	
7439965	Manganese	3900	ug/L	
7440097	Potassium	5960	ug/L	
7440235	Sodium	13300	ug/L	
7440666	Zinc	219	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440439	Cadmium	0.69	ug/L	
7440473	Chromium	29.1	ug/L	
7440484	Cobalt	32.9	ug/L	
7440508	Copper	66.9	ug/L	
7439921	Lead	62.5	ug/L	
7440020	Nickel	36.0	ug/L	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	1.83	ug/L	
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	46.5	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374212
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -3		

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	1580	ug/L	
	7440393	**Barium**	22.9	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	3890	ug/L	
	7439896	**Iron**	3920	ug/L	
	7439954	**Magnesium**	1740	ug/L	
	7439965	**Manganese**	48.2	ug/L	
	7440097	**Potassium**	1000	ug/L	
	7440235	**Sodium**	5950	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	1.5	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	1.53	ug/L	
	7440508	**Copper**	3.1	ug/L	
	7439921	**Lead**	0.94	ug/L	
	7440020	**Nickel**	2.45	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	5.9	ug/L	
	7440666	**Zinc**	7.82	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374213
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -2		

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7429905	Aluminum	580	ug/L	
	7440393	Barium	11.3	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	3750	ug/L	
	7439896	Iron	1450	ug/L	
	7439954	Magnesium	1610	ug/L	
	7439965	Manganese	23.0	ug/L	
	7440097	Potassium	990	ug/L	
	7440235	Sodium	7580	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	2.9	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.78	ug/L	
	7440508	Copper	2.4	ug/L	
	7439921	Lead	0.48	ug/L	
	7440020	Nickel	1.26	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	3.5	ug/L	
	7440666	Zinc	6.1	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374214
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -4		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**851**	**ug/L**	
7440393	**Barium**	**73.1**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**34100**	**ug/L**	
7439896	**Iron**	**50500**	**ug/L**	
7439954	**Magnesium**	**12200**	**ug/L**	
7439965	**Manganese**	**2990**	**ug/L**	
7440097	**Potassium**	**3260**	**ug/L**	
7440235	**Sodium**	**15400**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**0.87**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**1.43**	**ug/L**	
7440508	**Copper**	**1.5**	**ug/L**	
7439921	**Lead**	**0.44**	**ug/L**	
7440020	**Nickel**	**2.39**	**ug/L**	**J**
7782492	Selenium	1.3	ug/L	U
7440224	**Silver**	**0.77**	**ug/L**	
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	**3.0**	**ug/L**	
7440666	**Zinc**	**5.1**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374215
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -5		

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	1380	ug/L	
	7440393	**Barium**	60.6	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	19900	ug/L	
	7439896	**Iron**	50200	ug/L	
	7439954	**Magnesium**	5380	ug/L	
	7439965	**Manganese**	2160	ug/L	
	7440097	**Potassium**	2140	ug/L	
	7440235	**Sodium**	8460	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	13.2	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	2.35	ug/L	
	7440508	**Copper**	2.7	ug/L	
	7439921	**Lead**	2.46	ug/L	
	7440020	**Nickel**	2.86	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	3.9	ug/L	
	7440666	**Zinc**	12.0	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374216
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -6		

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	318	ug/L	
	7440393	**Barium**	41.7	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	11400	ug/L	
	7439896	**Iron**	40900	ug/L	
	7439954	**Magnesium**	3700	ug/L	
	7439965	**Manganese**	1150	ug/L	
	7440097	**Potassium**	1800	ug/L	
	7440235	**Sodium**	7490	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	7.92	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	0.32	ug/L	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	0.53	ug/L	
	7440020	**Nickel**	0.78	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	1.3	ug/L	
	7440666	**Zinc**	4.4	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374217
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -7		

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	477	ug/L	
7440393	**Barium**	45.7	ug/L	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	41700	ug/L	
7439896	**Iron**	55400	ug/L	
7439954	**Magnesium**	14100	ug/L	
7439965	**Manganese**	4610	ug/L	
7440097	**Potassium**	4070	ug/L	
7440235	**Sodium**	20600	ug/L	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	10.4	ug/L	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	0.69	ug/L	
7440508	**Copper**	1.3	ug/L	
7439921	**Lead**	0.22	ug/L	
7440020	**Nickel**	1.89	ug/L	J
7782492	Selenium	1.3	ug/L	U
7440224	**Silver**	0.97	ug/L	
7440280	Thallium	0.63	ug/L	U
7440622	**Vanadium**	1.6	ug/L	
7440666	**Zinc**	4.3	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374218
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -8		

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**312**	**ug/L**	
	7440393	**Barium**	**38.9**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**36400**	**ug/L**	
	7439896	**Iron**	**48800**	**ug/L**	
	7439954	**Magnesium**	**13600**	**ug/L**	
	7439965	**Manganese**	**3730**	**ug/L**	
	7440097	**Potassium**	**3860**	**ug/L**	
	7440235	**Sodium**	**18500**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**7.11**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.43**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.29**	**ug/L**	
	7440020	**Nickel**	**2.15**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	**Zinc**	**3.5**	**ug/L**	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374219
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -9		

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7429905	Aluminum	2170	ug/L	
	7440393	Barium	49.6	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	32000	ug/L	
	7439896	Iron	46600	ug/L	
	7439954	Magnesium	12800	ug/L	
	7439965	Manganese	3180	ug/L	
	7440097	Potassium	3790	ug/L	
	7440235	Sodium	15600	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	2.8	ug/L	
	7440439	Cadmium	0.19	ug/L	
	7440473	Chromium	2.1	ug/L	
	7440484	Cobalt	1.48	ug/L	
	7440508	Copper	6.1	ug/L	
	7439921	Lead	0.93	ug/L	
	7440020	Nickel	3.72	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	9.51	ug/L	
	7440666	Zinc	11.3	ug/L	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	0.15	mg/kg	U
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	0.10	mg/kg	U
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.15	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	0.20	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116A
Account Code:	02T10P50102D10P9LA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	97	%Rec	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	101	%Rec	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	99	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	94	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116ABL
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	2.5	mg/kg	U
7440360	Antimony	4.5	mg/kg	UJ
7440393	Barium	0.20	mg/kg	U
7440417	Beryllium	0.10	mg/kg	U
7440439	Cadmium	0.50	mg/kg	U
7440702	**Calcium**	**2.56**	**mg/kg**	
7440473	Chromium	0.50	mg/kg	U
7440484	Cobalt	0.50	mg/kg	U
7440508	Copper	0.40	mg/kg	U
7439896	Iron	1.5	mg/kg	U
7439954	Magnesium	5.0	mg/kg	U
7439965	Manganese	0.30	mg/kg	U
7440020	Nickel	1.0	mg/kg	U
7440097	Potassium	70	mg/kg	U
7440224	Silver	0.40	mg/kg	U
7440235	Sodium	5.0	mg/kg	U
7440622	Vanadium	0.30	mg/kg	U
7440666	Zinc	0.40	mg/kg	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: MXS030116ASB
Type: Spike Blank

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	99	%Rec	
	7440360	Antimony	92	%Rec	
	7440393	Barium	92	%Rec	
	7440417	Beryllium	89	%Rec	
	7440439	Cadmium	93	%Rec	
	7440473	Chromium	93	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	95	%Rec	
	7439896	Iron	94	%Rec	
	7439965	Manganese	93	%Rec	
	7440020	Nickel	94	%Rec	
	7440224	Silver	100	%Rec	
	7440622	Vanadium	95	%Rec	
	7440666	Zinc	92	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: MXW030114ABL
Type: Blank

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7429905	Aluminum	20	ug/L	U
	7440393	Barium	0.50	ug/L	U
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	10	ug/L	U
	7439896	Iron	10	ug/L	U
	7439954	Magnesium	20	ug/L	U
	7439965	Manganese	1.0	ug/L	U
	7440097	Potassium	700	ug/L	U
	7440235	Sodium	20	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.013	ug/L	U
	7440508	Copper	1.3	ug/L	U
	7439921	Lead	0.13	ug/L	U
	7439965	Manganese	0.13	ug/L	U
	7440020	Nickel	0.38	ug/L	U
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030114ASB
Account Code:	02T10P50102D10P9LA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	100	%Rec	
	7440417	Beryllium	95	%Rec	
	7439896	Iron	100	%Rec	
	7439965	Manganese	105	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	101	%Rec	
	7440382	Arsenic	99	%Rec	
	7440439	Cadmium	102	%Rec	
	7440473	Chromium	97	%Rec	
	7440484	Cobalt	96	%Rec	
	7440508	Copper	98	%Rec	
	7439921	Lead	100	%Rec	
	7439965	Manganese	93	%Rec	
	7440020	Nickel	99	%Rec	
	7782492	Selenium	100	%Rec	
	7440224	Silver	104	%Rec	
	7440280	Thallium	97	%Rec	
	7440622	Vanadium	94	%Rec	
	7440666	Zinc	102	%Rec	

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030115ABL
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	20	ug/L	U
	7440393	Barium	0.50	ug/L	U
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	10	ug/L	U
	7439896	Iron	10	ug/L	U
	7439954	Magnesium	20	ug/L	U
	7439965	Manganese	1.0	ug/L	U
	7440097	Potassium	700	ug/L	U
	7440235	Sodium	20	ug/L	U
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.013	ug/L	U
	7440508	Copper	1.3	ug/L	U
	7439921	Lead	0.13	ug/L	U
	7439965	Manganese	0.13	ug/L	U
	7440020	Nickel	0.38	ug/L	U
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

Manchester Environmental Laboratory
Report by Parameter for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: MXW030115ASB
Type: Spike Blank

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	99	%Rec	
	7440417	Beryllium	98	%Rec	
	7439896	Iron	99	%Rec	
	7439965	Manganese	105	%Rec	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	102	%Rec	
	7440382	Arsenic	100	%Rec	
	7440439	Cadmium	102	%Rec	
	7440473	Chromium	97	%Rec	
	7440484	Cobalt	97	%Rec	
	7440508	Copper	99	%Rec	
	7439921	Lead	105	%Rec	
	7439965	Manganese	94	%Rec	
	7440020	Nickel	99	%Rec	
	7782492	Selenium	103	%Rec	
	7440224	Silver	106	%Rec	
	7440280	Thallium	103	%Rec	
	7440622	Vanadium	91	%Rec	
	7440666	Zinc	104	%Rec	

Manchester Environmental Laboratory

Safety and Health Orientation Refresher Training Certification Form

I hereby acknowledge that I have completed a minimum of 8 hours of safety and health training which included the following items:

1. Safety, Health and Environmental Management Training for Laboratory Activities via the web. http://bama.ua.edu/~deip/web_training.htm

   I have indicated below which 10 (minimum) lessons I have completed of the following available:

   Rights and Responsibilities

   ____ EPA's Safety, Health & Environmental Management Program
   Note: This module has an error in the testing and certificate portion you'll be able to read the module and take the test but not to print out the certificate.
   ____ Planning & Preparation for Laboratory Activities
   ____ Hazard Communication
   ____ Hazard Identification and Evaluation
   ____ Emergency Planning & Community Right-To-Know Act

   Chemical Hazards

   ____ Chemical Hazards and Reactions
   ____ Basic Toxicology
   ____ Air Monitoring

   Physical Hazards

   ____ Occupational Noise
   ____ Human Factors/Ergonomics
   ____ Spill Prevention Control & Countermeasure Plan (SPCC)

   Biological Hazards

   ____ Biological Safety
   ____ Bloodborne Pathogens
   ____ Natural Hazards

   Personal Protection

   ____ Personal Protection Clothing & Equipment
   ____ Respiratory Protection
   ____ Decontamination
   ____ Emergency Eye Washes & Showers

General Safety

____ Ladders and Climbing
____ Portable Fire Extinguishers
____ Vehicle Safety
____ Emergency Preparedness & Fist Aide
____ Toxic Substances Control Act (TSCA)
____ Lab Operations and Support Activities.

Lab Operations & Support Activities

____ Hazardous Waste Operations & Emergency Response
____ Transportation of Hazardous Materials
____ Pollution Prevention
____ Waste Management
____ Laboratory Hood Systems

2. I have reviewed the Material Safety Data Sheets for the chemicals I will be handling in my work area as indicated by my supervisor/team leader.

I understand that copies of the Manchester Environmental Laboratory Chemical Hygiene Plan, Manchester Laboratory Dangerous Waste Disposal Manual and the Manchester Laboratory Safety and Health Manual are available for review or reading in the Laboratory Library Room or on-line under the Lab Stuff icon (then Lab Administration, Manuals, SOPs, and Plans) on your desktop at any time.

_____
Employee Signature

_____
Employer

_____
Work Area

_____
Date

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362500
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	**Pentachlorophenol**	630	ug/kg	
	118796	Phenol, 2,4,6-tribromo	79	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	12.2	ug/kg	U
	86737	**9H-Fluorene**	1530	ug/kg	
	83329	**Acenaphthene**	1370	ug/kg	
	208968	**Acenaphthylene**	29.3	ug/kg	
	120127	**Anthracene**	1480	ug/kg	
	56553	**Benzo(a)anthracene**	844	ug/kg	
	50328	**Benzo(a)pyrene**	452	ug/kg	
	191242	**Benzo(g,h,i)perylene**	207	ug/kg	
	205992	**Benzo[b]Fluoranthene**	558	ug/kg	
	207089	**Benzo[k]fluoranthene**	327	ug/kg	J
	218019	**Chrysene**	861	ug/kg	
	53703	**Dibenzo[a,h]anthracene**	93.0	ug/kg	J
	132649	**Dibenzofuran**	694	ug/kg	
	206440	**Fluoranthene**	3790	ug/kg	
	193395	**Indeno(1,2,3-cd)pyrene**	218	ug/kg	
	91203	**Naphthalene**	810	ug/kg	
	90120	**Naphthalene, 1-methyl-**	314	ug/kg	
	91576	**Naphthalene, 2-methyl-**	508	ug/kg	
	85018	**Phenanthrene**	4310	ug/kg	
	129000	**Pyrene**	1990	ug/kg	
	483658	**Retene**	399	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	53	%Rec	
	92944	p-Terphenyl	82	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	4.05	mg/kg	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**11.9**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: **7439976**	**Mercury**	**0.0617**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**12700**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**119**	**mg/kg**	
	7440417	**Beryllium**	**0.41**	**mg/kg**	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	**Calcium**	**4100**	**mg/kg**	
	7440473	**Chromium**	**29.2**	**mg/kg**	
	7440484	**Cobalt**	**12.7**	**mg/kg**	
	7440508	**Copper**	**40.9**	**mg/kg**	
	7439896	**Iron**	**25900**	**mg/kg**	
	7439954	**Magnesium**	**4460**	**mg/kg**	
	7439965	**Manganese**	**423**	**mg/kg**	
	7440020	**Nickel**	**21.7**	**mg/kg**	
	7440097	**Potassium**	**565**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**464**	**mg/kg**	
	7440622	**Vanadium**	**68.3**	**mg/kg**	
	7440666	**Zinc**	**95.6**	**mg/kg**	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362501
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes			Result	Units	Qlfr
	87865	**Pentachlorophenol**	3.7	ug/kg	
	118796	Phenol, 2,4,6-tribromo	70	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes			Result	Units	Qlfr
	91587	2-Chloronaphthalene	93.2	ug/kg	U
	86737	**9H-Fluorene**	1600	ug/kg	
	83329	**Acenaphthene**	2130	ug/kg	
	208968	Acenaphthylene	46.6	ug/kg	U
	120127	**Anthracene**	466	ug/kg	
	56553	**Benzo(a)anthracene**	380	ug/kg	
	50328	**Benzo(a)pyrene**	146	ug/kg	
	191242	**Benzo(g,h,i)perylene**	47.9	ug/kg	
	205992	**Benzo[b]Fluoranthene**	250	ug/kg	
	207089	**Benzo[k]fluoranthene**	178	ug/kg	J
	218019	**Chrysene**	408	ug/kg	
	53703	Dibenzo[a,h]anthracene	93.2	ug/kg	U
	132649	**Dibenzofuran**	543	ug/kg	
	206440	**Fluoranthene**	1300	ug/kg	
	193395	**Indeno(1,2,3-cd)pyrene**	63.7	ug/kg	J
	91203	**Naphthalene**	832	ug/kg	
	90120	**Naphthalene, 1-methyl-**	189	ug/kg	
	91576	**Naphthalene, 2-methyl-**	292	ug/kg	
	85018	**Phenanthrene**	2280	ug/kg	
	129000	**Pyrene**	683	ug/kg	
	483658	**Retene**	4450	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	58	%Rec	
	92944	p-Terphenyl	90	%Rec	

MET

Parameter : Arsenic by AA, RAS
Method : 200.9 Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes			Result	Units
	7440382	**Arsenic**	2.61	mg/kg

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**13.0**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: **7439976**	**Mercury**	**0.0360**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**9810**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**83.9**	**mg/kg**	
	7440417	**Beryllium**	**0.30**	**mg/kg**	
	7440439	**Cadmium**	**8.48**	**mg/kg**	
	7440702	**Calcium**	**3360**	**mg/kg**	
	7440473	**Chromium**	**17.4**	**mg/kg**	
	7440484	**Cobalt**	**11.9**	**mg/kg**	
	7440508	**Copper**	**21.0**	**mg/kg**	
	7439896	**Iron**	**24200**	**mg/kg**	
	7439954	**Magnesium**	**3920**	**mg/kg**	
	7439965	**Manganese**	**266**	**mg/kg**	
	7440020	**Nickel**	**17.4**	**mg/kg**	
	7440097	**Potassium**	**450**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**361**	**mg/kg**	
	7440622	**Vanadium**	**66.6**	**mg/kg**	
	7440666	**Zinc**	**73.4**	**mg/kg**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362502
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	**87865**	**Pentachlorophenol**	**2.8**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	77	%Rec	
GCMS					
Parameter :	Poly Aroma Hydro - GCMS				
Method :	XPAH-GCM				
Prep Method:	3510M/3540				
Analytes :	91587	2-Chloronaphthalene	9.0	ug/kg	UJ
	86737	**9H-Fluorene**	**355**	**ug/kg**	**J**
	83329	**Acenaphthene**	**440**	**ug/kg**	**J**
	208968	**Acenaphthylene**	**5.3**	**ug/kg**	**J**
	120127	**Anthracene**	**110**	**ug/kg**	**J**
	56553	**Benzo(a)anthracene**	**201**	**ug/kg**	**J**
	50328	**Benzo(a)pyrene**	**84.0**	**ug/kg**	**J**
	191242	**Benzo(g,h,i)perylene**	**25.1**	**ug/kg**	**J**
	205992	**Benzo[b]Fluoranthene**	**130**	**ug/kg**	**J**
	207089	**Benzo[k]fluoranthene**	**86.8**	**ug/kg**	**J**
	218019	**Chrysene**	**190**	**ug/kg**	**J**
	53703	**Dibenzo[a,h]anthracene**	**14.6**	**ug/kg**	**J**
	132649	**Dibenzofuran**	**152**	**ug/kg**	**J**
	206440	**Fluoranthene**	**892**	**ug/kg**	**J**
	193395	**Indeno(1,2,3-cd)pyrene**	**32.8**	**ug/kg**	**J**
	91203	**Naphthalene**	**651**	**ug/kg**	**J**
	90120	**Naphthalene, 1-methyl-**	**91.0**	**ug/kg**	**J**
	91576	**Naphthalene, 2-methyl-**	**175**	**ug/kg**	**J**
	85018	**Phenanthrene**	**887**	**ug/kg**	**J**
	129000	**Pyrene**	**399**	**ug/kg**	**J**
	483658	**Retene**	**12500**	**ug/kg**	**J**
	1499101	9,10 DIPHENYLANTHRACENE	46	%Rec	
	92944	p-Terphenyl	65	%Rec	
MET					
Parameter :	Arsenic by AA, RAS				
Method :	200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	**7440382**	**Arsenic**	**2.36**	**mg/kg**	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**13.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0272**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**7970**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**84.1**	**mg/kg**	
	7440417	**Beryllium**	**0.29**	**mg/kg**	
	7440439	**Cadmium**	**1.03**	**mg/kg**	
	7440702	**Calcium**	**3080**	**mg/kg**	
	7440473	**Chromium**	**13.7**	**mg/kg**	
	7440484	**Cobalt**	**11.8**	**mg/kg**	
	7440508	**Copper**	**20.5**	**mg/kg**	
	7439896	**Iron**	**22400**	**mg/kg**	
	7439954	**Magnesium**	**3330**	**mg/kg**	
	7439965	**Manganese**	**246**	**mg/kg**	
	7440020	**Nickel**	**14.1**	**mg/kg**	
	7440097	**Potassium**	**384**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**295**	**mg/kg**	
	7440622	**Vanadium**	**57.0**	**mg/kg**	
	7440666	**Zinc**	**67.1**	**mg/kg**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362503
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	**Pentachlorophenol**	27	ug/kg	
	118796	Phenol, 2,4,6-tribromo	86	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	208	ug/kg	U
	86737	**9H-Fluorene**	44900	ug/kg	
	83329	**Acenaphthene**	48800	ug/kg	
	208968	**Acenaphthylene**	161	ug/kg	
	120127	**Anthracene**	23300	ug/kg	
	56553	**Benzo(a)anthracene**	13200	ug/kg	
	50328	**Benzo(a)pyrene**	4930	ug/kg	
	191242	**Benzo(g,h,i)perylene**	1120	ug/kg	
	205992	**Benzo[b]Fluoranthene**	6300	ug/kg	
	207089	**Benzo[k]fluoranthene**	4740	ug/kg	J
	218019	**Chrysene**	12700	ug/kg	
	53703	**Dibenzo[a,h]anthracene**	243	ug/kg	J
	132649	**Dibenzofuran**	2310	ug/kg	
	206440	**Fluoranthene**	57700	ug/kg	
	193395	**Indeno(1,2,3-cd)pyrene**	1590	ug/kg	
	91203	**Naphthalene**	3180	ug/kg	
	90120	**Naphthalene, 1-methyl-**	18800	ug/kg	
	91576	**Naphthalene, 2-methyl-**	1890	ug/kg	
	85018	**Phenanthrene**	94300	ug/kg	
	129000	**Pyrene**	31000	ug/kg	
	483658	**Retene**	55500	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	62	%Rec	
	92944	p-Terphenyl	89	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	4.28	mg/kg	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**41.5**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.75	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.238**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**21000**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**149**	**mg/kg**	
	7440417	**Beryllium**	**0.610**	**mg/kg**	
	7440439	**Cadmium**	**0.67**	**mg/kg**	
	7440702	**Calcium**	**5410**	**mg/kg**	
	7440473	**Chromium**	**29.6**	**mg/kg**	
	7440484	**Cobalt**	**14.1**	**mg/kg**	
	7440508	**Copper**	**57.0**	**mg/kg**	
	7439896	**Iron**	**35100**	**mg/kg**	
	7439954	**Magnesium**	**5630**	**mg/kg**	
	7439965	**Manganese**	**589**	**mg/kg**	
	7440020	**Nickel**	**19.9**	**mg/kg**	
	7440097	**Potassium**	**802**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**555**	**mg/kg**	
	7440622	**Vanadium**	**85.9**	**mg/kg**	
	7440666	**Zinc**	**259**	**mg/kg**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**24**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	84	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	10.7	ug/kg	UJ
	86737	**9H-Fluorene**	**41.3**	**ug/kg**	**J**
	83329	**Acenaphthene**	**18.6**	**ug/kg**	**J**
	208968	**Acenaphthylene**	**6.7**	**ug/kg**	**J**
	120127	**Anthracene**	**31.8**	**ug/kg**	**J**
	56553	**Benzo(a)anthracene**	**90.7**	**ug/kg**	**J**
	50328	**Benzo(a)pyrene**	**55.9**	**ug/kg**	**J**
	191242	**Benzo(g,h,i)perylene**	**32.0**	**ug/kg**	**J**
	205992	**Benzo[b]Fluoranthene**	**99.9**	**ug/kg**	**J**
	207089	**Benzo[k]fluoranthene**	**69.3**	**ug/kg**	**J**
	218019	**Chrysene**	**92.2**	**ug/kg**	**J**
	53703	**Dibenzo[a,h]anthracene**	**17.6**	**ug/kg**	**J**
	132649	**Dibenzofuran**	**27.2**	**ug/kg**	**J**
	206440	**Fluoranthene**	**203**	**ug/kg**	**J**
	193395	**Indeno(1,2,3-cd)pyrene**	**37.9**	**ug/kg**	**J**
	91203	**Naphthalene**	**41.4**	**ug/kg**	**J**
	90120	**Naphthalene, 1-methyl-**	**8.9**	**ug/kg**	**J**
	91576	**Naphthalene, 2-methyl-**	**16.6**	**ug/kg**	**J**
	85018	**Phenanthrene**	**61.5**	**ug/kg**	**J**
	129000	**Pyrene**	**148**	**ug/kg**	**J**
	483658	**Retene**	**93.7**	**ug/kg**	**J**
	1499101	9,10 DIPHENYLANTHRACENE	49	%Rec	
	92944	p-Terphenyl	73	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**3.42**	**mg/kg**	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	12.8	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.75	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.0733	mg/kg	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	16700	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	137	mg/kg	
	7440417	Beryllium	0.520	mg/kg	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	Calcium	5090	mg/kg	
	7440473	Chromium	23.1	mg/kg	
	7440484	Cobalt	13.7	mg/kg	
	7440508	Copper	40.6	mg/kg	
	7439896	Iron	28800	mg/kg	
	7439954	Magnesium	5270	mg/kg	
	7439965	Manganese	379	mg/kg	
	7440020	Nickel	18.0	mg/kg	
	7440097	Potassium	694	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	531	mg/kg	
	7440622	Vanadium	75.8	mg/kg	
	7440666	Zinc	80.2	mg/kg	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.0714	mg/kg	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	99.8	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362504
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	103	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362505
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**26**	**ug/kg**	
	118796	Phenol, 2,4,6-tribromo	78	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	12.7	ug/kg	U
	86737	**9H-Fluorene**	**779**	**ug/kg**	
	83329	**Acenaphthene**	**902**	**ug/kg**	
	208968	**Acenaphthylene**	**30.1**	**ug/kg**	
	120127	**Anthracene**	**358**	**ug/kg**	
	56553	**Benzo(a)anthracene**	**485**	**ug/kg**	
	50328	**Benzo(a)pyrene**	**230**	**ug/kg**	
	191242	**Benzo(g,h,i)perylene**	**82.1**	**ug/kg**	
	205992	**Benzo[b]Fluoranthene**	**383**	**ug/kg**	
	207089	**Benzo[k]fluoranthene**	**235**	**ug/kg**	
	218019	**Chrysene**	**565**	**ug/kg**	
	53703	**Dibenzo[a,h]anthracene**	**17.2**	**ug/kg**	**J**
	132649	**Dibenzofuran**	**489**	**ug/kg**	
	206440	**Fluoranthene**	**2850**	**ug/kg**	
	193395	**Indeno(1,2,3-cd)pyrene**	**110**	**ug/kg**	
	91203	**Naphthalene**	**2100**	**ug/kg**	
	90120	**Naphthalene, 1-methyl-**	**479**	**ug/kg**	
	91576	**Naphthalene, 2-methyl-**	**1130**	**ug/kg**	
	85018	**Phenanthrene**	**2180**	**ug/kg**	
	129000	**Pyrene**	**1240**	**ug/kg**	**J**
	483658	**Retene**	**237**	**ug/kg**	
	1499101	9,10 DIPHENYLANTHRACENE	63	%Rec	
	92944	p-Terphenyl	96	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**4.96**	**mg/kg**	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	22.2	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.109	mg/kg	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	12900	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	134	mg/kg	
	7440417	Beryllium	0.48	mg/kg	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	Calcium	4890	mg/kg	
	7440473	Chromium	22.1	mg/kg	
	7440484	Cobalt	13.0	mg/kg	
	7440508	Copper	53.7	mg/kg	
	7439896	Iron	26700	mg/kg	
	7439954	Magnesium	4900	mg/kg	
	7439965	Manganese	468	mg/kg	
	7440020	Nickel	16.3	mg/kg	
	7440097	Potassium	596	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	388	mg/kg	
	7440622	Vanadium	67.1	mg/kg	
	7440666	Zinc	150	mg/kg	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	**Pentachlorophenol**	20	ug/kg	
	118796	Phenol, 2,4,6-tribromo	63	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	7.2	ug/kg	U
	86737	**9H-Fluorene**	656	ug/kg	
	83329	**Acenaphthene**	274	ug/kg	
	208968	**Acenaphthylene**	19.7	ug/kg	
	120127	**Anthracene**	526	ug/kg	
	56553	**Benzo(a)anthracene**	787	ug/kg	
	50328	**Benzo(a)pyrene**	298	ug/kg	
	191242	**Benzo(g,h,i)perylene**	93.3	ug/kg	
	205992	**Benzo[b]Fluoranthene**	632	ug/kg	
	207089	**Benzo[k]fluoranthene**	419	ug/kg	
	218019	**Chrysene**	999	ug/kg	
	53703	**Dibenzo[a,h]anthracene**	64.3	ug/kg	J
	132649	**Dibenzofuran**	262	ug/kg	
	206440	**Fluoranthene**	5250	ug/kg	J
	193395	**Indeno(1,2,3-cd)pyrene**	139	ug/kg	
	91203	**Naphthalene**	310	ug/kg	
	90120	**Naphthalene, 1-methyl-**	79.1	ug/kg	
	91576	**Naphthalene, 2-methyl-**	129	ug/kg	
	85018	**Phenanthrene**	2450	ug/kg	
	129000	**Pyrene**	2290	ug/kg	
	483658	**Retene**	71.4	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	59	%Rec	
	92944	p-Terphenyl	87	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	5.8	mg/kg	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	19.4	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	10100	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	95.6	mg/kg	
	7440417	Beryllium	0.33	mg/kg	
	7440439	Cadmium	1.69	mg/kg	
	7440702	Calcium	3300	mg/kg	
	7440473	Chromium	16.5	mg/kg	
	7440484	Cobalt	10.3	mg/kg	
	7440508	Copper	23.9	mg/kg	
	7439896	Iron	29500	mg/kg	
	7439954	Magnesium	3350	mg/kg	
	7439965	Manganese	299	mg/kg	
	7440020	Nickel	14.3	mg/kg	
	7440097	Potassium	476	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	353	mg/kg	
	7440622	Vanadium	66.2	mg/kg	
	7440666	Zinc	71.7	mg/kg	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7440382**	**Arsenic**	**5.7**	**mg/kg**	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**21.9**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**9780**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**92.0**	**mg/kg**	
	7440417	**Beryllium**	**0.33**	**mg/kg**	
	7440439	**Cadmium**	**1.84**	**mg/kg**	
	7440702	**Calcium**	**3300**	**mg/kg**	
	7440473	**Chromium**	**20.1**	**mg/kg**	
	7440484	**Cobalt**	**11.1**	**mg/kg**	
	7440508	**Copper**	**24.3**	**mg/kg**	
	7439896	**Iron**	**29900**	**mg/kg**	
	7439954	**Magnesium**	**3620**	**mg/kg**	
	7439965	**Manganese**	**305**	**mg/kg**	
	7440020	**Nickel**	**15.0**	**mg/kg**	
	7440097	**Potassium**	**441**	**mg/kg**	

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			Result	Units	Qlfr
Analytes	: 7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**339**	**mg/kg**	
	7440622	**Vanadium**	**65.8**	**mg/kg**	
	7440666	**Zinc**	**74.8**	**mg/kg**	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Post Spike
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: Metals, ICP-SAS			
Method	:			
Prep Method	:			
Analytes	: 7440360 Antimony	96	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol			NA
	118796	Phenol, 2,4,6-tribromo	86	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 86737	9H-Fluorene			NA
	83329	Acenaphthene			NA
	208968	Acenaphthylene			NA
	120127	Anthracene			NA
	56553	Benzo(a)anthracene			NA
	50328	Benzo(a)pyrene			NA
	191242	Benzo(g,h,i)perylene			NA
	205992	Benzo[b]Fluoranthene			NA
	207089	Benzo[k]fluoranthene			NA
	218019	Chrysene			NA
	53703	Dibenzo[a,h]anthracene			NA
	206440	Fluoranthene			NA
	193395	Indeno(1,2,3-cd)pyrene			NA
	91203	Naphthalene			NA
	90120	Naphthalene, 1-methyl-			NA
	91576	Naphthalene, 2-methyl-			NA
	85018	Phenanthrene			NA
	129000	Pyrene			NA
	483658	Retene			NA
	91587	2-Chloronaphthalene	67.8	%Rec	
	1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
	92944	p-Terphenyl	76	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	82	%Rec	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead			NA
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	86	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	77	%Rec	
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	111	%Rec	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum			NA
	7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7440360	Antimony	71	%Rec	
	7440393	Barium	89	%Rec	
	7440417	Beryllium	90	%Rec	
	7440439	Cadmium	94	%Rec	
	7440473	Chromium	88	%Rec	
	7440484	Cobalt	92	%Rec	
	7440508	Copper	95	%Rec	
	7439965	Manganese	76	%Rec	
	7440020	Nickel	91	%Rec	
	7440224	Silver	97	%Rec	
	7440622	Vanadium	82	%Rec	
	7440666	Zinc	90	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362506
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol			NA
	118796	Phenol, 2,4,6-tribromo	79	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 86737	9H-Fluorene			NA
	83329	Acenaphthene			NA
	208968	Acenaphthylene			NA
	120127	Anthracene			NA
	56553	Benzo(a)anthracene			NA
	50328	Benzo(a)pyrene			NA
	191242	Benzo(g,h,i)perylene			NA
	205992	Benzo[b]Fluoranthene			NA
	207089	Benzo[k]fluoranthene			NA
	218019	Chrysene			NA
	53703	Dibenzo[a,h]anthracene			NA
	206440	Fluoranthene			NA
	193395	Indeno(1,2,3-cd)pyrene			NA
	91203	Naphthalene			NA
	90120	Naphthalene, 1-methyl-			NA
	91576	Naphthalene, 2-methyl-			NA
	85018	Phenanthrene			NA
	129000	Pyrene			NA
	483658	Retene			NA
	91587	2-Chloronaphthalene	68.2	%Rec	
	1499101	9,10 DIPHENYLANTHRACENE	50	%Rec	
	92944	p-Terphenyl	76	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	82	%Rec	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead			NA
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	86	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	100	%Rec	
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	109	%Rec	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum			NA
	7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7440360	Antimony	79	%Rec	
	7440393	Barium	89	%Rec	
	7440417	Beryllium	91	%Rec	
	7440439	Cadmium	93	%Rec	
	7440473	Chromium	91	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	96	%Rec	
	7439965	Manganese	92	%Rec	
	7440020	Nickel	94	%Rec	
	7440224	Silver	99	%Rec	
	7440622	Vanadium	88	%Rec	
	7440666	Zinc	97	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362507
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	**Pentachlorophenol**	360	ug/kg	
118796	Phenol, 2,4,6-tribromo	84	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	206	ug/kg	UJ
86737	**9H-Fluorene**	616	ug/kg	J
83329	**Acenaphthene**	1720	ug/kg	J
208968	**Acenaphthylene**	113	ug/kg	J
120127	**Anthracene**	157	ug/kg	J
56553	**Benzo(a)anthracene**	36.0	ug/kg	J
50328	**Benzo(a)pyrene**	16.0	ug/kg	J
191242	Benzo(g,h,i)perylene	11.9	ug/kg	UJ
205992	**Benzo[b]Fluoranthene**	16.4	ug/kg	J
207089	**Benzo[k]fluoranthene**	10.1	ug/kg	J
218019	**Chrysene**	35.4	ug/kg	J
53703	Dibenzo[a,h]anthracene	23.8	ug/kg	UJ
132649	**Dibenzofuran**	589	ug/kg	J
206440	**Fluoranthene**	306	ug/kg	J
193395	Indeno(1,2,3-cd)pyrene	23.8	ug/kg	UJ
91203	**Naphthalene**	241000	ug/kg	J
90120	**Naphthalene, 1-methyl-**	3860	ug/kg	J
91576	**Naphthalene, 2-methyl-**	5910	ug/kg	J
85018	**Phenanthrene**	956	ug/kg	J
129000	**Pyrene**	223	ug/kg	J
483658	**Retene**	43300	ug/kg	J
1499101	9,10 DIPHENYLANTHRACENE	57	%Rec	
92944	p-Terphenyl	24	%Rec	

MET

Parameter : Arsenic by AA, RAS
Method : 200.9 Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units
7440382	**Arsenic**	7.5	mg/kg

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**13.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.0435**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**5260**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**66.1**	**mg/kg**	
	7440417	**Beryllium**	**0.19**	**mg/kg**	
	7440439	Cadmium	0.5	mg/kg	U
	7440702	**Calcium**	**3490**	**mg/kg**	
	7440473	**Chromium**	**10.3**	**mg/kg**	
	7440484	**Cobalt**	**6.12**	**mg/kg**	
	7440508	**Copper**	**15.6**	**mg/kg**	
	7439896	**Iron**	**22000**	**mg/kg**	
	7439954	**Magnesium**	**3140**	**mg/kg**	
	7439965	**Manganese**	**261**	**mg/kg**	
	7440020	**Nickel**	**10.3**	**mg/kg**	
	7440097	**Potassium**	**750**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**401**	**mg/kg**	
	7440622	**Vanadium**	**46.3**	**mg/kg**	
	7440666	**Zinc**	**58.8**	**mg/kg**	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362508
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	**Pentachlorophenol**	58	ug/kg	
118796	Phenol, 2,4,6-tribromo	70	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	9.1	ug/kg	U
86737	**9H-Fluorene**	431	ug/kg	
83329	**Acenaphthene**	405	ug/kg	
208968	**Acenaphthylene**	14.8	ug/kg	
120127	**Anthracene**	213	ug/kg	
56553	**Benzo(a)anthracene**	333	ug/kg	
50328	**Benzo(a)pyrene**	181	ug/kg	
191242	**Benzo(g,h,i)perylene**	68.2	ug/kg	
205992	**Benzo[b]Fluoranthene**	373	ug/kg	
207089	**Benzo[k]fluoranthene**	199	ug/kg	
218019	**Chrysene**	339	ug/kg	
53703	**Dibenzo[a,h]anthracene**	40.3	ug/kg	J
132649	**Dibenzofuran**	250	ug/kg	
206440	**Fluoranthene**	1020	ug/kg	
193395	**Indeno(1,2,3-cd)pyrene**	92.4	ug/kg	
91203	**Naphthalene**	495	ug/kg	
90120	**Naphthalene, 1-methyl-**	88.1	ug/kg	
91576	**Naphthalene, 2-methyl-**	162	ug/kg	
85018	**Phenanthrene**	668	ug/kg	
129000	**Pyrene**	525	ug/kg	J
483658	**Retene**	57.7	ug/kg	
1499101	9,10 DIPHENYLANTHRACENE	56	%Rec	
92944	p-Terphenyl	84	%Rec	

MET

Parameter : Arsenic by AA, RAS
Method : 200.9 Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units
7440382	**Arsenic**	8.1	mg/kg

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	**Lead**	**14.4**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	**Mercury**	**0.627**	**mg/kg**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**9400**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**102**	**mg/kg**	
	7440417	**Beryllium**	**0.35**	**mg/kg**	
	7440439	**Cadmium**	**8.41**	**mg/kg**	
	7440702	**Calcium**	**3200**	**mg/kg**	
	7440473	**Chromium**	**16.4**	**mg/kg**	
	7440484	**Cobalt**	**12.9**	**mg/kg**	
	7440508	**Copper**	**30.3**	**mg/kg**	
	7439896	**Iron**	**34000**	**mg/kg**	
	7439954	**Magnesium**	**3860**	**mg/kg**	
	7439965	**Manganese**	**336**	**mg/kg**	
	7440020	**Nickel**	**15.1**	**mg/kg**	
	7440097	**Potassium**	**419**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**268**	**mg/kg**	
	7440622	**Vanadium**	**65.0**	**mg/kg**	
	7440666	**Zinc**	**83.3**	**mg/kg**	

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Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02362509
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	1.60	ug/kg	U
	118796	Phenol, 2,4,6-tribromo	60	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	8.0	ug/kg	U
	86737	9H-Fluorene	7.0	ug/kg	
	83329	Acenaphthene	3.4	ug/kg	J
	208968	Acenaphthylene	2.4	ug/kg	J
	120127	Anthracene	6.7	ug/kg	
	56553	Benzo(a)anthracene	29.5	ug/kg	
	50328	Benzo(a)pyrene	17.1	ug/kg	
	191242	Benzo(g,h,i)perylene	11.9	ug/kg	
	205992	Benzo[b]Fluoranthene	25.1	ug/kg	
	207089	Benzo[k]fluoranthene	16.9	ug/kg	J
	218019	Chrysene	33.3	ug/kg	
	53703	Dibenzo[a,h]anthracene	1.3	ug/kg	J
	132649	Dibenzofuran	5.3	ug/kg	
	206440	Fluoranthene	65.9	ug/kg	
	193395	Indeno(1,2,3-cd)pyrene	12.5	ug/kg	
	91203	Naphthalene	12.2	ug/kg	
	90120	Naphthalene, 1-methyl-	2.2	ug/kg	J
	91576	Naphthalene, 2-methyl-	5.0	ug/kg	
	85018	Phenanthrene	18.8	ug/kg	
	129000	Pyrene	48.1	ug/kg	
	483658	Retene	69.6	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	66	%Rec	
	92944	p-Terphenyl	77	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	2.79	mg/kg	

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			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	4.41	mg/kg	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.0251	mg/kg	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	7470	mg/kg	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	73.0	mg/kg	
	7440417	Beryllium	0.27	mg/kg	
	7440439	Cadmium	10.0	mg/kg	
	7440702	Calcium	3300	mg/kg	
	7440473	Chromium	11.9	mg/kg	
	7440484	Cobalt	11.1	mg/kg	
	7440508	Copper	15.1	mg/kg	
	7439896	Iron	22400	mg/kg	
	7439954	Magnesium	3100	mg/kg	
	7439965	Manganese	247	mg/kg	
	7440020	Nickel	13.3	mg/kg	
	7440097	Potassium	398	mg/kg	
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	392	mg/kg	
	7440622	Vanadium	58.4	mg/kg	
	7440666	Zinc	47.7	mg/kg	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	**Pentachlorophenol**	**0.051**	**ug/L**	
118796	Phenol, 2,4,6-tribromo	90	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.037	ug/L	U
86737	9H-Fluorene	0.019	ug/L	U
83329	Acenaphthene	0.019	ug/L	U
208968	Acenaphthylene	0.019	ug/L	U
120127	Anthracene	0.019	ug/L	U
56553	Benzo(a)anthracene	0.037	ug/L	U
50328	Benzo(a)pyrene	0.037	ug/L	U
191242	Benzo(g,h,i)perylene	0.019	ug/L	U
205992	Benzo[b]Fluoranthene	0.019	ug/L	U
207089	Benzo[k]fluoranthene	0.019	ug/L	U
218019	Chrysene	0.037	ug/L	U
53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
132649	Dibenzofuran	0.019	ug/L	U
206440	**Fluoranthene**	**0.0083**	**ug/L**	**J**
193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
91203	Naphthalene	0.019	ug/L	U
90120	Naphthalene, 1-methyl-	0.019	ug/L	U
91576	Naphthalene, 2-methyl-	0.019	ug/L	U
85018	Phenanthrene	0.019	ug/L	U
129000	Pyrene	0.019	ug/L	U
483658	Retene	0.019	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
92944	p-Terphenyl	124	%Rec	

GEN

Parameter : Total suspended solids
Method : USGS I3765
Prep Method: USGS I3765

Analytes		Result	Units
***90069**	**Total suspended Solids**	**8.40**	**mg/L**

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	1480	ng/L	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	323	ug/L	J
	7440393	Barium	9.10	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	6610	ug/L	
	7439896	Iron	383	ug/L	
	7439954	Magnesium	2360	ug/L	
	7440097	Potassium	1100	ug/L	
	7440235	Sodium	7460	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.19	ug/L	
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.31	ug/L	
	7440508	Copper	20.9	ug/L	
	7439921	Lead	1.85	ug/L	
	7439965	Manganese	39.4	ug/L	
	7440020	Nickel	2.44	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	4.1	ug/L	
	7440666	Zinc	7.40	ug/L	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	1450	ng/L	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	115	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364300
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	7439976 Mercury	106	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364301
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	78	%Rec	
GCMS					
Parameter :	Poly Aroma Hydro - GCMS				
Method :	XPAH-GCM				
Prep Method:	3510M/3540				
Analytes :	91587	2-Chloronaphthalene	0.036	ug/L	U
	86737	9H-Fluorene	0.018	ug/L	U
	83329	Acenaphthene	0.018	ug/L	U
	208968	Acenaphthylene	0.018	ug/L	U
	120127	Anthracene	0.018	ug/L	U
	56553	Benzo(a)anthracene	0.036	ug/L	U
	50328	Benzo(a)pyrene	0.036	ug/L	U
	191242	Benzo(g,h,i)perylene	0.018	ug/L	U
	205992	Benzo[b]Fluoranthene	0.018	ug/L	U
	207089	Benzo[k]fluoranthene	0.018	ug/L	U
	218019	Chrysene	0.036	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
	132649	Dibenzofuran	0.018	ug/L	U
	206440	**Fluoranthene**	**0.0041**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
	91203	Naphthalene	0.018	ug/L	U
	90120	Naphthalene, 1-methyl-	0.018	ug/L	U
	91576	Naphthalene, 2-methyl-	0.018	ug/L	U
	85018	Phenanthrene	0.018	ug/L	U
	129000	Pyrene	0.018	ug/L	U
	483658	Retene	0.018	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	85	%Rec	
	92944	p-Terphenyl	132	%Rec	
GEN					
Parameter :	Total suspended solids				
Method :	USGS I3765				
Prep Method:	USGS I3765				
Analytes :	***90069**	**Total suspended Solids**	**9.68**	**mg/L**	

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	249	ng/L	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	395	ug/L	J
	7440393	Barium	9.50	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	6860	ug/L	
	7439896	Iron	462	ug/L	
	7439954	Magnesium	2450	ug/L	
	7440097	Potassium	1200	ug/L	
	7440235	Sodium	7510	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.64	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.33	ug/L	
	7440508	Copper	3.9	ug/L	
	7439921	Lead	0.42	ug/L	
	7439965	Manganese	42.6	ug/L	
	7440020	Nickel	1.26	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	4.3	ug/L	
	7440666	Zinc	4.9	ug/L	

1026 64301 Regsample

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Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364302
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (5A)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.025**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	66	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	Benzo(a)anthracene	0.037	ug/L	U
	50328	Benzo(a)pyrene	0.037	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.037	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.0043**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	Phenanthrene	0.019	ug/L	U
	129000	Pyrene	0.019	ug/L	U
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	100	%Rec	
	92944	p-Terphenyl	127	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**855**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**359**	**ug/L**	**J**
	7440393	**Barium**	**9.10**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6640**	**ug/L**	
	7439896	**Iron**	**430**	**ug/L**	
	7439954	**Magnesium**	**2340**	**ug/L**	
	7440097	**Potassium**	**1100**	**ug/L**	
	7440235	**Sodium**	**7250**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.31**	**ug/L**	
	7440508	**Copper**	**19.2**	**ug/L**	
	7439921	**Lead**	**0.36**	**ug/L**	
	7439965	**Manganese**	**39.0**	**ug/L**	
	7440020	**Nickel**	**1.27**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.9**	**ug/L**	
	7440666	**Zinc**	**5.2**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364303
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	91	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.036	ug/L	U
	86737	9H-Fluorene	0.018	ug/L	U
	83329	Acenaphthene	0.018	ug/L	U
	208968	Acenaphthylene	0.018	ug/L	U
	120127	Anthracene	0.018	ug/L	U
	56553	Benzo(a)anthracene	0.036	ug/L	U
	50328	Benzo(a)pyrene	0.036	ug/L	U
	191242	Benzo(g,h,i)perylene	0.018	ug/L	U
	205992	Benzo[b]Fluoranthene	0.018	ug/L	U
	207089	Benzo[k]fluoranthene	0.018	ug/L	U
	218019	Chrysene	0.036	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
	132649	Dibenzofuran	0.018	ug/L	U
	206440	Fluoranthene	0.018	ug/L	U
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
	91203	Naphthalene	0.018	ug/L	U
	90120	Naphthalene, 1-methyl-	0.018	ug/L	U
	91576	Naphthalene, 2-methyl-	0.018	ug/L	U
	85018	Phenanthrene	0.018	ug/L	U
	129000	Pyrene	0.018	ug/L	U
	483658	Retene	0.018	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	98	%Rec	
	92944	p-Terphenyl	124	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**10.0**	**mg/L**	

			Result	Units	Qlfr
MET					
Parameter :	All MERCURY tests				
Method :	1631B				
Prep Method:	1631B				
Analytes :	**7439976**	**Mercury**	**237**	**ng/L**	
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	**7429905**	**Aluminum**	**454**	**ug/L**	J
	7440393	**Barium**	**10.1**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6760**	**ug/L**	
	7439896	**Iron**	**540**	**ug/L**	
	7439954	**Magnesium**	**2420**	**ug/L**	
	7440097	**Potassium**	**1200**	**ug/L**	
	7440235	**Sodium**	**7320**	**ug/L**	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.39**	**ug/L**	
	7440508	**Copper**	**2.0**	**ug/L**	
	7439921	**Lead**	**0.47**	**ug/L**	
	7439965	**Manganese**	**43.4**	**ug/L**	
	7440020	**Nickel**	**0.91**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.9**	**ug/L**	
	7440666	**Zinc**	**4.7**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description: SED-8

Collected: 9/ 5/02
Matrix: Liquid
Sample Number: 02364304
Type: Reg sample

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.025**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	97	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	**Acenaphthene**	**0.013**	**ug/L**	**J**
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	**Benzo(a)anthracene**	**0.0051**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.038	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	**Chrysene**	**0.0067**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.024**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	Phenanthrene	0.019	ug/L	U
	129000	**Pyrene**	**0.013**	**ug/L**	**J**
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	94	%Rec	
	92944	p-Terphenyl	121	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**41.6**	**mg/L**	

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	403	ng/L	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	2990	ug/L	J
	7440393	Barium	27.3	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	7520	ug/L	
	7439896	Iron	3170	ug/L	
	7439954	Magnesium	2930	ug/L	
	7440097	Potassium	1300	ug/L	
	7440235	Sodium	7500	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.94	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	2.1	ug/L	
	7440484	Cobalt	1.69	ug/L	
	7440508	Copper	5.5	ug/L	
	7439921	Lead	1.68	ug/L	
	7439965	Manganese	92.3	ug/L	
	7440020	Nickel	2.94	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	9.58	ug/L	
	7440666	Zinc	12.5	ug/L	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364305
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-9		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	88	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	**Benzo(a)anthracene**	**0.0041**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.037	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	**Chrysene**	**0.0039**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.018**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	**Phenanthrene**	**0.0087**	**ug/L**	**J**
	129000	**Pyrene**	**0.011**	**ug/L**	**J**
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	79	%Rec	
	92944	p-Terphenyl	122	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**29.4**	**mg/L**	

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	929	ng/L	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	1920	ug/L	J
	7440393	Barium	20.3	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	7200	ug/L	
	7439896	Iron	2120	ug/L	
	7439954	Magnesium	2710	ug/L	
	7440097	Potassium	1200	ug/L	
	7440235	Sodium	7420	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.68	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	
	7440484	Cobalt	1.2	ug/L	
	7440508	Copper	5.0	ug/L	
	7439921	Lead	3.23	ug/L	
	7439965	Manganese	80.2	ug/L	
	7440020	Nickel	2.22	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	6.98	ug/L	
	7440666	Zinc	18.1	ug/L	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	Benzo(a)anthracene	0.037	ug/L	U
	50328	Benzo(a)pyrene	0.037	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.037	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.0071**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	Phenanthrene	0.019	ug/L	U
	129000	Pyrene	0.019	ug/L	U
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
	92944	p-Terphenyl	121	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**4.42**	**mg/L**	

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	89.0	ng/L	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	428	ug/L	J
	7440393	Barium	9.90	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	6750	ug/L	
	7439896	Iron	551	ug/L	
	7439954	Magnesium	2390	ug/L	
	7440097	Potassium	1100	ug/L	
	7440235	Sodium	7380	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.67	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.37	ug/L	
	7440508	Copper	2.7	ug/L	
	7439921	Lead	0.77	ug/L	
	7439965	Manganese	44.7	ug/L	
	7440020	Nickel	0.97	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	3.8	ug/L	
	7440666	Zinc	4.4	ug/L	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
GEN				
Parameter	: Total suspended solids			
Method	: USGS I3765			
Prep Method	: USGS I3765			
Analytes	: *90069 Total suspended Solids	4.89	mg/L	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	73	%Rec	
	118796	Phenol, 2,4,6-tribromo	89	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 1499101	9,10 DIPHENYLANTHRACENE	70	%Rec	
	86737	9H-Fluorene	89.7	%Rec	
	83329	Acenaphthene	85.6	%Rec	
	208968	Acenaphthylene	75.9	%Rec	
	120127	Anthracene	89.8	%Rec	
	56553	Benzo(a)anthracene	87.5	%Rec	
	50328	Benzo(a)pyrene	106	%Rec	
	191242	Benzo(g,h,i)perylene	84.5	%Rec	
	205992	Benzo[b]Fluoranthene	88.2	%Rec	
	207089	Benzo[k]fluoranthene	120	%Rec	
	218019	Chrysene	99.1	%Rec	
	53703	Dibenzo[a,h]anthracene	147	%Rec	
	206440	Fluoranthene	92.5	%Rec	
	193395	Indeno(1,2,3-cd)pyrene	80.3	%Rec	
	91203	Naphthalene	80.6	%Rec	
	92944	p-Terphenyl	99	%Rec	
	85018	Phenanthrene	87.1	%Rec	
	129000	Pyrene	64.6	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364306
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	Pentachlorophenol	80	%Rec	
118796	Phenol, 2,4,6-tribromo	88	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
1499101	9,10 DIPHENYLANTHRACENE	78	%Rec	
86737	9H-Fluorene	108	%Rec	
83329	Acenaphthene	103	%Rec	
208968	Acenaphthylene	90.2	%Rec	
120127	Anthracene	113	%Rec	
56553	Benzo(a)anthracene	101	%Rec	
50328	Benzo(a)pyrene	120	%Rec	
191242	Benzo(g,h,i)perylene	96.7	%Rec	
205992	Benzo[b]Fluoranthene	103	%Rec	
207089	Benzo[k]fluoranthene	139	%Rec	
218019	Chrysene	117	%Rec	
53703	Dibenzo[a,h]anthracene	167	%Rec	
206440	Fluoranthene	111	%Rec	
193395	Indeno(1,2,3-cd)pyrene	117	%Rec	
91203	Naphthalene	96.2	%Rec	
92944	p-Terphenyl	113	%Rec	
85018	Phenanthrene	106	%Rec	
129000	Pyrene	77.8	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364307
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.079**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	89	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.039	ug/L	U
	86737	9H-Fluorene	0.020	ug/L	U
	83329	Acenaphthene	0.020	ug/L	U
	208968	Acenaphthylene	0.020	ug/L	U
	120127	Anthracene	0.020	ug/L	U
	56553	Benzo(a)anthracene	0.039	ug/L	U
	50328	Benzo(a)pyrene	0.039	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	Chrysene	0.039	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
	132649	Dibenzofuran	0.020	ug/L	U
	206440	**Fluoranthene**	**0.032**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.039	ug/L	U
	91203	Naphthalene	0.020	ug/L	U
	90120	Naphthalene, 1-methyl-	0.020	ug/L	U
	91576	Naphthalene, 2-methyl-	0.020	ug/L	U
	85018	**Phenanthrene**	**0.013**	**ug/L**	**J**
	129000	**Pyrene**	**0.016**	**ug/L**	**J**
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	119	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**4.40**	**mg/L**	

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	**Mercury**	**187**	**ng/L**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**144**	**ug/L**	**J**
	7440393	**Barium**	**7.80**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6660**	**ug/L**	
	7439896	**Iron**	**202**	**ug/L**	
	7439954	**Magnesium**	**2340**	**ug/L**	
	7440097	**Potassium**	**1200**	**ug/L**	
	7440235	**Sodium**	**7540**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.20**	**ug/L**	
	7440508	**Copper**	**2.4**	**ug/L**	
	7439921	**Lead**	**1.2**	**ug/L**	
	7439965	**Manganese**	**31.3**	**ug/L**	
	7440020	**Nickel**	**1.2**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.1**	**ug/L**	
	7440666	**Zinc**	**4.3**	**ug/L**	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364308
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-6		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	**Pentachlorophenol**	0.078	ug/L	
	118796	Phenol, 2,4,6-tribromo	92	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	**9H-Fluorene**	10.0	ug/L	
	83329	**Acenaphthene**	9.8	ug/L	
	208968	**Acenaphthylene**	0.042	ug/L	
	120127	**Anthracene**	3.8	ug/L	
	56553	**Benzo(a)anthracene**	1.5	ug/L	
	50328	**Benzo(a)pyrene**	0.44	ug/L	
	191242	**Benzo(g,h,i)perylene**	0.087	ug/L	
	205992	**Benzo[b]Fluoranthene**	0.77	ug/L	
	207089	**Benzo[k]fluoranthene**	0.39	ug/L	
	218019	**Chrysene**	1.2	ug/L	
	53703	**Dibenzo[a,h]anthracene**	0.093	ug/L	J
	132649	**Dibenzofuran**	5.7	ug/L	
	206440	**Fluoranthene**	11.9	ug/L	
	193395	**Indeno(1,2,3-cd)pyrene**	0.13	ug/L	
	91203	**Naphthalene**	3.3	ug/L	
	90120	**Naphthalene, 1-methyl-**	1.3	ug/L	
	91576	**Naphthalene, 2-methyl-**	1.3	ug/L	
	85018	**Phenanthrene**	22.7	ug/L	
	129000	**Pyrene**	5.3	ug/L	
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	67	%Rec	
	92944	p-Terphenyl	110	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: *90069	**Total suspended Solids**	24.8	mg/L	

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			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	**Mercury**	**201**	**ng/L**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**911**	**ug/L**	**J**
	7440393	**Barium**	**14.2**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6780**	**ug/L**	
	7439896	**Iron**	**1460**	**ug/L**	
	7439954	**Magnesium**	**2470**	**ug/L**	
	7440097	**Potassium**	**1200**	**ug/L**	
	7440235	**Sodium**	**7670**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**1.1**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.63**	**ug/L**	
	7440508	**Copper**	**3.1**	**ug/L**	
	7439921	**Lead**	**2.05**	**ug/L**	
	7439965	**Manganese**	**97.8**	**ug/L**	
	7440020	**Nickel**	**1.53**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**5.6**	**ug/L**	
	7440666	**Zinc**	**8.79**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364309
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	87	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	Benzo(a)anthracene	0.037	ug/L	U
	50328	Benzo(a)pyrene	0.037	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.037	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	**Fluoranthene**	**0.0084**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.019	ug/L	U
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	**Phenanthrene**	**0.0098**	**ug/L**	**J**
	129000	Pyrene	0.019	ug/L	U
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	121	%Rec	
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: ***90069**	**Total suspended Solids**	**12.0**	**mg/L**	

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	**Mercury**	**1370**	**ng/L**	
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**376**	**ug/L**	**J**
	7440393	**Barium**	**9.20**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**6720**	**ug/L**	
	7439896	**Iron**	**439**	**ug/L**	
	7439954	**Magnesium**	**2380**	**ug/L**	
	7440097	**Potassium**	**1100**	**ug/L**	
	7440235	**Sodium**	**7290**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.32**	**ug/L**	
	7440508	**Copper**	**8.45**	**ug/L**	
	7439921	**Lead**	**0.56**	**ug/L**	
	7439965	**Manganese**	**41.4**	**ug/L**	
	7440020	**Nickel**	**1.2**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.6**	**ug/L**	
	7440666	**Zinc**	**7.53**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364310
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-7 POREWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	88	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.039	ug/L	U
	86737	**9H-Fluorene**	**0.30**	**ug/L**	
	83329	**Acenaphthene**	**8.5**	**ug/L**	
	208968	Acenaphthylene	0.020	ug/L	U
	120127	**Anthracene**	**0.048**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.011**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.039	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.010**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
	132649	**Dibenzofuran**	**0.18**	**ug/L**	
	206440	**Fluoranthene**	**0.077**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.039	ug/L	U
	91203	**Naphthalene**	**0.46**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**0.62**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.37**	**ug/L**	
	85018	**Phenanthrene**	**0.27**	**ug/L**	
	129000	**Pyrene**	**0.041**	**ug/L**	
	483658	**Retene**	**0.012**	**ug/L**	**J**
	1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
	92944	p-Terphenyl	122	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**4.19**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	5060	ug/L	J
	7440393	Barium	74.4	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	16900	ug/L	
	7439896	Iron	17600	ug/L	
	7439954	Magnesium	6150	ug/L	
	7439965	Manganese	1350	ug/L	
	7440097	Potassium	5320	ug/L	
	7440235	Sodium	94300	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	41.9	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	4.2	ug/L	
	7440484	Cobalt	6.49	ug/L	
	7440508	Copper	8.62	ug/L	
	7439921	Lead	1.43	ug/L	
	7440020	Nickel	7.54	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	18.2	ug/L	
	7440666	Zinc	22.0	ug/L	

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Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364311
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-5 POREWATER		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	
GCMS					
Parameter :	Poly Aroma Hydro - GCMS				
Method :	XPAH-GCM				
Prep Method:	3510M/3540				
Analytes :	91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	9H-Fluorene	6.7	ug/L	
	83329	Acenaphthene	25.4	ug/L	
	208968	Acenaphthylene	0.024	ug/L	
	120127	Anthracene	0.35	ug/L	
	56553	Benzo(a)anthracene	0.040	ug/L	
	50328	Benzo(a)pyrene	0.038	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.037	ug/L	J
	53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
	132649	Dibenzofuran	5.3	ug/L	
	206440	Fluoranthene	0.48	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
	91203	Naphthalene	0.17	ug/L	
	90120	Naphthalene, 1-methyl-	18.4	ug/L	
	91576	Naphthalene, 2-methyl-	2.1	ug/L	
	85018	Phenanthrene	3.4	ug/L	
	129000	Pyrene	0.20	ug/L	
	483658	Retene	0.79	ug/L	
	1499101	9,10 DIPHENYLANTHRACENE	80	%Rec	
	92944	p-Terphenyl	121	%Rec	
MET					
Parameter :	All MERCURY tests				
Method :	1631B				
Prep Method:	1631B				
Analytes :	7439976	Mercury	6.16	ng/L	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	551	ug/L	J
	7440393	**Barium**	108	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	41000	ug/L	
	7439896	**Iron**	57100	ug/L	
	7439954	**Magnesium**	12100	ug/L	
	7439965	**Manganese**	3800	ug/L	
	7440097	**Potassium**	6100	ug/L	
	7440235	**Sodium**	53300	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	52.3	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	1.1	ug/L	
	7440508	**Copper**	1.6	ug/L	
	7439921	**Lead**	0.93	ug/L	
	7440020	**Nickel**	1.80	ug/L	J
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	1.7	ug/L	
	7440666	**Zinc**	8.64	ug/L	

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Project Code:	TEC-247B	**Collected:**	9/ 5/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364312
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-51 (OR 5A) POREWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	93	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.058	ug/L	U
	86737	9H-Fluorene	18.4	ug/L	
	83329	Acenaphthene	65.5	ug/L	
	208968	Acenaphthylene	0.046	ug/L	
	120127	Anthracene	0.98	ug/L	
	56553	Benzo(a)anthracene	0.21	ug/L	
	50328	Benzo(a)pyrene	0.061	ug/L	
	191242	Benzo(g,h,i)perylene	0.037	ug/L	
	205992	Benzo[b]Fluoranthene	0.075	ug/L	
	207089	Benzo[k]fluoranthene	0.056	ug/L	
	218019	Chrysene	0.17	ug/L	
	53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
	132649	Dibenzofuran	14.9	ug/L	
	206440	Fluoranthene	1.7	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	J
	91203	Naphthalene	0.35	ug/L	
	90120	Naphthalene, 1-methyl-	51.5	ug/L	
	91576	Naphthalene, 2-methyl-	3.5	ug/L	
	85018	Phenanthrene	11.1	ug/L	
	129000	Pyrene	0.73	ug/L	
	483658	Retene	5.4	ug/L	
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	123	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	9.94	ng/L	

			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**891**	**ug/L**	**J**
	7440393	**Barium**	**112**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**41400**	**ug/L**	
	7439896	**Iron**	**57500**	**ug/L**	
	7439954	**Magnesium**	**12200**	**ug/L**	
	7439965	**Manganese**	**3820**	**ug/L**	
	7440097	**Potassium**	**6100**	**ug/L**	
	7440235	**Sodium**	**53200**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**52.5**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**1.29**	**ug/L**	
	7440508	**Copper**	**2.0**	**ug/L**	
	7439921	**Lead**	**1.1**	**ug/L**	
	7440020	**Nickel**	**2.13**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**2.7**	**ug/L**	
	7440666	**Zinc**	**10.7**	**ug/L**	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-4 (MS/MSD) POREWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	79	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.037	ug/L	U
	86737	**9H-Fluorene**	**1.9**	**ug/L**	
	83329	**Acenaphthene**	**6.6**	**ug/L**	
	208968	Acenaphthylene	0.019	ug/L	U
	120127	**Anthracene**	**0.42**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.39**	**ug/L**	
	50328	**Benzo(a)pyrene**	**0.033**	**ug/L**	**J**
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	**Benzo[b]Fluoranthene**	**0.069**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.034**	**ug/L**	
	218019	**Chrysene**	**0.34**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	**Dibenzofuran**	**0.066**	**ug/L**	
	206440	**Fluoranthene**	**3.3**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	0.074	ug/L	U
	90120	**Naphthalene, 1-methyl-**	**0.030**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.017**	**ug/L**	**J**
	85018	**Phenanthrene**	**5.1**	**ug/L**	
	129000	**Pyrene**	**1.8**	**ug/L**	
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	122	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**0.947**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**148**	**ug/L**	**J**
	7440393	**Barium**	**115**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**75400**	**ug/L**	
	7439896	**Iron**	**51900**	**ug/L**	
	7439954	**Magnesium**	**24900**	**ug/L**	
	7439965	**Manganese**	**8030**	**ug/L**	
	7440097	**Potassium**	**5240**	**ug/L**	
	7440235	**Sodium**	**15600**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**39.4**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**2.31**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.74**	**ug/L**	
	7440020	**Nickel**	**2.04**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**1.2**	**ug/L**	
	7440666	**Zinc**	**2.9**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**76**	**ug/L**	**J**
7440393	**Barium**	**113**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U
7440702	**Calcium**	**72600**	**ug/L**	
7439896	**Iron**	**50700**	**ug/L**	
7439954	**Magnesium**	**24400**	**ug/L**	
7439965	**Manganese**	**7720**	**ug/L**	
7440097	**Potassium**	**5170**	**ug/L**	
7440235	**Sodium**	**15500**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**39.1**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**2.28**	**ug/L**	
7440508	Copper	1.3	ug/L	U
7439921	**Lead**	**0.33**	**ug/L**	
7440020	**Nickel**	**1.91**	**ug/L**	**J**
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	74	%Rec	
	118796	Phenol, 2,4,6-tribromo	83	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 86737	9H-Fluorene			NA
	83329	Acenaphthene			NA
	120127	Anthracene			NA
	56553	Benzo(a)anthracene			NA
	218019	Chrysene			NA
	206440	Fluoranthene			NA
	85018	Phenanthrene			NA
	129000	Pyrene			NA
	1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
	208968	Acenaphthylene	89.8	%Rec	
	50328	Benzo(a)pyrene	122	%Rec	
	191242	Benzo(g,h,i)perylene	99.1	%Rec	
	205992	Benzo[b]Fluoranthene	94.9	%Rec	
	207089	Benzo[k]fluoranthene	144	%Rec	
	53703	Dibenzo[a,h]anthracene	163	%Rec	
	193395	Indeno(1,2,3-cd)pyrene	127	%Rec	
	91203	Naphthalene	80.1	%Rec	
	92944	p-Terphenyl	119	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7439965	Manganese			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	103	%Rec	
	7440393	Barium	99	%Rec	

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			Result	Units	Qlfr
Analytes :	7440417	Beryllium	97	%Rec	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	101	%Rec	
	7440382	Arsenic	97	%Rec	
	7440439	Cadmium	98	%Rec	
	7440473	Chromium	98	%Rec	
	7440484	Cobalt	93	%Rec	
	7440508	Copper	92	%Rec	
	7439921	Lead	96	%Rec	
	7440020	Nickel	92	%Rec	
	7782492	Selenium	95	%Rec	
	7440224	Silver	102	%Rec	
	7440280	Thallium	96	%Rec	
	7440622	Vanadium	97	%Rec	
	7440666	Zinc	89	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364313
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	79	%Rec	
	118796	Phenol, 2,4,6-tribromo	98	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 86737	9H-Fluorene			NA
	83329	Acenaphthene			NA
	120127	Anthracene			NA
	56553	Benzo(a)anthracene			NA
	218019	Chrysene			NA
	206440	Fluoranthene			NA
	85018	Phenanthrene			NA
	129000	Pyrene			NA
	1499101	9,10 DIPHENYLANTHRACENE	82	%Rec	
	208968	Acenaphthylene	84.6	%Rec	
	50328	Benzo(a)pyrene	117	%Rec	
	191242	Benzo(g,h,i)perylene	91.1	%Rec	
	205992	Benzo[b]Fluoranthene	108	%Rec	
	207089	Benzo[k]fluoranthene	128	%Rec	
	53703	Dibenzo[a,h]anthracene	153	%Rec	
	193395	Indeno(1,2,3-cd)pyrene	125	%Rec	
	91203	Naphthalene	82.9	%Rec	
	92944	p-Terphenyl	111	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439896	Iron			NA
	7439954	Magnesium			NA
	7439965	Manganese			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	104	%Rec	
	7440393	Barium	97	%Rec	

			Result	Units	Qlfr
Analytes	: 7440417	Beryllium	97	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	102	%Rec	
	7440382	Arsenic	99	%Rec	
	7440439	Cadmium	100	%Rec	
	7440473	Chromium	99	%Rec	
	7440484	Cobalt	92	%Rec	
	7440508	Copper	95	%Rec	
	7439921	Lead	96	%Rec	
	7440020	Nickel	95	%Rec	
	7782492	Selenium	96	%Rec	
	7440224	Silver	103	%Rec	
	7440280	Thallium	96	%Rec	
	7440622	Vanadium	98	%Rec	
	7440666	Zinc	93	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/ 6/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02364314
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	SED-3 POREWATER		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	89	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.13	ug/L	U
	86737	9H-Fluorene	39.0	ug/L	
	83329	Acenaphthene	104	ug/L	
	208968	Acenaphthylene	0.24	ug/L	
	120127	Anthracene	3.5	ug/L	
	56553	Benzo(a)anthracene	0.23	ug/L	
	50328	Benzo(a)pyrene	0.049	ug/L	
	191242	Benzo(g,h,i)perylene	0.0089	ug/L	J
	205992	Benzo[b]Fluoranthene	0.058	ug/L	
	207089	Benzo[k]fluoranthene	0.043	ug/L	
	218019	Chrysene	0.19	ug/L	
	53703	Dibenzo[a,h]anthracene	0.037	ug/L	U
	132649	Dibenzofuran	28.3	ug/L	
	206440	Fluoranthene	3.1	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.037	ug/L	U
	91203	Naphthalene	2.8	ug/L	
	90120	Naphthalene, 1-methyl-	63.2	ug/L	
	91576	Naphthalene, 2-methyl-	6.4	ug/L	
	85018	Phenanthrene	33.3	ug/L	
	129000	Pyrene	1.6	ug/L	
	483658	Retene	0.35	ug/L	
	1499101	9,10 DIPHENYLANTHRACENE	81	%Rec	
	92944	p-Terphenyl	131	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	2.47	ng/L	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**138**	**ug/L**	**J**
	7440393	**Barium**	**52.6**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**48100**	**ug/L**	
	7439896	**Iron**	**16000**	**ug/L**	
	7439954	**Magnesium**	**12400**	**ug/L**	
	7439965	**Manganese**	**4220**	**ug/L**	
	7440097	**Potassium**	**5110**	**ug/L**	
	7440235	**Sodium**	**75800**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**22.0**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.30**	**ug/L**	
	7440508	**Copper**	**1.6**	**ug/L**	
	7439921	**Lead**	**0.97**	**ug/L**	
	7440020	**Nickel**	**1.49**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	**Zinc**	**17.7**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	BEACH B-1 (EPA-SH-1)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	70	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.040	ug/L	U
	86737	9H-Fluorene	0.020	ug/L	U
	83329	Acenaphthene	0.020	ug/L	U
	208968	Acenaphthylene	0.020	ug/L	U
	120127	Anthracene	0.020	ug/L	U
	56553	Benzo(a)anthracene	0.040	ug/L	U
	50328	Benzo(a)pyrene	0.040	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	Chrysene	0.040	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	Dibenzofuran	0.020	ug/L	U
	206440	Fluoranthene	0.020	ug/L	U
	193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
	91203	Naphthalene	0.030	ug/L	U
	90120	Naphthalene, 1-methyl-	0.020	ug/L	U
	91576	Naphthalene, 2-methyl-	0.020	ug/L	U
	85018	Phenanthrene	0.020	ug/L	U
	129000	Pyrene	0.020	ug/L	U
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
	92944	p-Terphenyl	105	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: 7439976	Mercury	1.29	ng/L	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	20	ug/L	U
	7440393	Barium	0.50	ug/L	U
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**15.4**	**ug/L**	
	7439896	Iron	10	ug/L	U
	7439954	Magnesium	20	ug/L	U
	7440097	Potassium	700	ug/L	U
	7440235	**Sodium**	**85.1**	**ug/L**	**J**
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.014**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	Lead	0.13	ug/L	U
	7439965	**Manganese**	**0.70**	**ug/L**	
	7440020	Nickel	0.38	ug/L	U
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method	: 1631B			
Analytes	: 7439976 Mercury	1.25	ng/L	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	108	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374200
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method:	1631B			
Analytes	: 7439976 Mercury	109	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 2		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	79	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.040	ug/L	U
	86737	**9H-Fluorene**	**11.0**	**ug/L**	
	83329	**Acenaphthene**	**19.3**	**ug/L**	
	208968	**Acenaphthylene**	**0.067**	**ug/L**	
	120127	**Anthracene**	**0.17**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.014**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.040	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.013**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	**Dibenzofuran**	**4.2**	**ug/L**	
	206440	**Fluoranthene**	**0.17**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
	91203	Naphthalene	0.056	ug/L	U
	90120	**Naphthalene, 1-methyl-**	**0.20**	**ug/L**	
	91576	Naphthalene, 2-methyl-	0.020	ug/L	U
	85018	**Phenanthrene**	**0.043**	**ug/L**	
	129000	**Pyrene**	**0.16**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	88	%Rec	
	92944	p-Terphenyl	105	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**0.501**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	**116**	**ug/L**	
	7440393	**Barium**	**8.90**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**4070**	**ug/L**	
	7439896	**Iron**	**5050**	**ug/L**	
	7439954	**Magnesium**	**1330**	**ug/L**	
	7439965	**Manganese**	**431**	**ug/L**	
	7440097	**Potassium**	**1500**	**ug/L**	
	7440235	**Sodium**	**8260**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**6.0**	**ug/L**	
	7440439	**Cadmium**	**0.13**	**ug/L**	
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.12**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.14**	**ug/L**	
	7440020	**Nickel**	**0.48**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Duplicate
Station Description:			

MET

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7440360	Antimony	1.0	ug/L	U
7440382	**Arsenic**	**6.1**	**ug/L**	
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	**Cobalt**	**0.12**	**ug/L**	
7440508	Copper	1.3	ug/L	U
7439921	**Lead**	**0.13**	**ug/L**	
7440020	**Nickel**	**0.40**	**ug/L**	
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	98	%Rec	
	7440417	Beryllium	96	%Rec	
	7439896	Iron	97	%Rec	
	7439965	Manganese	100	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	100	%Rec	
	7440382	Arsenic	96	%Rec	
	7440439	Cadmium	99	%Rec	
	7440473	Chromium	94	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	96	%Rec	
	7439921	Lead	103	%Rec	
	7440020	Nickel	96	%Rec	
	7782492	Selenium	97	%Rec	
	7440224	Silver	102	%Rec	
	7440280	Thallium	95	%Rec	
	7440622	Vanadium	91	%Rec	
	7440666	Zinc	100	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374201
Account Code:	02T10P50102D10P9LA00	**Type:**	Matrix Spike Dupl
Station Description:			

MET

			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	106	%Rec	
	7440393	Barium	98	%Rec	
	7440417	Beryllium	97	%Rec	
	7439896	Iron	99	%Rec	
	7439965	Manganese	97	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	99	%Rec	
	7440382	Arsenic	97	%Rec	
	7440439	Cadmium	97	%Rec	
	7440473	Chromium	94	%Rec	
	7440484	Cobalt	93	%Rec	
	7440508	Copper	96	%Rec	
	7439921	Lead	103	%Rec	
	7440020	Nickel	95	%Rec	
	7782492	Selenium	97	%Rec	
	7440224	Silver	101	%Rec	
	7440280	Thallium	99	%Rec	
	7440622	Vanadium	92	%Rec	
	7440666	Zinc	101	%Rec	

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Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374202
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 3		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.021	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.043	ug/L	U
	86737	**9H-Fluorene**	**0.020**	**ug/L**	**J**
	83329	**Acenaphthene**	**0.048**	**ug/L**	
	208968	Acenaphthylene	0.021	ug/L	U
	120127	**Anthracene**	**0.012**	**ug/L**	**J**
	56553	Benzo(a)anthracene	0.043	ug/L	U
	50328	Benzo(a)pyrene	0.043	ug/L	U
	191242	Benzo(g,h,i)perylene	0.021	ug/L	U
	205992	Benzo[b]Fluoranthene	0.021	ug/L	U
	207089	Benzo[k]fluoranthene	0.021	ug/L	U
	218019	Chrysene	0.043	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.043	ug/L	U
	132649	Dibenzofuran	0.021	ug/L	U
	206440	**Fluoranthene**	**0.0096**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.043	ug/L	U
	91203	Naphthalene	0.039	ug/L	U
	90120	Naphthalene, 1-methyl-	0.021	ug/L	U
	91576	Naphthalene, 2-methyl-	0.021	ug/L	U
	85018	**Phenanthrene**	**0.017**	**ug/L**	**J**
	129000	**Pyrene**	**0.069**	**ug/L**	
	483658	Retene	0.021	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	83	%Rec	
	92944	p-Terphenyl	101	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**0.867**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**715**	**ug/L**	
	7440393	**Barium**	**15.0**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**3220**	**ug/L**	
	7439896	**Iron**	**5500**	**ug/L**	
	7439954	**Magnesium**	**1250**	**ug/L**	
	7439965	**Manganese**	**201**	**ug/L**	
	7440097	**Potassium**	**1200**	**ug/L**	
	7440235	**Sodium**	**8760**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**6.64**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**1.1**	**ug/L**	
	7440508	**Copper**	**1.4**	**ug/L**	
	7439921	**Lead**	**0.36**	**ug/L**	
	7440020	**Nickel**	**1.40**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**6.2**	**ug/L**	
	7440666	**Zinc**	**3.2**	**ug/L**	

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Project Code:	TEC-247B	Collected:	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	Matrix:	Liquid
Project Officer:	RENE FUENTES	Sample Number:	02374203
Account Code:	02T10P50102D10P9LA00	Type:	Reg sample
Station Description:	EPA (SH) 4		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.021	ug/L	U
	118796	Phenol, 2,4,6-tribromo	97	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.043	ug/L	U
	86737	**9H-Fluorene**	**0.077**	**ug/L**	
	83329	**Acenaphthene**	**3.4**	**ug/L**	
	208968	Acenaphthylene	0.021	ug/L	U
	120127	**Anthracene**	**0.042**	**ug/L**	
	56553	Benzo(a)anthracene	0.043	ug/L	U
	50328	Benzo(a)pyrene	0.043	ug/L	U
	191242	Benzo(g,h,i)perylene	0.021	ug/L	U
	205992	Benzo[b]Fluoranthene	0.021	ug/L	U
	207089	Benzo[k]fluoranthene	0.021	ug/L	U
	218019	Chrysene	0.043	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.043	ug/L	U
	132649	**Dibenzofuran**	**0.052**	**ug/L**	
	206440	**Fluoranthene**	**0.018**	**ug/L**	**J**
	193395	Indeno(1,2,3-cd)pyrene	0.043	ug/L	U
	91203	Naphthalene	0.021	ug/L	U
	90120	Naphthalene, 1-methyl-	0.021	ug/L	U
	91576	Naphthalene, 2-methyl-	0.021	ug/L	U
	85018	**Phenanthrene**	**0.019**	**ug/L**	**J**
	129000	**Pyrene**	**0.035**	**ug/L**	
	483658	Retene	0.021	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	82	%Rec	
	92944	p-Terphenyl	100	%Rec	
MER[illegible]					
[illegible]	: All MERCURY tests				
[illegible]	: 1631B				
[illegible] Method	: 1631B				
A[illegible]	: **7439976**	**Mercury**	**1.02**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	**Aluminum**	430	ug/L	
	7440393	**Barium**	22.2	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	6420	ug/L	
	7439896	**Iron**	17800	ug/L	
	7439954	**Magnesium**	2240	ug/L	
	7439965	**Manganese**	743	ug/L	
	7440097	**Potassium**	1500	ug/L	
	7440235	**Sodium**	8720	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	4.9	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	0.25	ug/L	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	0.67	ug/L	
	7440020	**Nickel**	0.76	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	2.1	ug/L	
	7440666	Zinc	2.5	ug/L	U

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Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374204
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.041	ug/L	U
	86737	**9H-Fluorene**	**0.89**	**ug/L**	
	83329	**Acenaphthene**	**9.5**	**ug/L**	
	208968	**Acenaphthylene**	**0.062**	**ug/L**	
	120127	**Anthracene**	**0.11**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.017**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.041	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.014**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
	132649	**Dibenzofuran**	**0.55**	**ug/L**	
	206440	**Fluoranthene**	**0.17**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
	91203	**Naphthalene**	**1.2**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**1.0**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.29**	**ug/L**	
	85018	**Phenanthrene**	**0.26**	**ug/L**	
	129000	**Pyrene**	**0.070**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	77	%Rec	
	92944	p-Terphenyl	97	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**5.87**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	2820	ug/L	
	7440393	Barium	44.7	ug/L	
	7440417	Beryllium	1.0	ug/L	U
	7440702	Calcium	11500	ug/L	
	7439896	Iron	32500	ug/L	
	7439954	Magnesium	4060	ug/L	
	7439965	Manganese	1200	ug/L	
	7440097	Potassium	1900	ug/L	
	7440235	Sodium	10300	ug/L	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	8.84	ug/L	
	7440439	Cadmium	0.14	ug/L	
	7440473	Chromium	1.6	ug/L	
	7440484	Cobalt	2.15	ug/L	
	7440508	Copper	5.7	ug/L	
	7439921	Lead	4.47	ug/L	
	7440020	Nickel	3.12	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	7.31	ug/L	
	7440666	Zinc	11.8	ug/L	

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Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	02374205
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 6 (SEDIMENT)		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	**Pentachlorophenol**	130	ug/kg	
	118796	Phenol, 2,4,6-tribromo	86	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method:	3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	77.9	ug/kg	U
	86737	**9H-Fluorene**	14900	ug/kg	
	83329	**Acenaphthene**	14800	ug/kg	
	208968	**Acenaphthylene**	81.4	ug/kg	
	120127	**Anthracene**	8420	ug/kg	
	56553	**Benzo(a)anthracene**	3380	ug/kg	
	50328	**Benzo(a)pyrene**	763	ug/kg	
	191242	**Benzo(g,h,i)perylene**	139	ug/kg	
	205992	**Benzo[b]Fluoranthene**	1010	ug/kg	
	207089	**Benzo[k]fluoranthene**	840	ug/kg	
	218019	**Chrysene**	2750	ug/kg	
	53703	**Dibenzo[a,h]anthracene**	126	ug/kg	
	132649	**Dibenzofuran**	11600	ug/kg	
	206440	**Fluoranthene**	20300	ug/kg	
	193395	**Indeno(1,2,3-cd)pyrene**	221	ug/kg	
	91203	**Naphthalene**	3990	ug/kg	
	90120	**Naphthalene, 1-methyl-**	4970	ug/kg	
	91576	**Naphthalene, 2-methyl-**	5640	ug/kg	
	85018	**Phenanthrene**	35000	ug/kg	
	129000	**Pyrene**	9600	ug/kg	
	483658	**Retene**	139	ug/kg	
	1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
	92944	p-Terphenyl	93	%Rec	
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	**Arsenic**	4.79	mg/kg	

			Result	Units	Qlfr
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7439921**	**Lead**	**15.6**	**mg/kg**	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.30	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	2.0	mg/kg	U
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**5810**	**mg/kg**	
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	**Barium**	**68.3**	**mg/kg**	
	7440417	**Beryllium**	**0.24**	**mg/kg**	
	7440439	**Cadmium**	**9.6**	**mg/kg**	
	7440702	**Calcium**	**2720**	**mg/kg**	
	7440473	**Chromium**	**10.6**	**mg/kg**	
	7440484	**Cobalt**	**9.77**	**mg/kg**	
	7440508	**Copper**	**13.8**	**mg/kg**	
	7439896	**Iron**	**21300**	**mg/kg**	
	7439954	**Magnesium**	**2900**	**mg/kg**	
	7439965	**Manganese**	**208**	**mg/kg**	
	7440020	**Nickel**	**12.0**	**mg/kg**	
	7440097	**Potassium**	**329**	**mg/kg**	
	7440224	Silver	0.40	mg/kg	U
	7440235	**Sodium**	**223**	**mg/kg**	
	7440622	**Vanadium**	**50.7**	**mg/kg**	
	7440666	**Zinc**	**53.5**	**mg/kg**	

Manchester Environmental Laboratory
Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/10/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374206
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: **87865**	**Pentachlorophenol**	**0.36**	**ug/L**	
	118796	Phenol, 2,4,6-tribromo	73	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.041	ug/L	U
	86737	**9H-Fluorene**	**0.047**	**ug/L**	
	83329	**Acenaphthene**	**10.3**	**ug/L**	
	208968	**Acenaphthylene**	**0.11**	**ug/L**	
	120127	**Anthracene**	**0.20**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.011**	**ug/L**	**J**
	50328	Benzo(a)pyrene	0.041	ug/L	U
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.020	ug/L	U
	207089	Benzo[k]fluoranthene	0.020	ug/L	U
	218019	**Chrysene**	**0.024**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
	132649	**Dibenzofuran**	**5.7**	**ug/L**	
	206440	**Fluoranthene**	**0.26**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
	91203	**Naphthalene**	**0.21**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**0.033**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.019**	**ug/L**	**J**
	85018	**Phenanthrene**	**0.090**	**ug/L**	
	129000	**Pyrene**	**0.097**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	126	%Rec	
	92944	p-Terphenyl	99	%Rec	
MET					
Parameter	: All MERCURY tests				
Method	: 1631B				
Prep Method	: 1631B				
Analytes	: **7439976**	**Mercury**	**1.12**	**ng/L**	

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			Result	Units	Qlfr
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**54**	**ug/L**	
	7440393	**Barium**	**6.30**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**4910**	**ug/L**	
	7439896	**Iron**	**897**	**ug/L**	
	7439954	**Magnesium**	**1640**	**ug/L**	
	7439965	**Manganese**	**200**	**ug/L**	
	7440097	**Potassium**	**1600**	**ug/L**	
	7440235	**Sodium**	**4600**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.63	ug/L	U
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**1.80**	**ug/L**	
	7440508	**Copper**	**1.9**	**ug/L**	
	7439921	Lead	0.13	ug/L	U
	7440020	**Nickel**	**2.17**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	Zinc	2.5	ug/L	U

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374207
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	EPA (SH) 8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 118796	Phenol, 2,4,6-tribromo			NA
	87865	**Pentachlorophenol**	2.5	ug/L	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 1499101	9,10 DIPHENYLANTHRACENE			NA
	92944	p-Terphenyl			NA
	91587	2-Chloronaphthalene	25.0	ug/L	U
	86737	**9H-Fluorene**	18900	ug/L	
	83329	**Acenaphthene**	23800	ug/L	
	208968	**Acenaphthylene**	141	ug/L	
	120127	**Anthracene**	10200	ug/L	
	56553	**Benzo(a)anthracene**	2090	ug/L	
	50328	**Benzo(a)pyrene**	699	ug/L	
	191242	**Benzo(g,h,i)perylene**	115	ug/L	
	205992	**Benzo[b]Fluoranthene**	969	ug/L	
	207089	**Benzo[k]fluoranthene**	599	ug/L	
	218019	**Chrysene**	2270	ug/L	
	53703	**Dibenzo[a,h]anthracene**	95.2	ug/L	J
	132649	**Dibenzofuran**	14500	ug/L	
	206440	**Fluoranthene**	13600	ug/L	
	193395	**Indeno(1,2,3-cd)pyrene**	181	ug/L	
	91203	**Naphthalene**	421000	ug/L	
	90120	**Naphthalene, 1-methyl-**	25800	ug/L	
	91576	**Naphthalene, 2-methyl-**	43300	ug/L	
	85018	**Phenanthrene**	32000	ug/L	
	129000	**Pyrene**	6170	ug/L	J
	483658	**Retene**	74.7	ug/L	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374211
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -1		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 118796	Phenol, 2,4,6-tribromo			NA
	87865	**Pentachlorophenol**	**1.1**	**ug/L**	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 1499101	9,10 DIPHENYLANTHRACENE			NA
	92944	p-Terphenyl			NA
	91587	2-Chloronaphthalene	21.7	ug/L	U
	86737	**9H-Fluorene**	**8340**	**ug/L**	
	83329	**Acenaphthene**	**10100**	**ug/L**	
	208968	**Acenaphthylene**	**87.7**	**ug/L**	
	120127	**Anthracene**	**4140**	**ug/L**	
	56553	**Benzo(a)anthracene**	**720**	**ug/L**	
	50328	**Benzo(a)pyrene**	**180**	**ug/L**	
	191242	**Benzo(g,h,i)perylene**	**29.2**	**ug/L**	
	205992	**Benzo[b]Fluoranthene**	**264**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**157**	**ug/L**	
	218019	**Chrysene**	**533**	**ug/L**	
	53703	**Dibenzo[a,h]anthracene**	**20.0**	**ug/L**	**J**
	132649	**Dibenzofuran**	**5810**	**ug/L**	
	206440	**Fluoranthene**	**4910**	**ug/L**	
	193395	**Indeno(1,2,3-cd)pyrene**	**46.0**	**ug/L**	
	91203	**Naphthalene**	**62900**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**14200**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**18000**	**ug/L**	
	85018	**Phenanthrene**	**11600**	**ug/L**	
	129000	**Pyrene**	**2110**	**ug/L**	**J**
	483658	**Retene**	**12.3**	**ug/L**	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**18900**	**ug/L**	
	7440382	**Arsenic**	**395**	**ug/L**	
	7440393	**Barium**	**329**	**ug/L**	

			Result	Units	Qlfr
Analytes :	7440417	Beryllium	1.0	ug/L	U
	7440702	**Calcium**	**59700**	**ug/L**	
	7439896	**Iron**	**140000**	**ug/L**	
	7439954	**Magnesium**	**19500**	**ug/L**	
	7439965	**Manganese**	**3900**	**ug/L**	
	7440097	**Potassium**	**5960**	**ug/L**	
	7440235	**Sodium**	**13300**	**ug/L**	
	7440666	**Zinc**	**219**	**ug/L**	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440439	**Cadmium**	**0.69**	**ug/L**	
	7440473	**Chromium**	**29.1**	**ug/L**	
	7440484	**Cobalt**	**32.9**	**ug/L**	
	7440508	**Copper**	**66.9**	**ug/L**	
	7439921	**Lead**	**62.5**	**ug/L**	
	7440020	**Nickel**	**36.0**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	**Silver**	**1.83**	**ug/L**	
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**46.5**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374212
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -3		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	**Pentachlorophenol**	**0.20**	**ug/L**	
118796	Phenol, 2,4,6-tribromo	77	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.039	ug/L	U
86737	**9H-Fluorene**	**0.070**	**ug/L**	
83329	**Acenaphthene**	**0.040**	**ug/L**	
208968	Acenaphthylene	0.020	ug/L	U
120127	**Anthracene**	**0.13**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.042**	**ug/L**	
50328	Benzo(a)pyrene	0.039	ug/L	U
191242	**Benzo(g,h,i)perylene**	**0.019**	**ug/L**	**J**
205992	**Benzo[b]Fluoranthene**	**0.050**	**ug/L**	
207089	**Benzo[k]fluoranthene**	**0.054**	**ug/L**	**J**
218019	**Chrysene**	**0.075**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.039	ug/L	U
132649	**Dibenzofuran**	**0.047**	**ug/L**	
206440	**Fluoranthene**	**0.46**	**ug/L**	
193395	**Indeno(1,2,3-cd)pyrene**	**0.021**	**ug/L**	**J**
91203	Naphthalene	0.15	ug/L	U
90120	**Naphthalene, 1-methyl-**	**0.017**	**ug/L**	**J**
91576	**Naphthalene, 2-methyl-**	**0.027**	**ug/L**	
85018	**Phenanthrene**	**0.47**	**ug/L**	
129000	**Pyrene**	**0.21**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
92944	p-Terphenyl	99	%Rec	

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**1580**	**ug/L**	
7440393	**Barium**	**22.9**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U

			Result	Units	Qlfr
Analytes	: 7440702	**Calcium**	**3890**	**ug/L**	
	7439896	**Iron**	**3920**	**ug/L**	
	7439954	**Magnesium**	**1740**	**ug/L**	
	7439965	**Manganese**	**48.2**	**ug/L**	
	7440097	**Potassium**	**1000**	**ug/L**	
	7440235	**Sodium**	**5950**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**1.5**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**1.53**	**ug/L**	
	7440508	**Copper**	**3.1**	**ug/L**	
	7439921	**Lead**	**0.94**	**ug/L**	
	7440020	**Nickel**	**2.45**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**5.9**	**ug/L**	
	7440666	**Zinc**	**7.82**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374213
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -2		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	**Pentachlorophenol**	**0.021**	**ug/L**	
118796	Phenol, 2,4,6-tribromo	73	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	**9H-Fluorene**	**1.4**	**ug/L**	
83329	**Acenaphthene**	**1.3**	**ug/L**	
208968	Acenaphthylene	0.020	ug/L	U
120127	**Anthracene**	**0.59**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.030**	**ug/L**	**J**
50328	Benzo(a)pyrene	0.041	ug/L	U
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	Benzo[b]Fluoranthene	0.020	ug/L	U
207089	Benzo[k]fluoranthene	0.020	ug/L	U
218019	**Chrysene**	**0.048**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	**Dibenzofuran**	**0.80**	**ug/L**	
206440	**Fluoranthene**	**0.67**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
91203	**Naphthalene**	**8.8**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**1.0**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**1.9**	**ug/L**	
85018	**Phenanthrene**	**3.6**	**ug/L**	
129000	**Pyrene**	**0.30**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	102	%Rec	
92944	p-Terphenyl	112	%Rec	

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**580**	**ug/L**	
7440393	**Barium**	**11.3**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes	: 7440702	**Calcium**	**3750**	**ug/L**	
	7439896	**Iron**	**1450**	**ug/L**	
	7439954	**Magnesium**	**1610**	**ug/L**	
	7439965	**Manganese**	**23.0**	**ug/L**	
	7440097	**Potassium**	**990**	**ug/L**	
	7440235	**Sodium**	**7580**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**2.9**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.78**	**ug/L**	
	7440508	**Copper**	**2.4**	**ug/L**	
	7439921	**Lead**	**0.48**	**ug/L**	
	7440020	**Nickel**	**1.26**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.5**	**ug/L**	
	7440666	**Zinc**	**6.1**	**ug/L**	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374214
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -4		

GC

Parameter : Pentachlorophenol
Method : 8040 GC - Phenols
Prep Method: 3510M liq-liq extraction via stir-bar

Analytes		Result	Units	Qlfr
87865	Pentachlorophenol	0.020	ug/L	U
118796	Phenol, 2,4,6-tribromo	81	%Rec	

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.041	ug/L	U
86737	**9H-Fluorene**	**22.5**	**ug/L**	
83329	**Acenaphthene**	**42.1**	**ug/L**	
208968	**Acenaphthylene**	**0.24**	**ug/L**	
120127	**Anthracene**	**1.6**	**ug/L**	
56553	**Benzo(a)anthracene**	**0.12**	**ug/L**	
50328	**Benzo(a)pyrene**	**0.018**	**ug/L**	**J**
191242	Benzo(g,h,i)perylene	0.020	ug/L	U
205992	**Benzo[b]Fluoranthene**	**0.028**	**ug/L**	
207089	**Benzo[k]fluoranthene**	**0.023**	**ug/L**	**J**
218019	**Chrysene**	**0.095**	**ug/L**	
53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
132649	**Dibenzofuran**	**11.0**	**ug/L**	
206440	**Fluoranthene**	**1.9**	**ug/L**	
193395	Indeno(1,2,3-cd)pyrene	0.041	ug/L	U
91203	**Naphthalene**	**1.4**	**ug/L**	
90120	**Naphthalene, 1-methyl-**	**13.8**	**ug/L**	
91576	**Naphthalene, 2-methyl-**	**1.5**	**ug/L**	
85018	**Phenanthrene**	**12.8**	**ug/L**	
129000	**Pyrene**	**0.89**	**ug/L**	
483658	Retene	0.020	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	71	%Rec	
92944	p-Terphenyl	88	%Rec	

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	**Aluminum**	**851**	**ug/L**	
7440393	**Barium**	**73.1**	**ug/L**	
7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes :	7440702	Calcium	34100	ug/L	
	7439896	Iron	50500	ug/L	
	7439954	Magnesium	12200	ug/L	
	7439965	Manganese	2990	ug/L	
	7440097	Potassium	3260	ug/L	
	7440235	Sodium	15400	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	0.87	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	1.43	ug/L	
	7440508	Copper	1.5	ug/L	
	7439921	Lead	0.44	ug/L	
	7440020	Nickel	2.39	ug/L	J
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.77	ug/L	
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	3.0	ug/L	
	7440666	Zinc	5.1	ug/L	

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Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374215
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -5		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.022	ug/L	U
	118796	Phenol, 2,4,6-tribromo	86	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.22	ug/L	U
	86737	**9H-Fluorene**	**0.21**	**ug/L**	
	83329	**Acenaphthene**	**1.5**	**ug/L**	
	208968	Acenaphthylene	0.11	ug/L	U
	120127	**Anthracene**	**0.26**	**ug/L**	
	56553	Benzo(a)anthracene	0.22	ug/L	U
	50328	Benzo(a)pyrene	0.22	ug/L	U
	191242	**Benzo(g,h,i)perylene**	**0.071**	**ug/L**	**J**
	205992	Benzo[b]Fluoranthene	0.11	ug/L	U
	207089	Benzo[k]fluoranthene	0.11	ug/L	U
	218019	**Chrysene**	**0.11**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.22	ug/L	U
	132649	**Dibenzofuran**	**0.084**	**ug/L**	**J**
	206440	**Fluoranthene**	**1.2**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.22	ug/L	U
	91203	**Naphthalene**	**0.38**	**ug/L**	
	90120	Naphthalene, 1-methyl-	0.11	ug/L	U
	91576	**Naphthalene, 2-methyl-**	**0.068**	**ug/L**	**J**
	85018	**Phenanthrene**	**1.1**	**ug/L**	
	129000	**Pyrene**	**0.52**	**ug/L**	
	483658	Retene	0.11	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	60	%Rec	
	92944	p-Terphenyl	72	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**1380**	**ug/L**	
	7440393	**Barium**	**60.6**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes	: 7440702	**Calcium**	**19900**	**ug/L**	
	7439896	**Iron**	**50200**	**ug/L**	
	7439954	**Magnesium**	**5380**	**ug/L**	
	7439965	**Manganese**	**2160**	**ug/L**	
	7440097	**Potassium**	**2140**	**ug/L**	
	7440235	**Sodium**	**8460**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**13.2**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**2.35**	**ug/L**	
	7440508	**Copper**	**2.7**	**ug/L**	
	7439921	**Lead**	**2.46**	**ug/L**	
	7440020	**Nickel**	**2.86**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**3.9**	**ug/L**	
	7440666	**Zinc**	**12.0**	**ug/L**	

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Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374216
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -6		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	73	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.041	ug/L	U
	86737	**9H-Fluorene**	**0.025**	**ug/L**	
	83329	**Acenaphthene**	**3.0**	**ug/L**	
	208968	**Acenaphthylene**	**0.025**	**ug/L**	
	120127	**Anthracene**	**0.078**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.026**	**ug/L**	**J**
	50328	**Benzo(a)pyrene**	**0.069**	**ug/L**	
	191242	**Benzo(g,h,i)perylene**	**0.054**	**ug/L**	
	205992	**Benzo[b]Fluoranthene**	**0.046**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.032**	**ug/L**	**J**
	218019	**Chrysene**	**0.023**	**ug/L**	**J**
	53703	Dibenzo[a,h]anthracene	0.041	ug/L	U
	132649	Dibenzofuran	0.020	ug/L	U
	206440	**Fluoranthene**	**0.028**	**ug/L**	
	193395	**Indeno(1,2,3-cd)pyrene**	**0.046**	**ug/L**	
	91203	Naphthalene	0.069	ug/L	U
	90120	**Naphthalene, 1-methyl-**	**0.10**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**0.022**	**ug/L**	
	85018	**Phenanthrene**	**0.031**	**ug/L**	
	129000	**Pyrene**	**0.025**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	74	%Rec	
	92944	p-Terphenyl	94	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**318**	**ug/L**	
	7440393	**Barium**	**41.7**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes :	7440702	Calcium	11400	ug/L	
	7439896	Iron	40900	ug/L	
	7439954	Magnesium	3700	ug/L	
	7439965	Manganese	1150	ug/L	
	7440097	Potassium	1800	ug/L	
	7440235	Sodium	7490	ug/L	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	Arsenic	7.92	ug/L	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	Cobalt	0.32	ug/L	
	7440508	Copper	1.3	ug/L	U
	7439921	Lead	0.53	ug/L	
	7440020	Nickel	0.78	ug/L	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.3	ug/L	
	7440666	Zinc	4.4	ug/L	

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Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374217
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -7		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	110	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.34	ug/L	U
	86737	9H-Fluorene	152	ug/L	
	83329	Acenaphthene	222	ug/L	
	208968	Acenaphthylene	0.57	ug/L	
	120127	Anthracene	19.6	ug/L	
	56553	Benzo(a)anthracene	0.28	ug/L	
	50328	Benzo(a)pyrene	0.019	ug/L	J
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	Benzo[b]Fluoranthene	0.022	ug/L	
	207089	Benzo[k]fluoranthene	0.024	ug/L	J
	218019	Chrysene	0.21	ug/L	
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	Dibenzofuran	134	ug/L	
	206440	Fluoranthene	12.7	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
	91203	Naphthalene	958	ug/L	
	90120	Naphthalene, 1-methyl-	269	ug/L	
	91576	Naphthalene, 2-methyl-	259	ug/L	
	85018	Phenanthrene	151	ug/L	
	129000	Pyrene	5.2	ug/L	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	73	%Rec	
	92944	p-Terphenyl	95	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7429905	Aluminum	477	ug/L	
	7440393	Barium	45.7	ug/L	
	7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes	: 7440702	**Calcium**	**41700**	**ug/L**	
	7439896	**Iron**	**55400**	**ug/L**	
	7439954	**Magnesium**	**14100**	**ug/L**	
	7439965	**Manganese**	**4610**	**ug/L**	
	7440097	**Potassium**	**4070**	**ug/L**	
	7440235	**Sodium**	**20600**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**10.4**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.69**	**ug/L**	
	7440508	**Copper**	**1.3**	**ug/L**	
	7439921	**Lead**	**0.22**	**ug/L**	
	7440020	**Nickel**	**1.89**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	**Silver**	**0.97**	**ug/L**	
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**1.6**	**ug/L**	
	7440666	**Zinc**	**4.3**	**ug/L**	

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Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374218
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -8		

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	89	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.040	ug/L	U
	86737	**9H-Fluorene**	**106**	**ug/L**	
	83329	**Acenaphthene**	**163**	**ug/L**	
	208968	**Acenaphthylene**	**0.44**	**ug/L**	
	120127	**Anthracene**	**17.6**	**ug/L**	
	56553	**Benzo(a)anthracene**	**0.36**	**ug/L**	
	50328	**Benzo(a)pyrene**	**0.031**	**ug/L**	**J**
	191242	Benzo(g,h,i)perylene	0.020	ug/L	U
	205992	**Benzo[b]Fluoranthene**	**0.046**	**ug/L**	
	207089	**Benzo[k]fluoranthene**	**0.040**	**ug/L**	**J**
	218019	**Chrysene**	**0.29**	**ug/L**	
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	**Dibenzofuran**	**94.3**	**ug/L**	
	206440	**Fluoranthene**	**12.6**	**ug/L**	
	193395	Indeno(1,2,3-cd)pyrene	0.040	ug/L	U
	91203	**Naphthalene**	**397**	**ug/L**	
	90120	**Naphthalene, 1-methyl-**	**205**	**ug/L**	
	91576	**Naphthalene, 2-methyl-**	**166**	**ug/L**	
	85018	**Phenanthrene**	**125**	**ug/L**	
	129000	**Pyrene**	**5.7**	**ug/L**	
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	74	%Rec	
	92944	p-Terphenyl	96	%Rec	
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: **7429905**	**Aluminum**	**312**	**ug/L**	
	7440393	**Barium**	**38.9**	**ug/L**	
	7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes :	**7440702**	**Calcium**	**36400**	**ug/L**	
	7439896	**Iron**	**48800**	**ug/L**	
	7439954	**Magnesium**	**13600**	**ug/L**	
	7439965	**Manganese**	**3730**	**ug/L**	
	7440097	**Potassium**	**3860**	**ug/L**	
	7440235	**Sodium**	**18500**	**ug/L**	
Parameter :	Metals, ICP/MS				
Method :	200.8	ICPMS 18 Elements			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**7.11**	**ug/L**	
	7440439	Cadmium	0.13	ug/L	U
	7440473	Chromium	1.3	ug/L	U
	7440484	**Cobalt**	**0.43**	**ug/L**	
	7440508	Copper	1.3	ug/L	U
	7439921	**Lead**	**0.29**	**ug/L**	
	7440020	**Nickel**	**2.15**	**ug/L**	**J**
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	Vanadium	1.0	ug/L	U
	7440666	**Zinc**	**3.5**	**ug/L**	

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Project Code:	TEC-247B	**Collected:**	9/11/02
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	02374219
Account Code:	02T10P50102D10P9LA00	**Type:**	Reg sample
Station Description:	ODEQ (SH) -9		

			Result	Units	Qlfr
GC					
Parameter :	Pentachlorophenol				
Method :	8040	GC - Phenols			
Prep Method:	3510M	liq-liq extraction via stir-bar			
Analytes :	87865	Pentachlorophenol	0.020	ug/L	U
	118796	Phenol, 2,4,6-tribromo	83	%Rec	
GCMS					
Parameter :	Poly Aroma Hydro - GCMS				
Method :	XPAH-GCM				
Prep Method:	3510M/3540				
Analytes :	91587	2-Chloronaphthalene	0.14	ug/L	U
	86737	9H-Fluorene	91.1	ug/L	
	83329	Acenaphthene	118	ug/L	
	208968	Acenaphthylene	0.35	ug/L	
	120127	Anthracene	14.1	ug/L	
	56553	Benzo(a)anthracene	0.76	ug/L	
	50328	Benzo(a)pyrene	0.097	ug/L	
	191242	Benzo(g,h,i)perylene	0.012	ug/L	J
	205992	Benzo[b]Fluoranthene	0.15	ug/L	
	207089	Benzo[k]fluoranthene	0.099	ug/L	J
	218019	Chrysene	0.62	ug/L	
	53703	Dibenzo[a,h]anthracene	0.040	ug/L	U
	132649	Dibenzofuran	70.0	ug/L	
	206440	Fluoranthene	15.8	ug/L	
	193395	Indeno(1,2,3-cd)pyrene	0.020	ug/L	J
	91203	Naphthalene	703	ug/L	
	90120	Naphthalene, 1-methyl-	170	ug/L	
	91576	Naphthalene, 2-methyl-	167	ug/L	
	85018	Phenanthrene	104	ug/L	
	129000	Pyrene	6.2	ug/L	J
	483658	Retene	0.020	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	71	%Rec	
	92944	p-Terphenyl	91	%Rec	
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7429905	Aluminum	2170	ug/L	
	7440393	Barium	49.6	ug/L	
	7440417	Beryllium	1.0	ug/L	U

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			Result	Units	Qlfr
Analytes	: 7440702	**Calcium**	**32000**	**ug/L**	
	7439896	**Iron**	**46600**	**ug/L**	
	7439954	**Magnesium**	**12800**	**ug/L**	
	7439965	**Manganese**	**3180**	**ug/L**	
	7440097	**Potassium**	**3790**	**ug/L**	
	7440235	**Sodium**	**15600**	**ug/L**	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	1.0	ug/L	U
	7440382	**Arsenic**	**2.8**	**ug/L**	
	7440439	**Cadmium**	**0.19**	**ug/L**	
	7440473	**Chromium**	**2.1**	**ug/L**	
	7440484	**Cobalt**	**1.48**	**ug/L**	
	7440508	**Copper**	**6.1**	**ug/L**	
	7439921	**Lead**	**0.93**	**ug/L**	
	7440020	**Nickel**	**3.72**	**ug/L**	
	7782492	Selenium	1.3	ug/L	U
	7440224	Silver	0.63	ug/L	U
	7440280	Thallium	0.63	ug/L	U
	7440622	**Vanadium**	**9.51**	**ug/L**	
	7440666	**Zinc**	**11.3**	**ug/L**	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	BS2255A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	6.7	ug/kg	U
86737	9H-Fluorene	3.3	ug/kg	U
83329	Acenaphthene	3.3	ug/kg	U
208968	Acenaphthylene	3.3	ug/kg	U
120127	Anthracene	3.3	ug/kg	U
56553	Benzo(a)anthracene	6.7	ug/kg	U
50328	Benzo(a)pyrene	6.7	ug/kg	U
191242	Benzo(g,h,i)perylene	3.3	ug/kg	U
205992	Benzo[b]Fluoranthene	3.3	ug/kg	U
207089	Benzo[k]fluoranthene	3.3	ug/kg	U
218019	Chrysene	6.7	ug/kg	U
53703	Dibenzo[a,h]anthracene	6.7	ug/kg	U
132649	Dibenzofuran	3.3	ug/kg	U
206440	Fluoranthene	3.3	ug/kg	U
193395	Indeno(1,2,3-cd)pyrene	6.7	ug/kg	U
91203	Naphthalene	3.3	ug/kg	U
90120	Naphthalene, 1-methyl-	3.3	ug/kg	U
91576	Naphthalene, 2-methyl-	3.3	ug/kg	U
85018	Phenanthrene	3.3	ug/kg	U
129000	Pyrene	3.3	ug/kg	U
483658	Retene	3.3	ug/kg	U
1499101	9,10 DIPHENYLANTHRACENE	69	%Rec	
92944	p-Terphenyl	74	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	BW2253A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.036	ug/L	U
86737	9H-Fluorene	0.018	ug/L	U
83329	Acenaphthene	0.018	ug/L	U
208968	Acenaphthylene	0.018	ug/L	U
120127	Anthracene	0.018	ug/L	U
56553	Benzo(a)anthracene	0.036	ug/L	U
50328	Benzo(a)pyrene	0.036	ug/L	U
191242	Benzo(g,h,i)perylene	0.018	ug/L	U
205992	Benzo[b]Fluoranthene	0.018	ug/L	U
207089	Benzo[k]fluoranthene	0.018	ug/L	U
218019	Chrysene	0.036	ug/L	U
53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
132649	Dibenzofuran	0.018	ug/L	U
206440	Fluoranthene	0.018	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
91203	Naphthalene	0.018	ug/L	U
90120	Naphthalene, 1-methyl-	0.018	ug/L	U
91576	Naphthalene, 2-methyl-	0.018	ug/L	U
85018	Phenanthrene	0.018	ug/L	U
129000	Pyrene	0.018	ug/L	U
483658	Retene	0.018	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
92944	p-Terphenyl	137	%Rec	

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Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Liquid
Sample Number: BW2253A2
Type: Blank

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.034	ug/L	U
86737	9H-Fluorene	0.017	ug/L	U
83329	Acenaphthene	0.017	ug/L	U
208968	Acenaphthylene	0.017	ug/L	U
120127	Anthracene	0.017	ug/L	U
56553	Benzo(a)anthracene	0.034	ug/L	U
50328	Benzo(a)pyrene	0.034	ug/L	U
191242	Benzo(g,h,i)perylene	0.017	ug/L	U
205992	Benzo[b]Fluoranthene	0.017	ug/L	U
207089	Benzo[k]fluoranthene	0.017	ug/L	U
218019	Chrysene	0.034	ug/L	U
53703	Dibenzo[a,h]anthracene	0.034	ug/L	U
132649	Dibenzofuran	0.017	ug/L	U
206440	Fluoranthene	0.017	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.034	ug/L	U
91203	Naphthalene	0.017	ug/L	U
90120	Naphthalene, 1-methyl-	0.017	ug/L	U
91576	Naphthalene, 2-methyl-	0.017	ug/L	U
85018	Phenanthrene	0.017	ug/L	U
129000	Pyrene	0.017	ug/L	U
483658	Retene	0.017	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	94	%Rec	
92944	p-Terphenyl	140	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020918A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020918B
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	99.6	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020924A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	0.020	mg/kg	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	CS020924B
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: All MERCURY tests				
Method	: 245.5	Mercury, Cold Vapor, Manual, Sediments			
Prep Method	: 245.5	Determination of Mercury in Sediments by			
Analytes	: 7439976	Mercury	97.9	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW020909A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GEN					
Parameter	: Total suspended solids				
Method	: USGS I3765				
Prep Method	: USGS I3765				
Analytes	: *90069	Total suspended Solids	2.0	mg/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW020909A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

		Result	Units	Qlfr
GEN				
Parameter :	Total suspended solids			
Method :	USGS I3765			
Prep Method:	USGS I3765			
Analytes :	*90069 Total suspended Solids	101	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021016A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
MET				
Parameter	: All MERCURY tests			
Method	: 1631B			
Prep Method:	1631B			
Analytes	: 7439976 Mercury	0.20	ng/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021017A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	106	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021025A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	Mercury	0.20	ng/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021025A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

	Result	Units	Qlfr
MET			
Parameter : All MERCURY tests			
Method : 1631B			
Prep Method: 1631B			
Analytes : 7439976 Mercury	112	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021029A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

		Result	Units	Qlfr
MET				
Parameter :	All MERCURY tests			
Method :	1631B			
Prep Method:	1631B			
Analytes :	7439976 Mercury	0.20	ng/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	CW021029A
Account Code:	02T10P50102D10P9LA00	**Type:**	Control
Station Description:			

		Result	Units	Qlfr
MET				
Parameter : All MERCURY tests				
Method : 1631B				
Prep Method: 1631B				
Analytes : 7439976	Mercury	98.5	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	0.15	mg/kg	U
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	0.10	mg/kg	U
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	0.15	mg/kg	U
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	0.20	mg/kg	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116A
Account Code:	02T10P50102D10P9LA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Arsenic by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440382	Arsenic	97	%Rec	
Parameter	: Lead by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7439921	Lead	101	%Rec	
Parameter	: Selenium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7782492	Selenium	99	%Rec	
Parameter	: Thallium by AA, RAS				
Method	: 200.9	Graphite Furnace Atomic Absorption Spectroscopy, EMSL-CIN			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440280	Thallium	94	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	MXS030116AE
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes			Result	Units	Qlfr
	7429905	Aluminum	2.5	mg/kg	U
	7440360	Antimony	4.5	mg/kg	UJ
	7440393	Barium	0.20	mg/kg	U
	7440417	Beryllium	0.10	mg/kg	U
	7440439	Cadmium	0.50	mg/kg	U
	7440702	**Calcium**	**2.56**	**mg/kg**	
	7440473	Chromium	0.50	mg/kg	U
	7440484	Cobalt	0.50	mg/kg	U
	7440508	Copper	0.40	mg/kg	U
	7439896	Iron	1.5	mg/kg	U
	7439954	Magnesium	5.0	mg/kg	U
	7439965	Manganese	0.30	mg/kg	U
	7440020	Nickel	1.0	mg/kg	U
	7440097	Potassium	70	mg/kg	U
	7440224	Silver	0.40	mg/kg	U
	7440235	Sodium	5.0	mg/kg	U
	7440622	Vanadium	0.30	mg/kg	U
	7440666	Zinc	0.40	mg/kg	U

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Project Code: TEC-247B
Project Name: MCCORMICK & BAXTER, PORTLAND
Project Officer: RENE FUENTES
Account Code: 02T10P50102D10P9LA00
Station Description:

Collected:
Matrix: Solid
Sample Number: MXS030116AS
Type: Spike Blank

			Result	Units	Qlfr
MET					
Parameter :	Metals, ICP-SAS				
Method :	200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method:	200.2	Metals, total recoverable, water, EMSL-C			
Analytes :	7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	99	%Rec	
	7440360	Antimony	92	%Rec	
	7440393	Barium	92	%Rec	
	7440417	Beryllium	89	%Rec	
	7440439	Cadmium	93	%Rec	
	7440473	Chromium	93	%Rec	
	7440484	Cobalt	94	%Rec	
	7440508	Copper	95	%Rec	
	7439896	Iron	94	%Rec	
	7439965	Manganese	93	%Rec	
	7440020	Nickel	94	%Rec	
	7440224	Silver	100	%Rec	
	7440622	Vanadium	95	%Rec	
	7440666	Zinc	92	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030114A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	20	ug/L	U
7440393	Barium	0.50	ug/L	U
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	10	ug/L	U
7439896	Iron	10	ug/L	U
7439954	Magnesium	20	ug/L	U
7439965	Manganese	1.0	ug/L	U
7440097	Potassium	700	ug/L	U
7440235	**Sodium**	**20**	**ug/L**	

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	Cobalt	0.013	ug/L	U
7440508	Copper	1.3	ug/L	U
7439921	Lead	0.13	ug/L	U
7439965	Manganese	0.13	ug/L	U
7440020	Nickel	0.38	ug/L	U
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030114A
Account Code:	02T10P50102D10P9LA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	100	%Rec	
	7440417	Beryllium	95	%Rec	
	7439896	Iron	100	%Rec	
	7439965	Manganese	105	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	101	%Rec	
	7440382	Arsenic	99	%Rec	
	7440439	Cadmium	102	%Rec	
	7440473	Chromium	97	%Rec	
	7440484	Cobalt	96	%Rec	
	7440508	Copper	98	%Rec	
	7439921	Lead	100	%Rec	
	7439965	Manganese	93	%Rec	
	7440020	Nickel	99	%Rec	
	7782492	Selenium	100	%Rec	
	7440224	Silver	104	%Rec	
	7440280	Thallium	97	%Rec	
	7440622	Vanadium	94	%Rec	
	7440666	Zinc	102	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030115A
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

MET

Parameter : Metals, ICP-SAS
Method : 200.7 ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes		Result	Units	Qlfr
7429905	Aluminum	20	ug/L	U
7440393	Barium	0.50	ug/L	U
7440417	Beryllium	1.0	ug/L	U
7440702	Calcium	10	ug/L	U
7439896	Iron	10	ug/L	U
7439954	Magnesium	20	ug/L	U
7439965	Manganese	1.0	ug/L	U
7440097	Potassium	700	ug/L	U
7440235	Sodium	20	ug/L	U

Parameter : Metals, ICP/MS
Method : 200.8 ICPMS 18 Elements
Prep Method: 200.2 Metals, total recoverable, water, EMSL-C

Analytes				
7440360	Antimony	1.0	ug/L	U
7440382	Arsenic	0.63	ug/L	U
7440439	Cadmium	0.13	ug/L	U
7440473	Chromium	1.3	ug/L	U
7440484	Cobalt	0.013	ug/L	U
7440508	Copper	1.3	ug/L	U
7439921	Lead	0.13	ug/L	U
7439965	Manganese	0.13	ug/L	U
7440020	Nickel	0.38	ug/L	U
7782492	Selenium	1.3	ug/L	U
7440224	Silver	0.63	ug/L	U
7440280	Thallium	0.63	ug/L	U
7440622	Vanadium	1.0	ug/L	U
7440666	Zinc	2.5	ug/L	U

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	MXW030115A
Account Code:	02T10P50102D10P9LA00	**Type:**	Spike Blank
Station Description:			

			Result	Units	Qlfr
MET					
Parameter	: Metals, ICP-SAS				
Method	: 200.7	ICP Inductively Coupled Plasma-Atomic Emission Spectroscopy (22 elements)			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440702	Calcium			NA
	7439954	Magnesium			NA
	7440097	Potassium			NA
	7440235	Sodium			NA
	7429905	Aluminum	107	%Rec	
	7440393	Barium	99	%Rec	
	7440417	Beryllium	98	%Rec	
	7439896	Iron	99	%Rec	
	7439965	Manganese	105	%Rec	
Parameter	: Metals, ICP/MS				
Method	: 200.8	ICPMS 18 Elements			
Prep Method	: 200.2	Metals, total recoverable, water, EMSL-C			
Analytes	: 7440360	Antimony	102	%Rec	
	7440382	Arsenic	100	%Rec	
	7440439	Cadmium	102	%Rec	
	7440473	Chromium	97	%Rec	
	7440484	Cobalt	97	%Rec	
	7440508	Copper	99	%Rec	
	7439921	Lead	105	%Rec	
	7439965	Manganese	94	%Rec	
	7440020	Nickel	99	%Rec	
	7782492	Selenium	103	%Rec	
	7440224	Silver	106	%Rec	
	7440280	Thallium	103	%Rec	
	7440622	Vanadium	91	%Rec	
	7440666	Zinc	104	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Solid
Project Officer:	RENE FUENTES	**Sample Number:**	OBS2255A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	1.9	ug/kg	U
	118796	Phenol, 2,4,6-tribromo	64	%Rec	

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Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2253A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.018	ug/L	U
	118796	Phenol, 2,4,6-tribromo	80	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2260A1
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

			Result	Units	Qlfr
GC					
Parameter	: Pentachlorophenol				
Method	: 8040	GC - Phenols			
Prep Method	: 3510M	liq-liq extraction via stir-bar			
Analytes	: 87865	Pentachlorophenol	0.019	ug/L	U
	118796	Phenol, 2,4,6-tribromo	72	%Rec	
GCMS					
Parameter	: Poly Aroma Hydro - GCMS				
Method	: XPAH-GCM				
Prep Method	: 3510M/3540				
Analytes	: 91587	2-Chloronaphthalene	0.038	ug/L	U
	86737	9H-Fluorene	0.019	ug/L	U
	83329	Acenaphthene	0.019	ug/L	U
	208968	Acenaphthylene	0.019	ug/L	U
	120127	Anthracene	0.019	ug/L	U
	56553	Benzo(a)anthracene	0.038	ug/L	U
	50328	Benzo(a)pyrene	0.038	ug/L	U
	191242	Benzo(g,h,i)perylene	0.019	ug/L	U
	205992	Benzo[b]Fluoranthene	0.019	ug/L	U
	207089	Benzo[k]fluoranthene	0.019	ug/L	U
	218019	Chrysene	0.038	ug/L	U
	53703	Dibenzo[a,h]anthracene	0.038	ug/L	U
	132649	Dibenzofuran	0.019	ug/L	U
	206440	Fluoranthene	0.019	ug/L	U
	193395	Indeno(1,2,3-cd)pyrene	0.038	ug/L	U
	91203	**Naphthalene**	**0.025**	**ug/L**	
	90120	Naphthalene, 1-methyl-	0.019	ug/L	U
	91576	Naphthalene, 2-methyl-	0.019	ug/L	U
	85018	Phenanthrene	0.019	ug/L	U
	129000	Pyrene	0.019	ug/L	U
	483658	Retene	0.019	ug/L	U
	1499101	9,10 DIPHENYLANTHRACENE	91	%Rec	
	92944	p-Terphenyl	108	%Rec	

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Combined Final Report for Project TEC-247B

Project Code:	TEC-247B	**Collected:**	
Project Name:	MCCORMICK & BAXTER, PORTLAND	**Matrix:**	Liquid
Project Officer:	RENE FUENTES	**Sample Number:**	OBW2260A2
Account Code:	02T10P50102D10P9LA00	**Type:**	Blank
Station Description:			

GCMS

Parameter : Poly Aroma Hydro - GCMS
Method : XPAH-GCM
Prep Method: 3510M/3540

Analytes		Result	Units	Qlfr
91587	2-Chloronaphthalene	0.036	ug/L	U
86737	9H-Fluorene	0.018	ug/L	U
83329	Acenaphthene	0.018	ug/L	U
208968	Acenaphthylene	0.018	ug/L	U
120127	Anthracene	0.018	ug/L	U
56553	Benzo(a)anthracene	0.036	ug/L	U
50328	Benzo(a)pyrene	0.036	ug/L	U
191242	Benzo(g,h,i)perylene	0.018	ug/L	U
205992	Benzo[b]Fluoranthene	0.018	ug/L	U
207089	Benzo[k]fluoranthene	0.018	ug/L	U
218019	Chrysene	0.036	ug/L	U
53703	Dibenzo[a,h]anthracene	0.036	ug/L	U
132649	Dibenzofuran	0.018	ug/L	U
206440	Fluoranthene	0.018	ug/L	U
193395	Indeno(1,2,3-cd)pyrene	0.036	ug/L	U
91203	**Naphthalene**	**0.022**	**ug/L**	
90120	Naphthalene, 1-methyl-	0.018	ug/L	U
91576	Naphthalene, 2-methyl-	0.018	ug/L	U
85018	Phenanthrene	0.018	ug/L	U
129000	Pyrene	0.018	ug/L	U
483658	Retene	0.018	ug/L	U
1499101	9,10 DIPHENYLANTHRACENE	92	%Rec	
92944	p-Terphenyl	108	%Rec	