DREDGE MATERIAL MANAGEMENT PLAN SEDIMENT CHARACTERIZATION REPORT

VOLUME I

LOWER WILLAMETTE RIVER
FEDERAL NAVIGATION CHANNEL, OREGON

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DREDGE MATERIAL MANAGEMENT PLAN
SEDIMENT CHARACTERIZATION REPORT

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EXECUTIVE SUMMARY

This sediment characterization report was prepared by Tetra Tech EC, Inc. (Tetra Tech) for the U.S. Army Corps of Engineers (USACE), Portland District, as part of the summary of the chemical, physical, and biological characterization of the Lower Willamette River Federal Navigational Channel (FNC), Oregon, and will support the development of an integrated Dredge Material Management Plan (DMMP) and National Environmental Policy Act (NEPA) document for FNC sediments. The DMMP addresses dredging needs, disposal capabilities, capacities of disposal areas, environmental compliance requirements, the potential for beneficial usage of dredged material, and indicators of continued economic justification for the next 20 years (2005 to 2025). The characterization of FNC sediment was performed in accordance with the Dredge Material Evaluation Framework (DMEF) for the Lower Columbia River Management Area manual.

The objective of this study was to characterize FNC sediments from Willamette River Mile (WRM) 0 (at the mouth of the Willamette River) to WRM 11.6 (the location of Broadway Bridge) that are subject to future dredging operations and that have not been previously characterized. Maintenance dredging within the FNC is to an authorized depth of –40 feet Columbia River Datum (CRD), plus 2 feet of advanced maintenance; therefore, the navigational channel could be maintained to –42 feet CRD. Although the FNC is authorized to a depth of –40 feet CRD, only those portions of the FNC required for safe navigation are dredged.

In order to effectively develop alternatives for dredging and the disposal of dredged materials, a substantial characterization of the FNC was conducted. Seventy-two sediment core sample locations were selected based on areas subject to dredging (shoaling) and 79 surface sediment locations were located adjacent to core locations to characterize potential "sloughing material" during dredging. The sediment samples (including three reference locations) were analyzed for all of the chemistry parameters presented in the DMEF manual. A few select locations were analyzed for additional parameters to support the Lower Willamette Group (LWG) sediment investigation.

In general, elevated concentrations of polychlorinated biphenyl (PCB) Aroclors, semivolatile organic compounds (SVOCs) (primarily polycyclic aromatic hydrocarbons [PAHs]), porewater tributyltin (TBT), and pesticides (e.g., DDT and degradation products) were detected in subsurface sediments in the FNC as well as adjacent surface sediments.

The results were compared to the DMEF screening criteria (Screening Levels [SLs], Maximum Levels [MLs], and Bioaccumulation Triggers (BTs]). These screening criteria were developed to characterize dredged material for suitability for unconfined, open-water disposal. The majority of DMEF SL exceedances for total PCBs is located between WRMs 10 to 12 on the east and west sides of the FNC. The majority of DMEF SL and ML exceedances for PAHs is located on the west side of the FNC between WRMs 5 to 7. The majority of DMEF SL and BT exceedances for porewater TBT is located between WRMs 3 to 6 and WRMs 7 to 8 on both the east and west sides of the FNC. The majority of DMEF SL exceedances for total DDT is located between WRMs 3 to 6 and WRMs 10 to 12 on both the east and west sides of the FNC, and located on the west side of the FNC between WRMs 6 to 8. Future characterization of the sediment may be required prior to any

Bioassay testing was conducted at 25 locations with the objective to spatially locate bioassays throughout the FNC where exceedances of multiple DMEF SLs at varying ranges were detected. The 25 test locations had a range of chemicals with varying concentrations of the following chemicals: total PCBs, total DDT, porewater TBT, chlordane, mercury, and to a lesser extent, PAHs. Overall, an analysis of the concentrations of constituents detected in these 25 bioassay samples, with the exception of WR-VC-12 (WRM 4), revealed that low to high concentrations, in some cases above the DMEF SLs (porewater TBT, total PCBs, and total DDT) and DMEF ML (total DDT), did not fail DMEF biological interpretive criteria. These results indicate that based on the survival and growth bioassay test results, unacceptable ecological impacts to benthic organisms were not observed, with the exception of sediment core location WR-VC-12.

Bioaccumulation testing was conducted on 10 sediment core locations with the objective to spatially locate bioaccumulation tests throughout the FNC where exceedances of multiple DMEF BTs at varying ranges were detected. The 10 test locations had a range of chemicals with varying concentrations of the following bioaccumulative chemicals of concern (BCOCs): metals, total PCBs, total DDT, TBT, and to a lesser extent, PAHs. While the majority of the BCOCs detected in the tissue of both organisms were generally bioaccumulating at greater tissue burdens than the tissue concentrations of the reference sample, all of the tissue residue results were well below their respective Puget Sound Dredge Disposal Analysis (PSDDA) Target Tissue Levels (TTLs), which have been developed to determine the suitability for unconfined, open-water disposal.

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Acronyms & Abbreviations

AOC	Administrative Order on Consent
BCOC	bioaccumulative chemicals of concern
BT	Bioaccumulation Trigger
CAS-Kelso	Columbia Analytical Services—Kelso, Washington
CAS-Texas	Columbia Analytical Services—Texas
cm	centimeter
CRCIP	Columbia River Channel Improvement Project
CRD	Columbia River Datum
CSS	composited sediment sample
CWA	Clean Water Act
cy	cubic yard
DDD	dichlorodiphenyl-dichloroethane
DDE	dichlorodiphenyl-dichloroethene
DDT	dichlorodiphenyl-trichloroethane
DEQ	Oregon Department of Environmental Quality
DGPS	digital global positioning system
DMEF	Dredge Material Evaluation Framework
DMMP	Dredge Material Management Plan
DMMU	Dredge Material Management Unit
DQO	data quality objective
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FNC	Willamette River Federal Navigation Channel
FS	feasibility study
GSA	General Services Administration
HPAH	high molecular weight polycyclic aromatic hydrocarbon
ISA	Initial Study Area
kg	kilogram
kHz	kilohertz
LPAH	low molecular weight polycyclic aromatic hydrocarbon
LWG	Lower Willamette Group
µg	microgram

µm	micrometer
ML	Maximum Level
NAD	North American Datum
NAS	Northwestern Aquatic Sciences
NEPA	National Environmental Policy Act
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
ppm	part per million
PRP	potential responsible party
PSDDA	Puget Sound Dredge Disposal Analysis
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RI	remedial investigation
SAP	Sampling and Analysis Plan
SL	Screening Level
SOW	Scope of Work
SVOC	semivolatile organic compound
TBT	tributlytin
Tetra Tech	Tetra Tech EC, Inc.
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TTL	Target Tissue Level
TVS	total volatile solid
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WRDA	Water Resources Development Act
WRM	Willamette River Mile

1. INTRODUCTION

This site characterization report was prepared by Tetra Tech EC, Inc. (Tetra Tech) in accordance with the requirements of the Scope of Work (SOW) for Delivery Orders W9127N-05-F-0076 and W9127N-05-F-0119 under General Services Administration (GSA) Contract GS-10F-0208J, dated April 15, 2005 and June 21, 2005, respectively. The report was prepared for the U.S. Army Corps of Engineers (USACE), Portland District, as part of the summary of the chemical, physical, and biological characterization of the Lower Willamette River Federal Navigational Channel (FNC), Oregon. The characterization of FNC sediment was performed in accordance with the Dredge Material Evaluation Framework (DMEF) for the Lower Columbia River Management Area manual (USACE et al. 1998).

This report summarizes the data collected in the field and analyzed by the chemistry and biological testing laboratories following methods described in the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) (Hart Crowser 2004). The objective of this study was to characterize FNC sediments from Willamette River Mile (WRM) 0 (at the mouth of the Willamette River) to WRM 11.6 (the location of Broadway Bridge). This report characterizes the sediment based on the current sampling event and is not meant to be the final characterization of the sediment in the FNC. This sampling event is intended to present the USACE with a characterization of areas that were not previously characterized by recent USACE or Lower Willamette Group (LWG) studies. Future characterization of the sediment may be required prior to any dredging event in areas with fine-grained sediments and areas that show contaminants above DMEF screening criteria. Data from these analyses will be used to develop the Dredge Material Management Plan (DMMP) for FNC sediments. The DMMP will address dredging needs, disposal capabilities, capacities of disposal areas, environmental compliance requirements, the potential for beneficial usage of dredged material, and indicators of continued economic justification.

1.1 PROJECT HISTORY AND SUMMARY

1.1.1 Site History

In December 2000, the Environmental Protection Agency (EPA) placed the Lower Willamette River on the nationwide Superfund cleanup list. According to the USACE, Oregon Department of Environmental Quality (DEQ), and the EPA, there may be unacceptably high levels of chemical contamination, especially in sediments, in the Willamette River. The contamination is attributed to a century of industrial, maritime, and development activity in and along the river. The EPA has implemented an Initial Study Area (ISA) concept for sampling that is presented in the Administrative Order on Consent (AOC). The ISA concept allows for the initial focus of the sediment sampling effort to be the 5.7-mile stretch of the Lower Willamette River from approximately the southern tip of Sauvie Island at WRM 3.5 to the southern end of Swan Island at WRM 9.2, and adjacent areas logically associated with an evaluation of the in-water portion of this river reach.

A few potential responsible parties (PRPs) identified by the EPA have formed the LWG to work towards an early cleanup of the river. The LWG includes businesses along the Willamette River, the Port of Portland, and the City of Portland. In January 2001, EPA began negotiating for the completion of a remedial investigation/feasibility study (RI/FS) with the LWG. From July to November 2004, 517 sediment samples were collected between WRM 2 and 11.

A portion of this DMMP sediment characterization project included collecting sediment samples within the ISA; however, sampling activities for this project are to support the development of the DMMP for assessing the quality of FNC sediments for future dredging activities. All sampling activities were governed in accordance with Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

1.1.2 Environmental Setting

Maintenance dredging within the FNC is to an authorized depth of –40 feet Columbia River Datum (CRD), plus 2 feet of advanced maintenance; therefore, the existing 600- to 1,900-foot-wide, 40-foot-deep navigational channel could be maintained to –42 feet CRD from WRM 0 to 11.6. Although the FNC is authorized to a depth of –40 feet CRD, only those portions of the FNC required for safe navigation are dredged. This sediment characterization project was completed to support the development of the DMMP and is not associated with the Columbia River Channel Improvement Project (CRCIP).

Because significant reaches of the FNC are naturally deeper than the FNC maintenance requirements, and a significant amount of work characterizing the FNC has already been completed, only specific areas of the FNC required supplemental sediment characterization activities. The locations of the sediment sampling activities were limited to:

- selected shallow areas within the FNC that are subject to future dredging operations,
- areas that had not previously been characterized, and
- areas adjacent to the FNC that may act as potential sources of contamination from sloughing during normal dredging operations.

Based on a preliminary analysis of USACE maps presenting bathymetric contours of the Lower Willamette River, Tetra Tech identified shoaling areas (above –40 feet CRD) within the FNC and divided the FNC into the following project WRM:

- WRM 0 to 3: from the mouth of the Willamette River to the mouth of Multnomah Channel,
- WRM 3 to 6: from the mouth of Multnomah Channel to the St. Johns Bridge,
- WRM 6 to 8: from the St. Johns Bridge to the northern tip of Swan Island,
- WRM 8 to 10: from the northern tip of Swan Island to the southern tip of the Port of Portland – Terminal 2, and

- WRM 10 to 12: from the southern tip of the Port of Portland – Terminal 2 to the Freemont Bridge.

Previous work and historical results presented in this report are discussed in relation to these WRMs of the FNC.

1.2 PURPOSE OF STUDY

There is an established, ongoing need to dredge and maintain the Lower Willamette River. The USACE operates and maintains the harbor under the following legislative authorities:

- Maintenance Dredging: The current depth and length for the Columbia and FNC were authorized by the 1962 Omnibus Bill for Rivers and Harbors, Public Law 87-874, October 23, 1962.
- Environmental Dredging: General authority for environmental dredging is contained in Section 312 of the Water Resources Development Act (WRDA) of 1990, as amended by Section 205 of WRDA 1996 and Section 224 of WRDA 1999. Specific authority for the Willamette River, Oregon, was added when the Willamette River was listed as a priority site in Section 224 of WRDA 1999.

The purpose of this study was to characterize FNC sediments from WRM 0 to 11.6 that are subject to future dredging operations and that have not been previously characterized. This sediment characterization report will support the development of an integrated DMMP and National Environmental Policy Act (NEPA) document for maintenance of the currently maintained FNC for the next 20 years (2005 to 2025) using the criteria of least cost, environmental acceptability, and technical feasibility.

1.3 FIELD AND LABORATORY DATA REPORT ORGANIZATION

In addition to this introduction, the following sections are included in this report:

- Section 2 presents the previous sediment characterization studies conducted within the FNC.
- Section 3 presents the field and laboratory methods used during sample collection and laboratory analysis;
- Section 4 summarizes the physical characteristics of the study area;
- Section 5 discusses the nature and extent of chemical concentrations in the river;
- Section 6 discusses the biological testing results, which include bioassay and bioaccumulation results;
- Section 7 presents a discussion of the sediment characterization project;
- Section 8 provides the references used to prepare this report;

- Appendix A contains the core logs;
- Appendix B contains the Chemical Data Validation Review Report for sediment chemistry results;
- Volume II contains the Columbia Analytical Services Laboratory Certificates for sediment results; and
- Volume III contains the Bioassay and Bioaccumulation Data Validation Report and the Northwestern Aquatic Sciences and Columbia Analytical Services Laboratory Certificates.

2. PREVIOUS SEDIMENT CHARACTERIZATION STUDIES

The USACE conducted sediment evaluations for maintenance dredging projects within the study area in 1988, 1989, 1992, 1996, 1999, and 2003. The following is a summary of these prior sediment characterization studies conducted by the USACE.

1988. The USACE collected sediment samples at 22 locations between WRM 4.3 and 11.7 for dredge material characterization purposes. Both physical and chemical tests and biological tests were conducted. Most of the sediment, including that between WRM 8 and 10.1, was found acceptable for unconfined open-water disposal. Sediments from WRM 7 to 7.5, 10.3, and 11.7 were recommended to be managed at a confined, open-water disposal site or upland facility due to elevated levels of 4,4'-dichlorodiphenyl-dichloroethane [DDD], polychlorinated biphenyls (PCBs), and lead (USACE 1988).

1989. The USACE conducted sediment sampling at the Burlington Northern Railroad Bridge at WRM 7 (USACE 1989). Analytical results showed analytes were low and typical of uncontaminated river sediments. In accordance with the Clean Water Act (CWA) (Section 404 [b][1]) guidelines, the sediment was determined acceptable for unconfined, open-water disposal.

1992. The USACE collected sediment samples at five locations between WRM 8 and 10.3 for dredge material characterization purposes. Similar to the 1988 study, sediments from between WRM 8 and 10.2 were determined acceptable for unconfined, open-water disposal. The sediment sample collected at WRM 10.3 detected zinc, pesticides (4,4'-DDD and 4,4'-dichlorodiphenyl-dichloroethene [DDE]), and 2-methylnaphthalene above EPA Region 10 screening levels for marine sediments (USACE 1992). This material was recommended to be managed at a confined, open-water disposal site or upland facility consistent with the 1988 study.

1996. The USACE conducted a dredge material characterization project to evaluate shoal material accumulated above navigational depths between WRM 8.3 and 10.1 (USACE 1996). Six sediment samples were collected for physical and chemical testing. Analytical results showed analytes were below EPA Region 10 screening levels for marine sediments, and the sediment was determined acceptable for unconfined, open-water disposal.

1997. The USACE conducted a sediment characterization project to describe the material to be potentially dredged and to confirm or establish area rankings in accordance with the draft regional dredge material testing manual and the DMEF for the Lower Columbia River Management Area. Results from this sediment characterization served to provide information for the CRCIP and Environmental Impact Statement (EIS). Sixty-eight samples were analyzed from 43 stations in the Willamette River, WRM 0.10 to WRM 11.55. Of the 68 samples analyzed, 13 samples exceeded the SL for one or more contaminants (lead, porewater tributlytin [TBT], total dichlorodiphenyl-trichloroethane [DDT], and total PCBs). The material represented by these samples was

determined unsuitable for unconfined aquatic disposal under Tier II testing SLs. Dredging these areas would require prior biological testing under Tier III, or disposal under guidelines and regulations for confined in-water or upland.

1999. The USACE conducted a dredge material characterization project to evaluate accumulated shoal material above navigational depths at WRM 2.3 and between WRM 8.0 and 9.35 (USACE 1999, 2000). The dredge material characterization project was conducted in two phases: April 1999 and November 1999.

- **Phase I.** In April 1999, the USACE collected nine sediment core samples characterizing three Dredge Material Management Units (DMMUs). Two core samples located at WRM 2.3 were designated as DMMU 1 and represented approximately 50,000 cubic yards (cy) of dredge material. Analytical results for one of the DMMU 1 cores (11.3 µg/kg) exceeded the DMEF SL for total DDT (6.9 µg/kg). Two core samples located between WRM 9 and 9.35 were designated as DMMU 2 and represented approximately 80,000 to 100,000 cy of dredge material. Analytical results for one of the cores (0.32 µg/L) representing DMMU 2 exceeded the DMEF SL for porewater TBT (0.15 µg/L). Five core samples located between WRM 8.3 and 8.5 were designated as DMMU 3 and represented approximately 350,000 cy of dredge material. Analytical results for one of the cores (0.6 µg/L) representing DMMU 3 exceeded the DMEF SL for porewater TBT, and another core (7.1 µg/kg) representing DMMU 3 exceeded the DMEF SL for total DDT. Because of the DMEF exceedances at each of the three DMMUs, the sediment was determined to be unsuitable for unconfined, open-water disposal without further characterization at the DMEF Tier III biological testing level (USACE 1999).

- **Phase II.** In November 1999, the USACE collected five additional sediment core samples collocated with the Phase I - April 1999 samples. The objective of Phase II was to collect sediment samples from each DMMU where total DDT and/or porewater TBT previously exceeded DMEF SLs to further characterize the proposed dredge material at the DMEF Tier III biological testing level. Sediment samples were submitted for both DMEF Tier II and Tier III analyses. Freshwater bioassays were analyzed for 10-day survival (*Hyalella azteca*), 10-day survival and growth (*Chironomus tentans*), and a 28-day bioaccumulation test (*Lumbriculus variegatus*). Bioassay results did not indicate significant effects for survival (*H. azteca* and *C. tentans*) and growth (*C. tentans*) in the test sediments. The amount of tissue sample retrieved after the 28-day bioaccumulation test was not sufficient to analyze more than one constituent for each replicate. The decision was made to analyze DDT on the tissue rather than TBT as originally planned (no porewater TBT was detected in Phase II sediments). Bioaccumulation results detected total DDT in all five tissue samples. Phase II sediment chemistry results for total DDT, conducted simultaneously with the biological tests, were detected below the DMEF SLs. Biological testing was essentially conducted on "clean" sediments, creating sufficient ambiguity between Phase I and Phase II results; therefore, the results of the biological tests were deemed inconclusive for determination of suitability for unconfined, open-water disposal (USACE 2000).

During Phase II sediment sampling activities, a fourth DMMU was sampled between WRM 11 to 11.3. Three sediment core samples were submitted for DMEF Tier II physical and chemical analyses. Analytical results for one of the cores (8.8 µg/kg) representing DMMU 4 exceeded the DMEF SL for total DDT. DMMU 4 was determined to be unsuitable for unconfined, open-water disposal without further characterization at the DMEF Tier III level (USACE 2000).

2003. The USACE, Portland District, conducted sediment sampling and testing in support of the planned maintenance dredging within the FNC in September 2003. The USACE proposed dredging up to 1,052,600 cy of FNC sediments. Subsurface sediment samples were collected from 53 locations within the FNC at WRM 2.3 (Post Office Bar) and between WRMs 7.5 and 10. Samples were grouped to form 19 separate composites. The 19 composited sediment samples (CSSs) were submitted for chemical analyses. Subsurface sediment samples were collected to the maximum removal depth of –42 feet CRD (including 2 feet of overdredge allowance). Sediment from each core was set aside until all the cores were collected from a specific CSS. At that time, sediment from each individual core tube was combined and thoroughly homogenized to create one composite sample representative of the dredge prism in each CSS.

The analytical chemistry results indicated that chemical constituents detected in CSSs 5 through 19 were all below the DMEF screening criteria (Table 1). CSSs 1, 2, and 3 exceeded the DMEF SL for total DDT. CSSs 2, 3, and 4 exceeded the DMEF SL for porewater TBT. Because chemical testing results exceeded the DMEF SLs in CSSs 1 through 4, Tier III bioassay testing was conducted in accordance with the DMEF manual (USACE et al. 1998). All of the test sediments (CSSs 1 through 4) were determined to have passed the DMEF Tier III biological effects criteria (Hart Crowser 2004). An analysis of the concentrations of constituents detected in these samples revealed that low to moderate concentrations, in some cases above the DMEF SLs (porewater TBT and total DDT), did not result in unacceptable ecological impacts to benthic organisms at these CSSs (i.e., did not fail biological interpretive criteria).

Additionally, bioaccumulation testing was conducted on CSS 2 to determine the suitability for unconfined, open-water disposal because of the porewater TBT concentration exceeding the DMEF Bioaccumulation Trigger (BT). The results of the bioaccumulation testing, interpreted in accordance with the DMEF guidance, indicated that there was a statistically significant difference between the CSS 2 treatment and the reference sediment (Hart Crowser 2004). The results of the bioaccumulation testing were also interpreted using the Target Tissue Level (TTL) for TBT adopted by the Puget Sound Dredge Disposal Analysis (PSDDA) agencies. The mean tissue concentration in the CSS 2 (377 µg/kg wet weight) exposure treatment was below the PSDDA TTL for TBT (600 µg/kg wet weight). The PSDDA procedure provides a risk-based tissue concentration of concern for TBT, whereas the DMEF guidance manual provides a non-risk-based methodology for statistically comparing tissue levels.

In accordance with the DMEF guidelines, the results from the 2003 dredge material characterization study confirmed that the proposed dredge material was suitable for unconfined, open-water disposal.

3. METHODS

This section presents the field and laboratory methodology for completing the sediment sampling tasks. The resulting data will be used to evaluate sediment quality in sediment above the channel operating depths for determining appropriate disposal options when dredging becomes possible.

3.1 UTILITY SURVEY/ACCESS

Prior to commencing intrusive field activities, Tetra Tech contacted Oregon's Utility Notification Center at 1-800-332-2344 (call number is #5073218) to identify all known above and underground utilities within the study area. Based on the results of the Utility Notification, up to 22 utilities were determined to be present within or near the study area. These utilities included: fiber optic cables, natural gas lines, gasoline lines, water mains, street lights, irrigation and sewer lines, telephone lines, electrical power lines, and television cables.

The utilities known to have pipelines/cables present in or near the study area were contacted by the Utility Notification Center and informed of the USACE and Tetra Tech's intent to collect subsurface sediment samples near their utility. To confirm utility locations, a Tetra Tech representative had a phone conversation and/or personally met with each company or municipal department with utilities in the study area. The locations of all known above and underground utilities were then physically marked and/or recorded on a site map.

All overhead utilities were avoided in a manner to provide a minimum of a 15-foot distance between overhead utilities and all sampling equipment. Underground utilities were avoided by moving sample locations if proposed locations occurred within 50 feet of the utilities.

3.2 SAMPLING PROCEDURES

The following sections describe the procedures used for navigation, sampling, and analysis for the sediment characterization.

3.2.1 Field Operations and Equipment

The sampling vessel employed for the surface and subsurface sampling was provided by Sound Vessels, Inc., of Port Townsend, Washington. The 36-foot-long sampling vessel, R/V Brendan D II, was equipped with a 1,000-pound capacity aluminum A-Frame mounted by two winches that deployed the "grab" sampler for surface sediment samples, as well as the coring system for subsurface sampling.

The air-powered van Veen "grab" sampler is operated by using forced air from a SCUBA tank through air hoses to open and close the sampler jaws. The "grab" sampler size is 0.2 m^2 and is capable of penetrating the sediment surface down to approximately 30 cm.

The vibracore is a custom-built design (modeled after the Rossfelder P-3 vibracore) that runs on 220-volt electric power supplied by a generator located aboard the sampling vessel.

With powered vibration running, the vibracore drives a length of 4-inch outer diameter (OD) aluminum tube into the sediment. The vibration causes liquefaction of sediment coming into contact with the outer side walls of the core tube, allowing for relatively undisturbed insertion and collection of sediment within the core tube. A continuous sediment sample was retained within a cellulose acetate butyrate (CAB) tube liner with the aid of a stainless-steel core cutter/catcher. Prior to sampling, the core catcher was decontaminated following the procedures outlined in Section 5 of the SAP. A new decontaminated core tube and liner was used for each station and core.

3.2.2 Horizontal and Vertical Location Control

Sediment sampling stations were located using a Trimble Ag132 Differential Global Positioning System (DGPS) and a computer running HYPACK® hydrographic survey software. Actual sediment sampling locations were recorded at the time of collection. If it was necessary to move a station because it was not accessible by the sampling vessel or if refusal was encountered, the new location was recorded.

Quality control (QC) checks of the DGPS were conducted by positioning the DGPS antenna on a survey monument and recording the differentially corrected location. DGPS recorded coordinates were then compared to the monument's actual coordinates. This QC check was conducted at the beginning and end of the field effort, and it verified that the DGPS was providing sub-meter positioning accuracy. The survey monument used to conduct this QC check was the USACE brass benchmark "Moor Farley" (stamped 1987), which was located at the end of the pier (northeast corner) at the USACE Government Moorings at 8010 NW St. Helens Road. Northing and easting coordinates were recorded in Oregon State Plane, North Zone, North American Datum (NAD) 83 coordinate system to the nearest 0.1 foot.

Vertical control parameters measured at all sediment sampling locations included the depth to sediment and the river surface elevation. The depth to sediment was measured at the time of sample collection, using an Innerspace 448 survey grade fathometer and a 3 degree, 208 kHz transducer. River surface elevations were based on two staff gauges, located at the USACE Government Moorings B Dock (WRM 6) and the City of Portland Fire Dock (WRM 9.7).

After sampling was completed, the elevation of sediment at each sample point was determined from the depth to sediment measurements and the water surface elevations recorded at the staff gauges. Sediment elevations at the sampling locations were recorded in CRD.

The following parameters were documented at every sample location:

- Time and date,
- Horizontal location in NAD 83 state plane coordinates, as appropriate,
- Depth to mudline (i.e., water depth), and
- River surface elevation referenced to CRD.

Parameters listed above were measured using combinations of the following:

- DGPS,
- Fathometer and a 3 degree, 208 kHz transducer, and
- USACE Willamette River staff gauges.

3.2.2.1 Water Surface Elevation

River water surface elevations were measured and recorded from two staff gauges: the USACE Government Moorings B Dock and the City of Portland Fire Dock (Figure 1). The staff gauges were marked in increments of 0.1 foot and were referenced to CRD. Water surface elevations were typically recorded two times or more daily for the stretch of river that was being sampled. Recorded river surface elevations were used to correct fathometer/transducer soundings to elevations by subtracting the depth measurement from the river surface elevations (i.e., river surface elevations - depth to mudline = mudline elevation).

3.2.3 Surface and Subsurface Sediment Sampling Scheme

In order to effectively develop alternatives for dredging and the disposal of dredged materials, a substantial characterization of the FNC was conducted. Table 2 summarizes the analytical parameters performed to support bulk chemical analysis and biological and bioaccumulation testing. Tables 3 and 4 present the surface and subsurface sediment sampling coordinates, respectively. Additional details are provided below.

Figures 2 through 7 present the surface and subsurface sample locations within, and adjacent to, the FNC that are subject to future dredging. These areas represent identified shallow areas (above –40 feet CRD) that require sediment characterization activities. Subsurface core locations were selected by using the following criteria:

- Minimum of one sample collected from each defined dredge area;
- General conservative assessment of sample quantity required to fully characterize project sediments using the DMMU concept as defined in the DMEF guidance manual (suggesting a core spacing about every 800 feet); and
- Sample spacing scheme used by EPA and other Portland Harbor studies conducted (typically a sample spacing between 200 and 400 feet).

On this basis, Tetra Tech selected to space each core on the order of every 500 feet, with a minimum of one sample per dredge area. Each surface (0 to 30 centimeters [cm]) sediment sample was collected at the edge of the FNC boundary (just outside of the FNC) adjacent to a subsurface sediment sample location. Special considerations included:

- Surface sediment samples (WR-PG-01 and WR-PG-02; Figure 2) were collected on the east bank of the FNC near WRM 2.3 (Post Office Bar) where the recent Dredge Material Characterization Project was conducted (Hart Crowser 2004); and
- Surface sediment samples (even numbers WR-PG-74 through WR-PG-104; Figures 5 and 6) were collected on the west bank of the FNC between WRMs 7.5 and 10 where the recent Dredge Material Characterization Project was conducted (Hart Crowser 2004).

The surface sediment samples represent the potential "sloughing material" that may be pulled down the side slopes into the FNC during normal dredging operations. Each surface sample was submitted for bulk chemistry for the parameters listed in Table 2.

3.2.4 Reference Area Sediment Sampling

In 2001, the USACE conducted a study to identify three reference areas within the Lower Willamette River with varying grain sizes suitable for use as reference sediment sources for biological testing under Tier III requirements of the DMEF (Hart Crowser 2002). The study identified three reference areas that correspond to the established sediment grain size classes for fine-grained (between 70 to 80 percent fines), medium-grained (between 50 to 60 percent fines), and coarse-grained (between 2 to 10 percent fines) sediment found in the Lower Willamette River.

The reference sediment collected for this project was as similar as practicable to the site sediments (i.e., grain size and total organic carbon [TOC]), and served as a point of comparison to identify potential effects of contaminants. Reference surface (0 to 30 centimeters [cm]) sediment samples for this sediment characterization project were collected from each of the three identified locations (Figure 8). These reference areas are defined as coarse-grained sediment located by Ross Island; medium-grained sediment located within Cedar Island Cove; and fine-grained sediment located by Elk Rock (Hart Crowser 2001). Tables 2 and 3 present the reference sampling analytical parameters and coordinates, respectively.

3.2.4.1 Core Sample Acceptability

Depth of penetration versus depth of recovery was closely monitored during the collection of the cores. During core collection, penetration and sediment retention were measured to the nearest tenth of a foot. The core tube was monitored during extraction to evaluate if sediment was lost. After the core was extracted, the core catcher was inspected for rocks or other obstacles that may have plugged the core while penetrating. Caution was taken to prevent disturbance of the surface of the sediment when the core was laid at an angle during removal from the drive head. Cores were rejected whenever it was determined that sediment was lost, the core catcher was plugged, or there was doubt about the representativeness of the sediments retained in the core tube. The actual penetration depth and sample recovery were compared and documented on core log forms. A sample recovery of 75 percent or greater was considered acceptable and representative of an individual location. If recovery was below 75 percent and if the core showed signs of disturbance, another coring attempt was usually performed at that station. If acceptance criteria were not met after multiple attempts, the physical conditions of the sediment were likely causing substandard

recovery. In such cases, professional judgment was used to determine whether to accept the core by the Field Supervisor.

3.2.4.2 Core Compaction

Compaction of the sediment that occurred during the coring process was assessed by calculating the percent sediment recovery for each core. Compaction was assumed to be linear for the entire core and was estimated by dividing the measured sediment recovery by the measured core penetration depth. The resulting percent recovery was applied to the measured features and intervals in each recovered core to account for compaction. Core logs are presented in Appendix A.

3.2.4.3 Archiving Sediment from Newly Exposed Sediment Surface

The subsurface sediment cores were penetrated to –44 feet CRD. This enabled Tetra Tech to take samples to the maintenance depth of –40 feet CRD, including the 2 feet of advanced maintenance and a sample from the first 2 feet below the dredging maximum depth (i.e., –42 to –44 feet CRD). The –42 to –44 feet CRD sample from each individual core was collected and archived (frozen at –20°C). The archiving of these samples allows for possible future analysis, if it becomes necessary, to evaluate chemical concentrations in the newly exposed sediments (post-dredging) in each dredge prism.

3.2.5 Core Processing

After the core was removed from the drive head, but before the tube was cut, the tube was marked with an indelible marker identifying the station. As soon as possible after collection, the cores were transported to the processing area located at the Port of Portland, Terminal 4 Gear Locker Building, where logging and sample processing were completed. Core sections collected for chemical analyses and potential bioassay testing were extruded at the core processing station by cutting the CAB liner. Sediment within the cores was photographed and visually classified, and changes from the top to the bottom of the core tube were noted and recorded on the core log sheets. Each individual core was composited in its entirety up to the proposed dredge depth –42 feet CRD (including the 2-foot advanced maintenance). A sample from the first 2 feet below the maximum dredging depth (i.e., –42 to –44 feet CRD) from each individual core was composited and archived (frozen at –20°C).

Because Tier III bioassay testing is required when sediment chemistry results exceed DMEF SLs, a minimum of 4 liters of sediment from each core location was collected in case it became necessary to conduct biological testing. Samples collected for biological testing were stored under nitrogen at approximately 4°C until withdrawn for analysis or archiving.

Sediment cores were processed according to the following step-by-step procedure:

1. The sediment was transferred from core to a clean stainless-steel bowl and covered with aluminum foil.
2. The sample was stirred until there was uniform color and texture.

Sediment chemical characterization consisted of cores from 72 locations within the FNC. Columbia Analytical Services of Kelso, Washington (CAS-Kelso), analyzed the submitted sediment core samples for chemistry parameters listed in Table 2 except for dioxins/furans. CAS of Houston, Texas (CAS-Texas) analyzed 13 of the 72 core samples for dioxins/furans.

3.2.6 Surface Sediment Sample Collection

An air powered van Veen "grab" type sampler was used to collect surface (0 to 30 cm) and reference sediment samples. After retrieval of the sediment sample, the acceptability of each sample was assessed against sample acceptability criteria. Acceptance criteria for adequate sample recovery consisted of determining if overlying water was present, sediment surface was intact, and the grab sampler closed without obstruction or blocking of its mouth. Sediment samples not meeting these criteria were rejected and sample collection was repeated. If an acceptable sediment sample could be collected at the proposed location after several attempts, the location was moved in a 3-meter radius around the original location until an acceptable sample was obtained.

Because Tier III bioassay testing is required when sediment chemistry results exceed DMEF SLs, a minimum of 4 liters of sediment from each surface sediment sample was collected in case it became necessary to conduct biological testing. Samples collected for biological testing were stored under nitrogen at approximately 4°C until withdrawn for analysis or archiving.

Field observations were maintained in a field log notebook. These observations include the following:

- Sampling location;
- Water depth;
- Date and time;
- Sediment texture and color;
- Other characteristics (e.g., odor, sheen, presence of wood or metal debris, staining, color, grain size);
- Biological structures (e.g., shells, tubes, bioturbation, organisms);
- Number of deployments; and
- Characteristics of mudline bottom (if possible).

3.2.7 Sample Identification

Surface and subsurface core sediment samples were assigned an individual sample identification number in the following manner:

Surface Sediment Sample: WR-PG-## or WR-PG-##-Ref or WR-PG-##Dup

Subsurface Sediment Sample: WR-VC-## or WR-VC-##Z

Where: WR = Willamette River
PG-## = Power Grab - Station ID
Ref = Reference Location
Dup = Duplicate Sample
VC-## = Vibracore – Station ID
Z = Archived Sample from –42 to –44 feet CRD

3.2.8 Deviations from the SAP

Methods described in the SAP (Hart Crowser 2004) were generally followed for sample collection and handling procedures.

The SAP has undergone review by state and federal agencies, with review comments incorporated. The USACE, EPA, Port of Portland, representatives of the LWG, and other interested parties requested several changes be incorporated into the SAP prior to execution. These changes included:

- Elimination of 14 proposed surface grab sample locations that were considered a duplication of the LWG's November 2004 sampling locations;
- The addition of the following analytes for chemical analyses: chlorinated herbicides, dioxins/furans, volatile organic compounds (VOCs), butyltins (bulk), organochlorine pesticides, and three metals (aluminum, chromium, and selenium);
- Surface grab samples would penetrate for a collection of 20-30 cm of material (the proposed penetration depth was 0 to 10 cm); and
- Increase the total depth of subsurface core samples from –43 feet CRD to –44 feet CRD to account for the vertical inaccuracy of dredging practices. The additional 1 foot (–43 to –44 feet CRD) of sediment sample was composited with the initially proposed –42 to –43 feet CRD sample and archived.

Additionally, the SAP proposed that a sufficient volume of sediment from each surface and subsurface sediment sample location would be collected to conduct potential bioaccumulation testing. However, it was determined that it was not feasible (i.e., sediment storage capacity concerns and sediment holding times) to collect the required volume of sediment (approximately 30 gallons of sediment) from each sample location for possible bioaccumulation testing. It was determined that Tetra Tech would collect a sufficient volume of sediment from 10 subsurface sediment locations. The selection of the 10 subsurface sediment locations for bioaccumulation testing is discussed in further detail in Section 6.3.

Tetra Tech encountered refusal at 11 proposed subsurface core locations and one additional core location due to site access (i.e., blocked by a barge). At each of the 11 proposed locations, the samples were inspected relative to the acceptance criteria described above in Section 3.2.4. If these criteria were not met, the core was discarded and redeployed. If acceptance criteria were not met for the second time, the coring location was offset by 10 to 20 feet and the core was redeployed. If acceptance criteria were not met for the third time, the physical conditions of the sediment were

likely causing substandard recovery. In such cases, professional judgment was used to determine whether to accept the core or to offset it by a greater distance and redeploy it. The 11 proposed locations were refused due to the type of substrate encountered (i.e., rocks and gravel). Additionally, five proposed surface grab sample locations were refused due to the type of substrate encountered (i.e., rocks and gravel).

3.3 PHYSICAL AND CHEMICAL ANALYSES

3.3.1 Sediment Chemistry Protocols

A total of 161 sediment samples (151 FNC locations, 7 duplicates, and 3 reference locations) were analyzed by CAS for the chemistry parameters listed in Table 2. Analytical methods are listed for each compound or compound group with additional method and QA information provided in Appendix B.

The overall data quality objectives (DQOs) for collection and chemical testing of sediment samples were met, as set forth in the SAP (Hart Crowser 2003), and the data for this project are acceptable for use as qualified. The Chemical Data Quality Review Report is presented in Appendix B. The laboratory certificates for physical and chemical analysis are provided in Volume II.

3.3.2 Physical Analysis

All 158 sediment samples from the FNC were analyzed for grain size (ASTM D422M), total volatile solids (EPA 160.4M), and total solids (EPA 160.3M and PSEP).

3.3.3 Chemical Analysis

All 158 sediment samples from the FNC and the 3 reference sediment samples were analyzed for the following DMEF constituents:

- Conventionals (including ammonia as nitrogen [EPA 350.1M], total sulfide [EPA SW-846 9030M], and TOC [Puget Sound Estuarine Protocol]);
- Metals (Al, Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, and Zn) (EPA SW-846 6010B, 6020, 7471A, 7742);
- Butyltins in filtered porewater (Krone) (WR-PG-26 was not analyzed for porewater TBT due to an insufficient amount of porewater collected);
- Total petroleum hydrocarbons (TPHs) (including gasoline [NWTPH-Gx] and #2 diesel and motor oil [NWTPH-Dx]) (WR-PG-12 was not analyzed for gasoline due to an insufficient amount of sediment allotted for this analysis);
- Semivolatile organics (SVOCs) (including polycyclic aromatic hydrocarbons [PAHs], phenols, selected chlorinated hydrocarbons and miscellaneous compounds, and phthalates) (EPA SW-846 8270C and 8151M);

- Pesticides (EPA SW-846 8081A); and
- Polychlorinated biphenyls (PCBs) (EPA SW-846 8082).

Additionally, the following chemical analytes were analyzed at select locations:

- Chlorinated herbicides (EPA SW-846 8151A) (10 locations including the 3 reference locations);
- Dioxin/furans (EPA 1613) (13 locations including the 3 reference locations);
- Butyltins in dry weight (Krone) (11 locations including the 3 reference locations); and
- VOCs (EPA SW-846 8260B) (21 locations including the 3 reference locations).

Additional sediment was required for laboratory quality assurance (QA) samples (i.e., field duplicates). Field duplicates were collected periodically throughout the sampling program at a frequency of 1 per 20 field samples. A total of 7 field duplicates were collected during the sediment sampling program. The field duplicate locations and other QA samples are discussed in further detail in Volume II.

4. PHYSICAL CHARACTERISTICS

4.1 GRAIN SIZE

The following section describes the material in terms of fine material (less than 62.5 µm) consisting of silts and clays, or coarse material (greater than 62.5 µm) consisting of sands and gravels. Samples were also analyzed for TOC and total volatile solids (TVS), which tend to increase as the percentage of fines increases. Organic matter has a high affinity for fine-grained sediment because of the adsorption onto mineral surfaces. Grain size results are presented in Table 5.

4.1.1 Reference Locations

Reference stations WR-PG-01-Ref and WR-PG-02-Ref consisted of a greater percentage of coarse material (i.e., silty sands), and WR-PG-03-Ref consisted of mostly fine material (silt with sand). The TOC and TVS were highest in the silt sample, WR-PG-03-Ref.

4.1.2 WRM 0 to 3

Sample locations on the east side of the FNC from WRM 0 to 3 are predominantly fine material (clayey silts or clayey sandy silt) with TOC ranging from 1.9 to 2.9 percent and TVS ranging from 6.7 to 9.2 percent, both increasing with increasing percent fines.

Sample locations located on the west side of the FNC from WRM 0 to 3 are predominantly silts, but contained more coarse material (sandy silt) than sample locations on the east side. West side sample locations also had lower TOC (average of 1.5 percent) and TVS (average 5.6 percent) than those sample locations on the east side.

4.1.3 WRM 3 to 6

Sample locations located on the east side of the FNC between WRM 3 and 6 are predominantly clayey, sandy silts in both the surface and subsurface samples, moving more to a coarse, silty sand at surface locations WR-PG-21 and 23 and subsurface location WR-VC-23. A gravelly sand was encountered at surface location WR-PG-27. This area (near MarCom Marine) is considered quite gravelly; four proposed locations (three subsurface and one surface) were rejected due to equipment refusal. TOC ranged from 0.67 to 2.5 percent, with the maximum 2.5 percent in silty sand at surface location WR-PG-23. TVS ranged from 2.2 to 8.2 percent, with the maximum occurring in clayey silt at surface station WR-PG-11.

Surface locations on the west side of the FNC between WRM 3 and 6 are predominantly clayey, sandy silt. The physical characteristic at surface location WR-PG-26 is primarily sand; surface location WR-PG-36 is silty sand; and surface location WR-PG-42 is gravelly, silty sand. Subsurface samples are predominantly sandy, clayey silt, with two subsurface locations (WR-VC-20 and 30) consisting of sandy, silty clay. TOC ranged from 0.2 to 3.2 percent with the maximum at subsurface location WR-VC-22. TVS ranged from 0.9 to 11 percent with the maximum at surface location

WR-PG-18. The minimums for both TOC and TVS occurred at surface location WR-PG-26, consisting primarily of sand with some gravel.

4.1.4 WRM 6 to 8

Sample locations on the east side of the FNC between WRM 6 and 8 consisted of fine material; sandy, clayey silt at the surface; and sandy, silty clay in the subsurface. TOC averaged 2.4 percent and TVS averaged 8.1 percent.

Sample locations on the west side of the FNC between WRM 6 and 8 consisted of fine material (clayey, sandy silt) with some coarse material (silty sand) at both surface and subsurface locations WR-PG-58 and WR-VC-58, respectively. Surface location WR-PG-60 consists of a clayey, sandy silt with gravel, and subsurface location WR-VC-60 consisted of clayey, silty sand with gravel. TOC ranged from 0.3 to 3.4 percent with the maximum in subsurface location WR-VC-50. TVS ranged from 3.2 to 9.5 percent with the maximum in subsurface location WR-VC-74.

4.1.5 WRM 8 to 10

Sample locations at the FNC between WRM 8 and 10 consisted mostly of sandy, silt at the surface, with some silty sands at two surface locations (WR-PG-33 and 41). Subsurface material consisted of silty sand at two locations (WR-VC-33 and 37) and silty, sandy clay at four subsurface locations (WR-VC-39, 41, 43, and 45). TOC ranged from 0.9 to 2 percent, and TVS ranged from 2.5 to 7.8 percent with the maximums of TOC and TVS at surface location WR-PG-43.

Sample locations on the west side of the FNC between WRM 8 and 10 consisted primarily of sandy silt at the surface with some clayey silt at surface locations WR-PG-86 and 88. TOC ranged from 1.6 to 3.5 percent and TVS ranged from 6.5 to 11 percent, with the maximums of TOC and TVS occurring at surface location WR-PG-100.

4.1.6 WRM 10 to 12

Sample locations on the east side of the FNC between WRM 10 and 12 consisted primarily of sandy silt in the surface with one surface location consisting of silty sand (WR-PG-63). Subsurface physical characteristics consisted of clayey sand (WR-VC-47, 53, 55, and 59) or a greater percentage of fines such as a silty, sandy clay (WR-VC-49, 51, 57, and 61). TOC ranged from 1.3 to 2.2 percent, and TVS ranged from 4.8 to 7.6 percent, with the maximums for both analytes occurring at surface location WR-PG-47.

Sample locations on the west side of the FNC between WRM 10 and 12 consisted primarily of sandy silts with patches of coarser material such as silty sand at four surface locations (WR-PG-108, 126, 130, and 134). Subsurface locations consisted primarily of clayey sand or sandy clay. TOC ranged from 0.7 to 3.6 percent, and TVS ranged from 2.7 to 10.8 percent, with the maximums for TOC and TVS occurring at surface location WR-PG-120.

5. NATURE AND EXTENT OF DETECTED CHEMICALS

5.1 SEDIMENT CHEMISTRY RESULTS AND COMPARISON TO DMEF SCREENING CRITERIA

This section discusses the results of chemical analyses performed on surface sediment grabs and subsurface sediment cores collected in April/May 2005.

Chemical concentrations detected in the 82 surface (including the 3 reference samples) and 72 core sediment samples are presented in Tables 6 through 19. Each table presents an individual analyte group by project WRM for both surface and subsurface samples. The results were compared to the DMEF screening criteria (Screening Levels [SLs] and Maximum Levels [MLs]). These screening criteria were developed to characterize dredged material for suitability for unconfined, open-water disposal. The SL values provide a regulatory benchmark by identifying sediments that would be suitable for open-water disposal, if constituent concentrations are below the SLs no impacts to benthic organisms are predicted. The ML values identify sediments that have always been found to cause adverse effects on benthic organisms. A third chemical screen, the Bioaccumulation Trigger (BT) has been determined for some chemicals of concern. When the BT is exceeded, bioaccumulation testing is required to determine whether dredge material is suitable for unconfined, open-water disposal. Sediment chemical results are tabulated and compared to DMEF SLs, MLs, and BTs. These comparison results are discussed below. Figures 9 through 14 present the sample locations and sediment chemical results that exceed DMEF SLs.

5.1.1 Conventionals

Analytical results for conventionals are presented in Table 6. Conventionals include total solids, TVS, ammonia, total sulfide, and TOC. Total solids are the organic and inorganic materials remaining after a sample has been completely dried. This variable is used to convert sediment concentrations of substances from wet weight to dry weight basis. The minimum and maximum percentages for total solids are 28.2 and 79.4, respectively. The average percentage for total solids is 50.3.

TVS represents the fraction of the total solids that are lost on ignition at a higher temperature than that used to determine total solids. TVS is used as a crude estimate of the percentage of organic matter present in a given sample. The minimum and maximum percentages for TVS are 0.91 and 11, respectively. The average percentage for TVS is 7.1.

Ammonia is a naturally occurring toxicant found in anoxic sediments. The toxicity of aqueous ammonia is primarily attributed to the un-ionized form. The minimum and maximum concentrations for ammonia detected in FNC sediments are 2 and 775 mg/kg, respectively. The average concentration for ammonia is 225.2 mg/kg.

Total sediment sulfides represent the amount of acid-soluble hydrogen disulfide, hydrosulfide, and sulfide ions in a sample. Sediment sulfides are measured because they have been implicated as a source of toxicity to benthic organisms (Burgess et al., 1993) and also influence the bioavailability of metals in sediments (DiToro et al., 1990). The minimum and maximum concentrations for total sulfide detected in FNC sediments are 0.2 and 355 mg/kg, respectively. The average concentration for total sulfide is 17.6 mg/kg.

TOC is a measure of the total amount of non-volatile, volatile, partially volatile, and particulate organic compounds in a sample. The minimum and maximum percentages for both surface and subsurface TOC are 0.21 and 3.63, respectively. The average percentage for TOC in both surface and subsurface samples is 2.1. The minimum and maximum percentages for subsurface TOC are 0.28 and 3.36, respectively. The average percentage for TOC in subsurface samples is 1.8.

5.1.2 Metals

Analytical results for metals in surface and subsurface samples are presented in Table 7.

5.1.2.1 Surface

Analytical results for metals were below DMEF SLs at all 82 surface sediment locations.

5.1.2.2 Subsurface

Analytical results for metals were below DMEF SLs at most core locations. Two core locations on the west side of the FNC between WRM 10 and 12 exceeded DMEF SLs: WR-VC-110 exceeded DMEF SLs for mercury and copper, and WR-VC-106 exceeded DMEF SL for mercury.

5.1.3 Butyltins

Analytical results for butyltins in surface and subsurface samples are presented in Table 8. Porewater butyltins were analyzed in all sediment samples collected, with the exception to surface sample WR-PG-26 due to an insufficient amount of interstitial water available. Additionally, eight surface sediment locations (WR-PG-17, 19, 21, 23, 27, 29, 42, and 48) were analyzed for bulk butyltins to support the LWG study. Bulk butyltins (in dry weight) were analyzed in the three reference locations.

5.1.3.1 Surface

The DMEF SL and BT are the same value (0.15 µg/L) for porewater TBT. Analytical results for porewater TBT in most surface sediment locations were below the DMEF SL and BT. The only two surface locations that exceeded the DMEF SL and BT were WR-PG-50 and WR-PG-52, located on the west side of the FNC between WRMs 6 and 8 (Figures 11 and 12).

5.1.3.2 Subsurface

There were 25 core locations with concentrations above the DMEF SL and BT. Nine locations on the east side of the FNC between WRMs 3 and 6 (WR-VC-05, 07, 09, 11, 13, 15, 23, 29, 31)

exceeded the DMEF SL and BT, and eight core locations on the west side of the FNC between WRMs 3 and 6 (WR-VC-08, 18, 26, 28, 30, 32, 34, 36) exceeded the DMEF SL and BT (Figures 10 and 11).

Two core locations on the east side of the FNC between WRMs 6 and 8 (WR-VC-29 and 31) exceeded the DMEF SL and BT and six core locations on the west side of the FNC between WRMs 6 and 8 (WR-VC-62, 64, 66, 68, 70, 72) exceeded the DMEF SL and BT (Figure 12). Core location WR-VC-62 detected the highest concentration (1.2 µg/L) of porewater TBT.

5.1.4 Semivolatile Organic Compounds (SVOCs)

Analytical results for SVOCs in surface and subsurface samples are presented in Table 9.

5.1.4.1 Surface

Analytical results for SVOCs were below DMEF SLs at all surface locations.

5.1.4.2 Subsurface

Eight core locations detected SVOCs above DMEF SLs, four of which detected concentrations of SVOCs above the DMEF MLs. Three cores located on the west side of the FNC between WRMs 4 and 6 detected benzoic acid above the DMEF SL (WR-VC-18, 22, and 32) (Figures 10 and 11). Additionally, two of those cores (WR-VC-18 and 32) detected benzoic acid concentrations above the DMEF ML.

Cores located on the west side of the FNC between WRMs 6 and 8 detected 1,2-dichlorobenzene above the DMEF SL (WR-VC-58 and 60), benzoic acid above the DMEF SL (WR-VC-64 and 70) and 1,4-dichlorobenzene above the DMEF SL (WR-VC-60) (Figure 12). Additionally, WR-VC-70 detected benzoic acid above the DMEF ML and WR-VC-60 detected 1,4-dichlorobenzene above the ML.

Core location WR-VC-110 located on the west side of the FNC between WRMs 10 and 12 detected N-nitrosodiphenylamine and bis(2-ethylhexyl)phthalate above their respective DMEF SLs (Figure 14).

5.1.5 Polycyclic Aromatic Hydrocarbons (PAHs)

Analytical results for PAHs in surface and subsurface samples are presented in Table 10.

Twelve out of 79 surface locations and 7 out of 95 core locations contained one or more PAH compounds above DMEF SLs. The majority of the exceedances occurred on the west side of the FNC between WRM 6 and 7 (Figures 11 and 12).

5.1.5.1 Surface

A summary of DMEF SL exceedances for PAHs are presented in Table 11. The highest level of LPAHs detected in surface samples was measured in WR-PG-50, and the highest level of HPAHs detected in surface samples was WR-PG-42 (Figure 12).

5.1.5.2 Subsurface

A summary of DMEF SL exceedances for PAHs are presented in Table 11. The highest levels of LPAHs and HPAHs detected in subsurface samples were measured in WR-PG-50 (Figure 12).

5.1.6 Pesticides

Analytical results for pesticides in surface and subsurface samples are presented in Table 12. The DMEF reports an SL, ML and BT for total DDT, which is the sum of 4,4'-DDE, 4,4'-DDT, and 4,4'-DDD. Total DDT was calculated by summing the detected concentrations only. If 4,4'-DDE, 4,4'-DDT, and 4,4'-DDD results were non-detect, then the total DDT concentration reported is the highest individual detection limit.

5.1.6.1 Surface

Almost half of the surface sample locations (34 out of 79) detected total DDT above the DMEF SL. Of these 34 surface locations, nine detected total DDT above the DMEF ML.

One surface sample location (WR-PG-04) located on the west side of the FNC between WRMs 0 and 3 detected total DDT above the DMEF SL (Figure 10).

Surface locations WR-PG-13, 15, 21, 23, and 27 located on the east side of the FNC between WRMs 4 and 6 detected total DDT above the DMEF SL (Figure 11). WR-PG-12, 14, 16, 18, 22, 24, 30, 34, 36, and 48 located on the west side of the FNC between WRMs 4 and 6 detected total DDT above the DMEF SL (Figure 11). Additionally, WR-PG-16 detected chlordane above its respective DMEF SL.

Surface locations WR-PG-50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, and 74 located on the west side of the FNC and WR-PG-63 located on the east side of the FNC between WRMs 6 and 8 detected total DDT above the DMEF SL (Figures 11 and 12). Additionally, WR-PG-50, 54, 56, 58, 64, 66, 68, 70, and 72 exceeded the DMEF ML for total DDT.

Surface locations WR-PG-104, 108, and 112 located on the west side of the FNC between WRMs 10 and 12 detected total DDT above the DMEF SL (Figures 13 and 14) .

5.1.6.2 Subsurface

Fifty-three out of 72 core locations (74 percent) detected total DDT above the DMEF SL. Of these 53 detections, three core locations located on the west side of the FNC (WR-VC-62, 64, and 110) detected total DDT above the DMEF BT, and 8 core locations (WR-VC-28, 50, 56, 58, 66, 68, 70, and 108) located on the west side of the FNC detected total DDT above the DMEF ML. Sample location WR-VC-28 located near WRM 5 detected the highest total DDT concentration (1,226 µg/kg) in any sediment sample (Figure 11).

5.1.7 Polychlorinated Biphenyls (PCBs)

Analytical results for PCBs in surface and subsurface samples are presented in Tables 13 and 14. Table 13 presents the PCB results compared to the DMEF SL and ML. The DMEF reports an SL, ML

and BT for total PCBs, which is the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254, and 1260. Total PCBs were calculated by summing detected concentrations only. If all Aroclor results were non-detect, then the total PCB concentration reported is the highest individual detection limit. Table 14 presents the PCB TOC normalized concentrations compared to the DMEF BT. The DMEF BT, 38, is expressed in mg/kg (TOC normalized). Additionally, PCB Aroclors 1262 and 1268, which are not required by the DMEF, were analyzed in every sediment sample to support the LWG study. No detections of PCB Aroclors 1262 and/or 1268 were reported.

5.1.7.1 Surface

Two surface locations (WR-PG-23 and 27) located on the east side of the FNC detected total PCBs above the DMEF SL (Figure 11).

One surface location (WR-PG-60) located on the west side of the FNC near WRM 7 detected total PCBs above the DMEF SL (Figure 12).

One surface location (WR-PG-63) located on the east side of the FNC and WR-PG-106 located on the west side of the FNC between WRMs 10 to 12 detected total PCBs above the DMEF SL (Figure 14).

5.1.7.2 Subsurface

One subsurface location (WR-VC-12) located on the west side of the FNC near WRM 4 detected total PCBs above the DMEF SL (Figure 10).

Three subsurface locations (WR-VC-50, 52, and 54) located on the west side of the FNC between WRMs 6 to 7 detected total PCBs above the DMEF SL (Figures 11 and 12).

Four subsurface locations (WR-VC-49, 51, 55, and 59) located on the east side of the FNC and four subsurface locations (WR-VC-106, 108, 110, and 132) located on the west side of the FNC between WRMs 10 to 12 detected total PCBs above the DMEF SL (Figure 14). Additionally, WR-VC-106, 108, and 110 exceeded the DMEF BT for total PCBs.

5.1.8 Phenols

Analytical results for phenols in surface and subsurface samples are presented in Table 15. Pentachlorophenol is the only phenol that currently has an established DMEF SL, ML, and BT. No detected concentrations of pentachlorophenol were above the DMEF SL.

5.1.9 Chlorinated Herbicides

Analytical results for chlorinated herbicides in surface and subsurface samples are presented in Table 16. There are currently no DMEF screening criteria established for chlorinated herbicides. At the request of the LWG, one surface location (WR-PG-06) located on the east side of the FNC near WRM 4 and six locations (four surface and two subsurface) on the west side of the FNC between WRMs 6 to 8 were analyzed for chlorinated herbicides. Additionally, chlorinated herbicides were analyzed in the three reference locations.

Dalapon was detected in three locations, with WR-PG-01-Ref detecting the highest concentration. MCPP was detected at surface location WR-PG-58 (Figure 12). No other chlorinated herbicides were detected in any sample.

5.1.10 Dioxins/Furans

Analytical results for dioxins/furans in surface samples are presented in Table 17. There are currently no DMEF screening criteria established for dioxins/furans. At the request of the LWG, one surface location (WR-PG-36) located on the west side of the FNC near WRM 5 and nine surface locations (WR-PG-56, 58, 60, 62, 64, 66, 68, 70, and 72) on the west side of the FNC between WRMs 6 to 8 were analyzed for dioxins/furans. Additionally, dioxins/furans were analyzed in the three reference locations. The dioxin isomer 2,3,7,8-Tetrachlorodibenzo-p-dioxin (or 2,3,7,8-TCDD), considered to be the most toxic dioxin, was detected in 3 out of 13 surface samples analyzed. The three locations (WR-PG-56, 58, and 60) are located on the west side of the FNC near WRM 7.

5.1.11 Volatile Organic Carbons (VOCs)

Analytical results for VOCs in surface and subsurface samples are presented in Table 18. There are currently no DMEF screening criteria established for VOCs. At the request of the LWG, two surface locations (WR-PG-14 and 42) located on the west side of the FNC between WRMs 4 to 6, 13 surface locations (WR-PG-56, 58, 60, 62, 64, 66, 68, 70, 72, and 74) on the west side of the FNC between WRMs 6 to 8, and three surface locations (WR-PG-84, 86, and 88) located on the west side of the FNC between WRMs 8 to 10 were analyzed for VOCs. Additionally, VOCs were analyzed in the three reference locations.

5.1.12 Total Petroleum Hydrocarbons (TPHs)

Analytical results for TPHs in surface and subsurface samples are presented in Table 19. TPHs were analyzed in all sediment samples collected as this is a contaminant of concern in the Portland Harbor. There are currently no DMEF screening criteria established for TPHs. Surface sample location WR-PG-12 was not analyzed for gasoline due to an insufficient amount of sediment allotted for this analysis. The highest detected TPH concentrations were reported on the west side of the FNC between WRMs 6 and 8.

5.2 SEDIMENT CHEMISTRY DISCUSSION

In general, sediments in the FNC and adjacent surface sediments had elevated concentrations of PCB Aroclors, SVOCs (primarily PAHs), porewater TBT, and pesticides (e.g., DDT and degradation products). Tables 7 through 19 present summary tables of all chemical and physical testing results by individual analyte group. Tables 20 through 22 present a statistical summary of these chemicals detected in both surface and subsurface samples and DMEF SL exceedances.

PCB compounds are environmentally persistent and have a strong tendency to accumulate in aquatic sediments and in tissues of aquatic organisms. The higher chlorinated biphenyls (Aroclors 1254 and 1260), which are resistant to biodegradation, were detected at high percentages throughout the

FNC, whereas the mono-, di-, and trichlorinated biphenyls (the primary composition of Aroclor-1016, 1221, and 1232), which biodegrade relatively rapidly, were not detected in any sample. Total PCBs were detected in 140 of the 154 samples (91 percent) analyzed for PCBs (Table 20). Total PCBs exceeded the DMEF SL in 4 out of 82 surface samples (5 percent) and 10 out of 72 subsurface samples (14 percent) (Tables 21 and 22). The majority of DMEF SL exceedances for total PCBs are located between WRMs 10 to 12 on both the east and west sides of the FNC.

PAHs are the major components of creosote, road tars, and incomplete combustion of petroleum hydrocarbons (e.g., waste oils). Their chemical, physical, and biological properties vary with their molecular weight and structure. Solubility generally decreases with increasing molecular weight. The less soluble a PAH compound, the more likely it is to remain in the sediment. Both LPAHs and HPAHs were detected at high percentages (94 percent or greater) throughout the FNC (Table 20). LPAHs exceeded the DMEF SL in 4 out of 82 surface samples (5 percent) and 6 out of 72 subsurface samples (8 percent) and HPAHs exceeded the DMEF SL in 7 out of 82 surface samples (9 percent) and 5 out of 72 subsurface samples (7 percent) (Tables 21 and 22). The majority of DMEF SL and ML exceedances are located on the west side of the FNC between WRMs 5 to 7.

Butyltins have been widely used as an antifoulant in marine paints, typically found in marinas, ship repair facilities, and navigation channels. Butyltins exist in several forms and are released to the aquatic environment in several different ways. Several factors, including organic carbon in sediment and water, pH, clay fractions, and the presence of iron oxides is known to affect its toxicity. The analysis of interstitial water (i.e., porewater) for the presence of butyltins is considered an effective way to measure its potential for impact in the aquatic environment. TBT is considered the most toxic of the butyltins. Porewater TBT was detected in 143 out of 153 samples (93 percent) analyzed for butyltins (Table 20). Porewater TBT exceeded the DMEF SL and BT in 2 out of 81 surface samples (2 percent) and 23 out of 72 subsurface samples (32 percent) (Tables 21 and 22). The majority of DMEF SL and BT exceedances are located between WRMs 3 to 6 and WRMs 7 to 8 on both the east and west sides of the FNC.

Dichlorodiphenyltrichloroethane (DDT) is the common name for the pesticide of which 4,4'-DDT is the predominant component. DDT may also contain up to 30 percent of the 2,4'-DDT isomer. DDD is also a pesticide. The technical grade of DDD contains related compounds in small amounts, with 4,4'-DDD being one of the isomers. The compound 4,4'-dichlorodiphenyl-dichloroethene (4,4'-DDE) is an impurity and degradation product of DDT. The sum of these isomers represents total DDT. These isomers were detected at high percentages throughout the FNC (Table 20). Total DDT exceeded the DMEF SL in 33 out of 82 surface samples (40 percent) and 53 out of 72 subsurface samples (74 percent) (Tables 21 and 22). The majority of DMEF SL exceedances are located between WRMs 3 to 6 and WRMs 10 to 12 on both the east and west sides of the FNC, and located on the west side of the FNC between WRMs 6 to 8.

6. BIOLOGICAL AND BIOACCUMULATION TESTING

Bioassay testing was conducted on 25 select locations. Although more than 25 sediment sample locations exceeded one or more DMEF SL, it was determined that for purposes of this sediment characterization project, bioassay testing would only be conducted on a limited number of locations. The rationale for this approach is that supplementary sediment testing within the FNC will likely be conducted to further delineate any proposed dredge prism(s) prior to any future dredging activities. Therefore, the bioassay testing objective was to identify 25 locations spatially located throughout the FNC that has exceedances of multiple DMEF SLs at varying ranges of detections. The 25 bioassay sample locations were chosen based on a review of the preliminary sediment chemical results for all samples collected. The goal was to select 25 locations that had a range of chemicals with varying concentrations of the following chemicals: total PCBs, total DDT, porewater TBT, chlordane, mercury, and to a lesser extent, PAHs.

The SAP proposed that a sufficient volume of sediment from each surface and subsurface sediment sample location be collected to conduct potential bioaccumulation testing. However, it was determined that it was not feasible (due to sediment storage capacity concerns and sediment holding times) to collect the required volume of sediment (approximately 30 gallons) from each sample location for possible bioaccumulation testing. Although several sediment sample locations exceeded one or more DMEF BT, it was determined that for purposes of this sediment characterization project, Tetra Tech would collect a sufficient volume of sediment from 10 subsurface sediment locations for bioaccumulation testing. The rationale for this approach is that supplementary sediment testing within the FNC will likely be conducted to further delineate any proposed dredge prism(s) prior to any future dredging activities. Therefore, the bioaccumulation testing objective was to identify 10 locations spatially located throughout the FNC that has exceedances of multiple DMEF BTs at varying ranges of detections. The 10 subsurface sample locations were chosen based on a review of preliminary sediment data collected by the LWG in November 2004. The objective was to identify 10 LWG sample locations that had elevated detections of bioaccumulative chemicals of concern (BCOCs) (e.g., metals, total PCBs, total DDT, TBT, and to a lesser extent, PAHs), and collocate these locations with 10 FNC subsurface locations. Figures 15 through 19 present the bioassay and bioaccumulation locations selected for Tier III biological testing. Tier III bioassay and bioaccumulation testing was conducted and interpreted in accordance with DMEF guidance (USACE et. al. 1998).

6.1 DATA QUALITY REVIEW

Data quality reviews of the sediment bioassay and bioaccumulation tests were conducted to ensure the results of the sediment bioassay and bioaccumulation tests were of sufficient quality for use in this FNC sediment characterization study. The bioassay and bioaccumulation data quality reviews and reports from NAS are included as Volume III of this report.

Reference sediment is defined in the DMEF as follows: "A whole sediment used to assess sediment conditions that is similar as practicable to the grain size and TOC of the dredged material but is free of contamination." As discussed in Section 3.2.4, the target ranges for grain size of the reference sediments collected for bioassay testing were defined as fine-grained (70 to 80 percent fines), medium-grained (50 to 60 percent fines), and coarse-grained (2 to 10 percent fines). Percent fines are defined as the material that passes through the No. 230 sieve (i.e., less than 62.5 µm) as defined in the DMEF (Corps et al., 1998).

The results of the grain size testing for reference and FNC sediment samples that were selected for bioassay testing are presented in Table 23. WR-PG-01-Ref was characterized as 14.3 percent fines, WR-PG-02-Ref was characterized as 16.1 percent fines, and WR-PG-03-Ref was characterized as 57.7 percent fines.

The 25 sediment samples selected for bioassay testing had grain size characteristics ranging from 28.9 percent to 95.8 percent fines. The average grain size characteristic for the 25 sediment samples is 73.9 percent fines. It was determined that the grain size of WR-PG-03-Ref was as similar as practicable (percent fines and TOC) to the selected bioassay samples and, therefore, used for bioassay data interpretation. The reference sediment, WR-PG-03-Ref, tested in the sediment bioassay testing program met required performance criteria and was suitable for use in this study.

The conclusion of the bioassay data quality review is that all bioassay data are of acceptable quality and are fully usable for the purposes of this dredge material characterization study (Volume III).

6.2 BIOASSAY TESTING

Table 23 presents the 25 sediment sample locations selected for bioassay testing with their corresponding grain size characteristics, TOC, and TVS percentages. The following three bioassay tests were conducted on 25 sediment samples (6 surface samples and 19 subsurface samples) and one reference sample (WR-PG-03-Ref) for purposes of this DMMP sediment characterization study:

- 10-Day Amphipod Survival Test (*H. azteca*);
- 10-Day Midge Survival Test *(C. tentans*); and
- 10-Day Midge Growth Test *(C. tentans*).

The bioassay testing locations are presented in Figures 15 through 19. The freshwater sediment toxicity tests were conducted in three separate phases. The three test phases were conducted on the following dates:

- June 24 through July 4, 2005 (4 test sediments and 1 reference sediment);
- July 1 through July 11, 2005 (6 test sediments and 1 reference sediment); and
- August 16 through August 26, 2005 (15 test sediments and 1 reference sediment).

These freshwater sediment toxicity tests were conducted in accordance with available standard guidance (EPA 2000; ASTM 1995) and the laboratory protocol presented in the SAP (Hart Crowser

2003). Volume III contains the Bioassay Validation Report and Laboratory Certificates submitted by NAS.

6.2.1 Bioassay Testing Interpretive Criteria

The sediment bioassay results were interpreted in accordance with the DMEF guidance as presented in the SAP (Hart Crowser 2003). The response of bioassay organisms exposed to a test sediment is compared to the response of these organisms in both control and reference sediments. This comparison determines if the test sediment sample has passed or failed the sediment bioassays.

Biological test interpretation relies on two levels of observed response in the test organism. These are known as "one-hit" and "two-hit" criteria failures. The bioassay-specific guidelines for each of these response categories are listed below (see Section 6.2.1.1). In general, a one-hit failure is a marked response in any one biological test. A marked response in comparison to the reference sediment in any one of the three sediment bioassays will result in the test sediment failing bioassay analyses. A two-hit failure exhibits a lower intensity response, which must be present in two or more biological tests for the test sediment to fail bioassay analyses.

6.2.1.1 One-Hit Criteria

When any one of the three biological tests shows a test sediment response relative to the reference sediment that exceeds the bioassay-specific response guidelines (presented below), and if that response is statistically different from the reference, the test sediment is judged to have failed the bioassay.

In accordance with the DMEF, the bioassay-specific response guidelines for evaluating the one-hit criteria are as follows.

Amphipod Survival Bioassay: Mean test mortality is greater than 15 percent over the mean reference response and is statistically different from the reference (alpha = 0.05).

Midge Survival Bioassay: Mean mortality in the test sediment is 20 percent over reference and statistically different from reference (alpha = 0.05).

Midge Growth Bioassay: For the growth test, a mean biomass is achieved that is less than 60 percent of the reference sediment response and statistically different from the reference (alpha = 0.05).

6.2.1.2 Two-Hit Criteria

When any two of the three biological tests show test sediment responses that are less than the bioassay-specific guidelines noted above for a one-hit failure, but are statistically significantly different from the reference sediment, the test sediment is judged to have failed the bioassay.

6.2.2 Interpretation of Bioassay Results

The results of the acute amphipod and midge bioassays are presented in Tables 24 through 32. These tables list the sediment samples tested, the corresponding reference sediment sample (WR-

PG-03-REF based on similar grain size and TOC), the test endpoint, comparison with the one-hit and two-hit interpretative criteria, and the overall results of whether the test sediment passed or failed the biological effects interpretive criteria.

6.2.2.1 Amphipod Bioassay Results

The mean percent mortality in the test sediments for the 10-day amphipod bioassay (*H. azteca*) ranged from 0 to 11.3 percent in the bioassays (Tables 24, 27, and 30). All 25 test sediments passed the one-hit criteria, but sample WR-VC-12 was determined to have statistically greater mortality than the corresponding reference sediment (two-hit criteria).

6.2.2.2 Midge Survival Bioassay Results

The mean percent mortality in the test sediments for the 10-day acute midge bioassay (*C. tentans*) ranged from 2.5 to 37.5 percent in the bioassays (Tables 25, 28, and 31). All 25 test sediments passed the one-hit criteria, but sample WR-VC-12 was determined to have statistically greater mortality than the corresponding reference sediment (two-hit criteria).

6.2.2.3 Midge Growth Bioassay Results

The mean test individual biomass for the 10-day chronic midge bioassay *(C. tentans)* ranged from 0.62 to 0.76 mg in the bioassays (Tables 26, 29, and 32). None of the 25 sample locations tested were considered failures under the one-hit rule for midge growth. However, 7 of the 25 test sediments (surface samples WR-PG-48 and 66 and subsurface samples WR-VC-18, 31, 46, 49 and 66) were determined to be statistically different in biomass than that of the reference sediment (two-hit criteria).

6.2.2.4 Bioassay Testing Discussion

The biological effects interpretive criteria used in this FNC sediment characterization project are based on an analysis of bioassay results. This analysis segregates responses that are markedly different from reference responses (one-hit criteria) and responses that are less than the one-hit criteria but nonetheless statistically different from reference sediment responses (two-hit criteria). As described previously, any one-hit failure in any of the bioassays will result in the interpretation that the test sediment has failed the biological effects criteria. In the absence of a one-hit failure, two of the three bioassay tests must fail the two-hit criteria before a test sediment will be determined to have failed the biological effects criteria.

All 25 of the test sediments, with the exception of WR-VC-12, were determined to have passed the biological effects criteria. WR-VC-12, located on the west side of the FNC near WRM 4, failed two of the three bioassay tests two-hit criteria. Both the amphipod and midge survival tests showed significantly greater mortality than the reference sediment (Tables 24 and 25). All water quality observations of overlying water temperature and dissolved oxygen were within the protocol-specified ranges. Both the interstitial ammonia level for WR-VC-12 (35.9 mg/L) measured in the overlying water and sediment ammonia-N (417 mg/kg) level were lower than bioassay test samples

WR-VC-49, 106, and 132, which passed the biological effects criteria. Additionally, bioassay test sample WR-VC-66 measured a higher interstitial ammonia level than WR-VC-12.

WR-VC-12 exceeded the DMEF SLs for both total DDT and PCBs (Tables 12 and 13). Of the 25 sediment bioassay samples tested, WR-VC-12 had the fifth-highest total DDT detection (26 µg/kg) and the sixth-highest total PCB detection (132 µg/kg). The other 24 sample locations tested passed the DMEF biological effects criteria. A select few of the 24 sample locations detected either total DDT or PCBs at concentrations higher than WR-VC-12; however, none of these sample locations has both total DDT and PCBs combined at concentrations higher than WR-VC-12. For example, sample location WR-VC-62 exceeded the DMEF SL for total DDT (50 µg/kg) (fourth-highest total DDT concentration), but did not exceed the DMEF SL for total PCBs (102 µg/kg) (ninth-highest total PCB concentration). Furthermore, sample location WR-VC-132 exceeded the DMEF SL for total PCBs (260 µg/kg) (third-highest total PCB concentration) and exceeded the DMEF SL for total DDT (16.9 µg/kg) (eighth-highest total DDT concentration). Therefore, this bioassay failure for WR-VC-12 suggests that the combined concentrations of both total PCBs and DDT are showing adverse biological effects.

Overall, an analysis of the concentrations of constituents detected in these 25 bioassay samples, with the exception of WR-VC-12, revealed that low to high concentrations, in some cases above the DMEF SLs (TBT, total PCBs, and total DDT) and DMEF ML (total DDT), did not result in unacceptable ecological impacts (i.e., did not fail biological interpretive criteria) to benthic organisms.

6.3 BIOACCUMULATION TESTING

Two species of benthic organisms were used for bioaccumulation testing—the oligochaete *(Lumbriculus variegates*) and the bivalve (*Corbicula fluminea*). The 28-day bioaccumulation tests were conducted in general accordance with available guidance (EPA and USACE 1998 and EPA 2000). An optional schedule of overlying water renewal (three times per week) based on the *Inland Testing Manual* (EPA and USACE 1998) was undertaken for both tests. It should be noted that no standard method currently exists for the 28-day *C. fluminea* test, and the protocol followed by NAS is included in Volume III. The results of this testing will assist in the development of a protocol for a second freshwater bioaccumulation species (*C. fluminea*).

L. variegatus is the standard freshwater bioaccumulation testing organism, but has limited tissue biomass available for analytical chemistry testing of tissue, which limits the types of chemical analysis that can be conducted on tissues at the conclusion of the standard 28-day laboratory bioaccumulation test. Therefore, for this project, the bivalve *C. fluminea* was also tested because these are larger organisms and provide greater tissue mass for chemical analysis.

Table 33 presents the 10 subsurface locations selected for bioaccumulation testing with their corresponding grain size characteristics, TOC, and TVS percentages. The 28-day bioaccumulation tests were conducted at two separate phases for each test species. The two test phases were conducted on the following dates:

- Phase I: June 8 through July 26, 2005 (5 test sediments and one negative control sediment); and
- Phase II: July 13 through August 10, 2005 (5 test sediments, one reference sediment, and one negative control sediment).

Both phases of 28-day bioaccumulation tests exposed each organism to a negative control test sediment. The negative control sediment was collected from Beaver Creek, a known clean site (free of contamination) in Newport, Oregon. Percent survival for both the *L. variegatus* and *C. fluminea* bioaccumulation tests were all greater than 90 percent. No QA/QC problems were encountered with both the *L. variegatus* and *C. fluminea* bioaccumulation tests and these tests are considered acceptable for use (Volume III).

6.3.1 Bioaccumulation Testing Tissue Chemical Analyses

The Day 0 (Test Initiation) and Day 28 (Test Completion) tissue samples were analyzed for the following constituents:

- Conventionals (including total lipids and total solids);
- Metals (Sb, As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, and Zn);
- Butyltins;
- SVOCs (including PAHs, phenols, selected chlorinated hydrocarbons and miscellaneous compounds, and phthalates);
- Pesticides; and
- PCBs (including 64 PCB congener list).

6.3.2 Bioaccumulation Testing Tissue Analytical Chemistry Results

The results of the CAS-laboratory bioaccumulation tissue results for both *L. variegatus* and *C. fluminea* are presented in Tables 34 through 37 and are discussed in further detail in the following sections.

The 28-day bioaccumulation test protocol allows for five replicates per treatment. Typically at test termination, each individual replicate is frozen and submitted to the analytical laboratory for chemical testing. While this approach is useful for providing a statistical comparison of the test sediment to the control and/or reference sample(s), the individual replicates provide limited tissue biomass to conduct chemical analyses on an entire suite of chemical constituents. For purposes of this sediment characterization project, the five replicates for each treatment were composited and homogenized to yield one tissue sample to conduct multiple chemical analyses. Additionally, the Day 0 tissue samples for both phases were composited and homogenized to yield one tissue sample per organism for chemical analyses. The compositing of the tissue samples allowed for each treatment to be analyzed for the classes of chemical constituents listed in Section 6.3.1.

This sediment characterization project compares the composited tissue residue concentration for each test sediment to the tissue residue concentration of the composited reference sediment sample. This method provides a direct comparison of tissue results to evaluate contaminant uptake for each benthic organism. Additionally, the difference in detected sediment concentrations for each constituent analyzed in the 10 bioaccumulation samples is compared to the reference sample sediment concentrations to evaluate whether differential uptake is occurring. Tables 38 through 43 present the 10 bioaccumulation samples sediment chemistry results for metals, butyltins, pesticides, PCBs, and PCBs-TOC Normalized, respectively.

Due to the result of the 28-day bioaccumulation tests being conducted in two phases, the reference sample, WR-VC-03-Ref, was only tested during Phase II. Therefore, the reference sample tissue results for Phase II are also compared to Phase I tissue results. It should be noted that both test organisms for each phase were collected from different culture broods. The two culture broods of *L. variegatus* were supplied to NAS on May 27 and July 12, 2005, by Aquatic Foods, Inc. in Fresno, CA, and both broods passed the standard 4-day toxicity screening test designed to assess survivability and possible avoidance of test sediments. The two broods of *C. fluminea* were supplied to NAS on June 1 and July 6, 2005, by Dr. Don Cherry, Virginia Polytechnic Institute and State University in Blacksburg, VA. The adult clams were collected from the Upper Clinch River, VA. As mentioned previously, no standard method currently exists for the 28-day *C. fluminea* test; therefore, the 4-day toxicity test was not conducted. However, the 28-day clam survival in the control sediment for both phases were above 96 percent indicating that the clams were of good health at test initiation.

6.3.2.1 *Lumbriculus variegatus* Bioaccumulation Tissue Analysis Results

The analytical tissue chemistry results for the Day 0, Negative Control, and Day 28 (Test Completion) tissue residue concentrations from exposure to Phase I sediment samples WR-VC-28, 29, 72, 108, and 118 are presented in Table 34, and Phase II sediment samples WR-VC-11, 46, 66, 43, and 57 are presented in Table 36.

Lipid Results. The percent lipids reported in the Day 0 sample (3.2 percent) is slightly higher than those reported in the 10 test samples (range = 1.8 to 2.4) indicating that the organisms generally remained healthy throughout the duration of the test. It should be noted that the organisms are not fed during the 28 days of exposure and must rely on organic matter present in the test sediments for nutrition.

Metals Results. The tissue concentrations of various metals were measured in Day 28 tissue for the 10 test sediments (Figures 20 through 29). The tissue burdens for metals in the 10 test sediments compared to the reference sediment tended to be mixed. The sediment concentrations for metals were elevated in the 10 test sediments compared to those observed in the reference sediment, particularly cadmium and lead (Table 38) (Note: no DMEF SL exceedances for metals were reported in any of the 10 test samples). The measured tissue concentrations for cadmium and lead in the reference sample were 0.26 and 0.82 mg/kg wet weight, respectively. The tissue ranges for cadmium and lead in the test sediments were 0.33 to 0.67 mg/kg wet weight and 0.95 to 4.1

mg/kg wet weight, respectively (Figures 22 and 25). Tissue burdens for antimony, chromium, nickel, and zinc in the 10 test sediments were generally similar compared to the reference sample tissue burdens (Figures 20, 23, 27, and 29). Conversely, both the reference and control sediments showed elevated tissue burdens for arsenic and mercury compared to the 10 test sediments (Figures 21 and 26). For the remaining metals (cadmium, copper, lead, and silver) accumulation in the 10 test sediments was generally greater than in the reference sediment (Figures 22, 24, 25, and 28).

The wet weight tissue results for the 10 test sediments and the reference sample generally show a consistent pattern that the sediments that exhibit the highest metals concentrations in sediment (WR-VC-108) is also associated with the highest metal tissue concentrations.

Butyltin Results. The tissue concentrations of butyltins were measured in Day 28 tissue for the 10 test sediments. The tissue burdens for TBT were greater in the 10 test sediments 28-day tissue compared to the reference sediment (Figure 30). The wet weight tissue results for the 10 test sediments and the reference sample show a consistent pattern that the sediments that exhibit the highest porewater TBT concentrations in sediment (WR-VC-29) is also associated with the highest TBT tissue concentrations (Table 39).

Pesticides. Total DDT (sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) in the tissue samples was calculated by summing the detected concentrations only. For the pesticide DDT and its metabolites, DDE and DDD, very low levels were detected in *L. variegatus* tissue in the Day 0 sample (total DDT = 4.92 µg/kg wet weight). Seven of the 10 test sediment samples exceeded the DMEF SL for total DDT, and three of these locations also exceeded the DMEF BT and ML (Table 40). The sediment concentration for total DDT in the reference sample was 1.43 µg/kg. The wet weight tissue results of the 10 test samples compared to the reference sample shows significantly higher tissue burdens (Figure 31). Unexpectedly, the highest detected sediment concentration, 1,226 µg/kg in WR-VC-28, had the third-highest tissue burden measured. Sample locations WR-VC-72 and WR-VC-108 both had considerably lower sediment concentrations; however, these two locations measured tissue levels considerably higher than WR-VC-28.

PCB Results. Total PCBs (sum of Aroclors 1016 through 1260) were calculated by summing detected concentrations only. If all Aroclor results were non-detect, then the total PCB concentration reported is the highest individual detection limit. The tissue burdens for total PCBs were significantly greater in the 10 test sediments 28-day tissue compared to the reference sediment (Figure 32). Total PCBs were detected in the Day 0 tissue sample (19.4 µg/kg wet weight), but not in the 28-day control or reference samples. The sediment concentration for WR-VC-28 did not detect total PCBs (Table 41). However, the tissue residue results show that WR-VC-28 detected Aroclor 1254 at 170 µg/kg wet weight (Table 34).

The DMEF SL for total PCBs was exceeded for WR-VC-57 (132 µg/kg) and WR-VC-108 (2,472 µg/kg) (Table 41). Additionally, the DMEF BT for total PCBs was exceeded for WR-VC-108 (Table 42). As expected, WR-VC-108 measured the highest total PCBs concentration in the tissue samples (Figure 32). The sediment concentration for sample location WR-VC-72 was measured at 100 µg/kg, which is slightly below the sediment concentration for WR-VC-57. However, the tissue

µg/kg, which is slightly below the sediment concentration for WR-VC-57. However, the tissue residue results show that WR-VC-72 had a slightly higher tissue burden than WR-VC-57 (278 µg/kg wet weight versus 258 µg/kg wet weight, respectively).

PCB Congeners Results. PCB congeners were not analyzed as part of the sediment chemical analysis program. The tissue analysis of PCB congeners was to support the current efforts of RSET in updating the DMEF manual and to support the ongoing LWG study.

The majority of the PCB congeners were not detected in the reference sample; however, a few low level detections were observed (Tables 34 and 36). The PCB congeners detected in the 10 test sediments were generally higher than the tissue results in the reference sediment, with exception to PCB congeners 101, 110, and 187.

SVOCs Results. Several SVOCs were measured in the tissue samples, but for purposes of this project, only the primary bioaccumulative SVOCs (fluoranthene, hexachlorobenzene, pentachlorophenol, and pyrene) are discussed in this section.

Fluoranthene was detected in the Day 0 tissue sample at 14 µg/kg wet weight. The reference sample detected fluoranthene at 4.8 µg/kg wet weight after the 28-day exposure. The tissue results of the 10 test samples compared to the reference sample shows considerably higher tissue burdens, especially in sample location WR-VC-46 (Tables 34 and 36). This was expected, as WR-VC-46 detected the highest fluoranthene concentration of the 10 test sediments, which also exceeded both the DMEF SL and BT (Table 43).

Hexachlorobenzene was not detected in any of the tissue samples (Tables 34 and 36). This was expected, as hexachlorobenzene was either non-detect or detected at very low concentrations in the test sediments (Table 43).

Pentachlorophenol was not detected in any of the tissue samples with the exception to the reference sample. This was unexpected, as pentachlorophenol was not detected in the reference sediment sample (Table 43).

Pyrene was detected in the Day 0 tissue sample at 12 µg/kg wet weight. The reference sample detected pyrene at 4.5 µg/kg wet weight after the 28-day exposure. The tissue results of the 10 test samples compared to the reference sample shows considerably higher tissue burdens, especially in sample location WR-VC-46 (Tables 34 and 36). This was expected, as WR-VC-46 detected the highest pyrene concentration of the 10 test sediments, which also exceeded both the DMEF SL and BT (Table 43).

6.3.2.2 *Corbicula fluminea* Bioaccumulation Tissue Analysis Results

The analytical tissue chemistry results for the Day 0, Negative Control, and Day 28 (Test Completion) tissue residue concentrations from exposure to Phase I sediment samples WR-VC-28, 29, 72, 108, and 118 are presented in Table 35, and Phase II sediment samples WR-VC-11, 46, 66, 43, and 57 are presented in Table 37.

throughout the duration of the test. It should be noted that the organisms are not fed during the 28-days of exposure and must rely on organic matter present in the test sediments for nutrition.

Metals Results. The tissue concentrations of various metals were measured in Day 28 tissue for the 10 test sediments (Figures 33 through 42). The sediment concentrations for metals were elevated in the 10 test sediments compared to those observed in the reference sediment, particularly cadmium and lead (Table 38) (Note: no DMEF SL exceedances for metals were reported in any of the 10 test samples). The tissue burdens for metals were generally similar or greater in the 10 test sediments 28-day tissue compared to the reference sediment with the exception of mercury and zinc (Figures 39 and 42). The measured tissue burdens for mercury and zinc in the reference sample were 0.145 and 136 mg/kg wet weight, respectively; however, the ranges for mercury and zinc in the test sediment tissues were 0.078 to 0.11 mg/kg wet weight and 111 to 139 mg/kg wet weight, respectively.

Butyltin Results. The tissue concentrations of butyltins were measured in Day 28 tissue for the 10 test sediments. The tissue burdens for TBT were greater in the 10 test sediments 28-day tissue compared to the reference sediment (Figure 43). The wet weight tissue results for the 10 test sediments and the reference sample show a consistent pattern that the sediments that exhibit the highest TBT concentrations in sediment (WR-VC-29) is also associated with the highest TBT tissue concentrations (Table 39).

Pesticides. Total DDT (sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) in the tissue samples was calculated by summing the detected concentrations only. For the pesticide DDT and its metabolites DDE and DDD, very low levels were detected in *C. fluminea* tissue in the Day 0 sample (total DDT = 2.6 µg/kg wet weight). Seven of the 10 test samples exceeded the DMEF SL for total DDT; three of these locations also exceeded the DMEF BT and ML (Table 40). The sediment concentration for total DDT in the reference sample was 3.8 µg/kg. The tissue results of the 10 test samples compared to the reference sample shows generally greater tissue burdens (Figure 44). Unexpectedly, the highest detected sediment concentration, 1,226 µg/kg, in WR-VC-28 had the third-highest tissue burden measured. Sample locations WR-VC-72 and WR-VC-66 both had considerably lower sediment concentrations; however, these two locations measured tissue levels higher than WR-VC-28.

PCB Results. Total PCBs (sum of Aroclors 1016 through 1260) were calculated by summing detected concentrations only. If all Aroclor results were non-detect, then the total PCB concentration reported is the highest individual detection limit. The tissue burdens for total PCBs were lower in the 10 test sediments 28-day tissue compared to the reference sediment (Figure 45). Total PCBs were detected in the Phase I control tissue sample (17 µg/kg wet weight), but not in the Phase II control tissue samples (not detected at 20 µg/kg wet weight) (Tables 35 and 37).

Total PCBs were detected in Day 0 and all 10 test tissue samples, but were not detected in the reference sample. Unexpectedly, all 10 test sediments, with the exception of WR-VC-28 and WR-VC-43, had detectable concentrations of Aroclor 1254 in sediment (Table 41). However, the tissue residue results for the 28-day tissue (Day 0 and all 10 test tissue samples) indicates that Aroclor

VC-43, had detectable concentrations of Aroclor 1254 in sediment (Table 41). However, the tissue residue results for the 28-day tissue (Day 0 and all 10 test tissue samples) indicates that Aroclor 1242 was the only detected Aroclor (Tables 32 and 34). This underscores the fact that differential uptake of individual PCB congeners by aquatic organisms may change the fingerprint of congeners so that the expected Aroclor mixture is not observed in the tissue.

PCB Congeners Results. PCB congeners were not analyzed as part of the sediment chemical analysis program. The majority of the PCB congeners were not detected in the reference sample. However, a few low level detections were observed (Tables 35 and 37). The PCB congeners detected in the 10 test sediments were generally higher than the tissue results in the reference sediment, with the exception to PCB congeners 101, 110, and 187.

SVOCs Results. Several SVOCs were measured in the tissue samples, but for purposes of this project, only the primary bioaccumulative SVOCs (fluoranthene, hexachlorobenzene, pentachlorophenol, and pyrene) are discussed in this section.

Fluoranthene was detected in the Day 0 tissue sample at 14 µg/kg wet weight. The reference sample detected fluoranthene at 9.4 µg/kg wet weight after the 28-day exposure. The tissue results of the 10 test samples compared to the reference sample shows considerably higher tissue burdens, especially in sample location WR-VC-46 (Tables 35 and 37). This was expected, as WR-VC-46 detected the highest fluoranthene concentration of the 10 test sediments, which also exceeded both the DMEF SL and BT (Table 43).

Hexachlorobenzene was not detected in any of the tissue samples (Tables 35 and 37). This was expected, as hexachlorobenzene was either non-detect or detected at very low concentrations in the test sediments (Table 43).

Pentachlorophenol was not detected in any of the tissue samples with the exception to the reference sample. This was unexpected, as pentachlorophenol was not detected in the reference sediment sample (Table 43).

Pyrene was detected in the Day 0 tissue sample at 4.7 µg/kg wet weight. The reference sample detected pyrene at 4.5 µg/kg wet weight after the 28-day exposure. The tissue results of the 10 test samples compared to the reference sample shows considerably higher tissue burdens, especially in sample location WR-VC-46 (Tables 35 and 37). This was expected, as WR-VC-46 detected the highest pyrene concentration of the 10 test sediments, which also exceeded both the DMEF SL and BT (Table 43).

6.3.3 Bioaccumulation Testing Discussion

The DMEF provides a non-risk-based methodology for statistically comparing tissue levels, whereas the PSDDA program's manual provides a risk-based Target Tissue Levels (TTL) of concern. The TTLs provide a risk-based tissue concentration of concern. A tissue concentration that exceeds or is not significantly less than the stated TTL is considered unsuitable for open water disposal under PSDDA. Washington State's DMMP currently identifies 31 BCOCs that are listed in Table 6-5 of the PSDDA program's User Manual (PSDDA, 2000). Similar to the DMEF, if sediment

concentrations of any of these BCOCs exceed DMEF BT levels, then there is "reason to believe" that a potential risk may be posed to human and/or ecosystem health due to the accumulation of contaminants in aquatic organisms. In such cases, the DMMP agencies, like the DMEF, require bioaccumulation testing in addition to toxicity tests in order to determine suitability for unconfined, open water disposal.

In April 2003, the EPA (for the DMMP agencies in Puget Sound) prepared an issue paper, *Revisions to the Bioaccumulative Contaminants of Concern List*. The purpose of this issue paper was to present the final BCOC list and provide an overview of the programmatic changes in dredge material testing that would occur as a result of their implementation. It should be noted that the sediment and tissue data used to develop these lists are more representative of marine and estuarine systems. Revising the DMMP's BCOC list involved creation of four separate BCOC lists. List 1 is the primary list of BCOCs, and the analysis of List 1 chemicals will be required for all sediment being tested for open water disposal effective as of the new dredging year (June 16, 2003).

For purposes of this project, the bioaccumulation testing objective was to identify 10 locations within the FNC that have exceedances of multiple DMEF BTs at varying ranges of detections. The tissue results were then compared two separate ways. First, the tissue results for the 10 test locations were compared to the reference sample tissue results to determine if BCOCs are bioaccumulating at rates greater than the reference location. Second, the tissue results for each BCOC were then compared to the PSDDA program's TTLs to determine potential dredge material suitability. The List 1 BCOCs identified in FNC sediments are metals, total PCBs, total DDT, TBT, fluoranthene, pyrene, hexachlorobenzene, and pentachlorophenol. While the majority of the BCOCs detected in the tissue of both test organisms for the 10 test sediments were generally bioaccumulating at greater tissue burdens than the tissue concentrations of the reference sediment, all of the tissue residue results were well below their respective PSDDA TTLs.

7. DISCUSSION

This sediment characterization project focused specifically on areas of the FNC that required supplemental sediment characterization activities. The locations of the sediment sampling activities were limited to shallow areas within the FNC that are subject to future dredging operations, areas that had not been previously characterized, and areas adjacent to the FNC that may act as potential sources of contamination from sloughing during normal dredging operations. In general, subsurface sediments in the FNC as well as adjacent surface sediments detected elevated concentrations of porewater TBT, pesticides (e.g., DDT and degradation products), PCB Aroclors, and SVOCs (primarily PAHs). Future characterization of the sediment may be required prior to any dredging event in areas with fine-grained sediments and areas that show contaminants above DMEF screening criteria.

Bioassay testing was conducted at 25 locations with the objective to spatially locate bioassays throughout the FNC where exceedances of multiple DMEF SLs at varying ranges were detected. The 25 test locations had a range of chemicals with varying concentrations of the following chemicals: total PCBs, total DDT, porewater TBT, chlordane, mercury, and to a lesser extent, PAHs. Overall, an analysis of the concentrations of constituents detected in these 25 bioassay samples, with the exception to WR-VC-12 (WRM 4), revealed that low to high concentrations, in some cases above the DMEF SLs (porewater TBT, total PCBs, and total DDT) and DMEF ML (total DDT), did not fail DMEF biological interpretive criteria. These results indicate that based on the survival and growth bioassay test results, unacceptable ecological impacts to benthic organisms were not observed with the exception of WR-VC-12.

Bioaccumulation testing was conducted on 10 subsurface locations with the objective to spatially locate bioaccumulation tests throughout the FNC where exceedances of multiple DMEF BTs at varying ranges were detected. The 10 test locations had a range of chemicals with varying concentrations of the following BCOCs: metals, total PCBs, total DDT, TBT, and to a lesser extent, PAHs. While the majority of the BCOCs detected in the tissue of both organisms were generally bioaccumulating at greater tissue burdens than the tissue concentrations of the reference sample, all of the tissue residue results were well below their respective PSDDA TTLs, which have been developed to determine the suitability of the test sediment.

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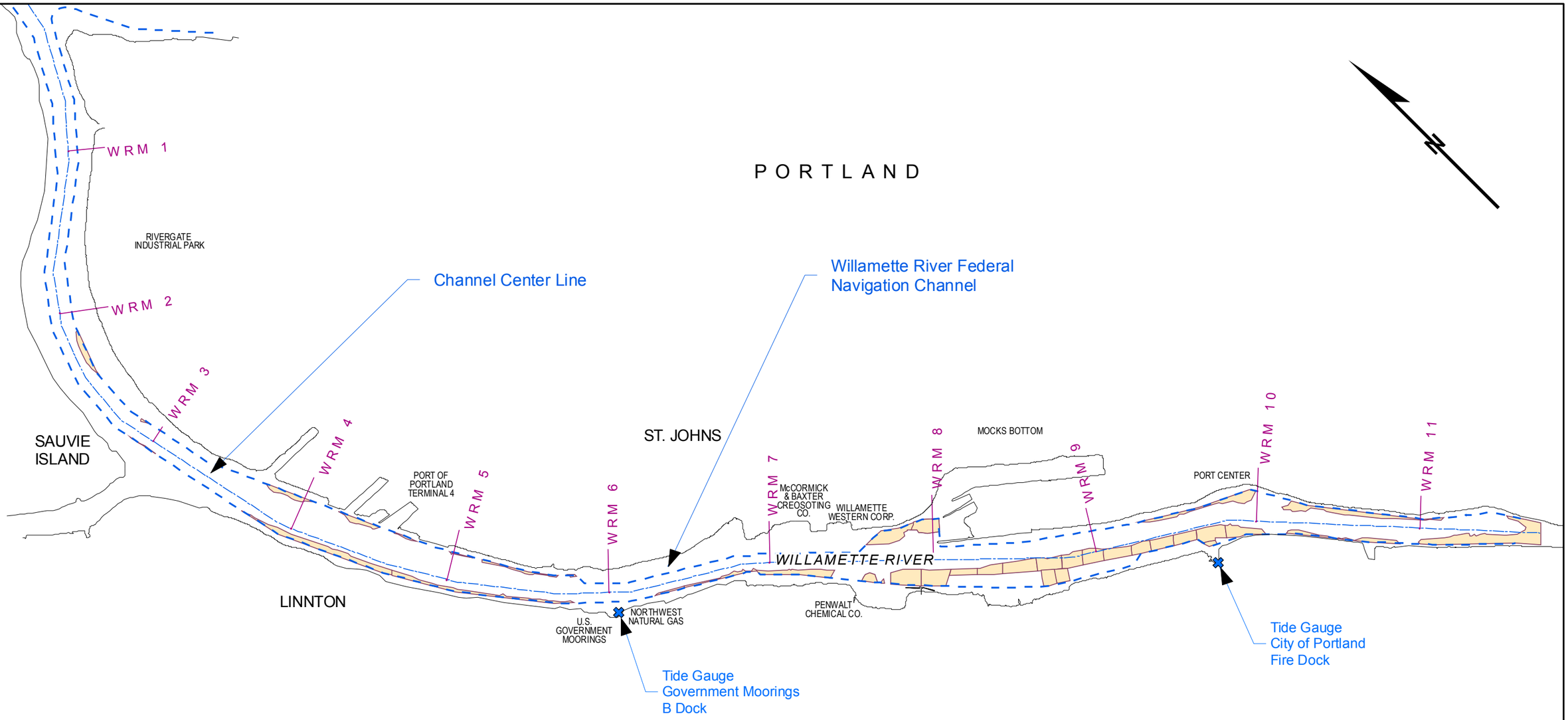


TETRA TECH EC, INC.

0 1 2 4
Miles

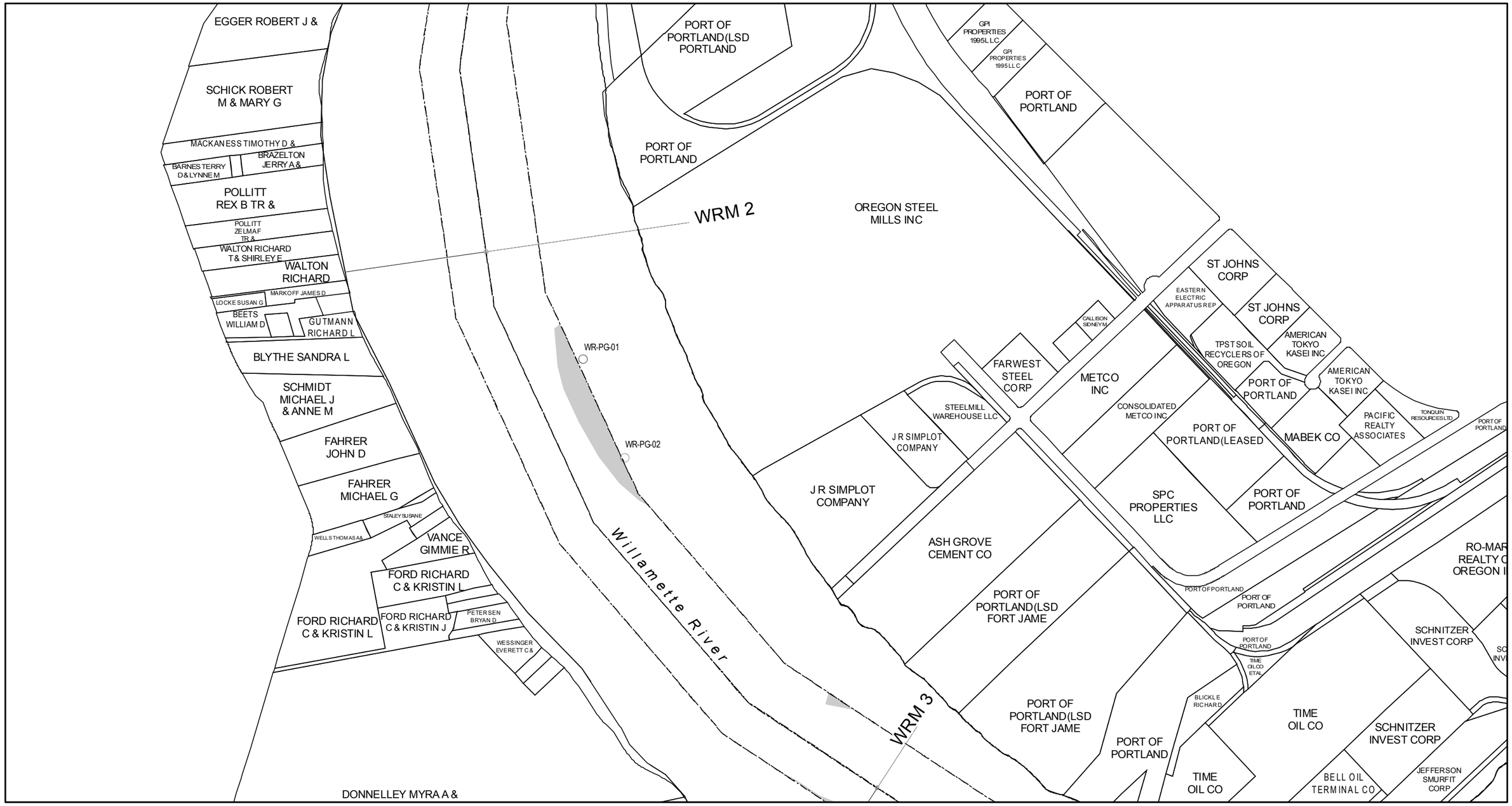
Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file. 2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 1

Willamette River DMMP

Study Area

Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

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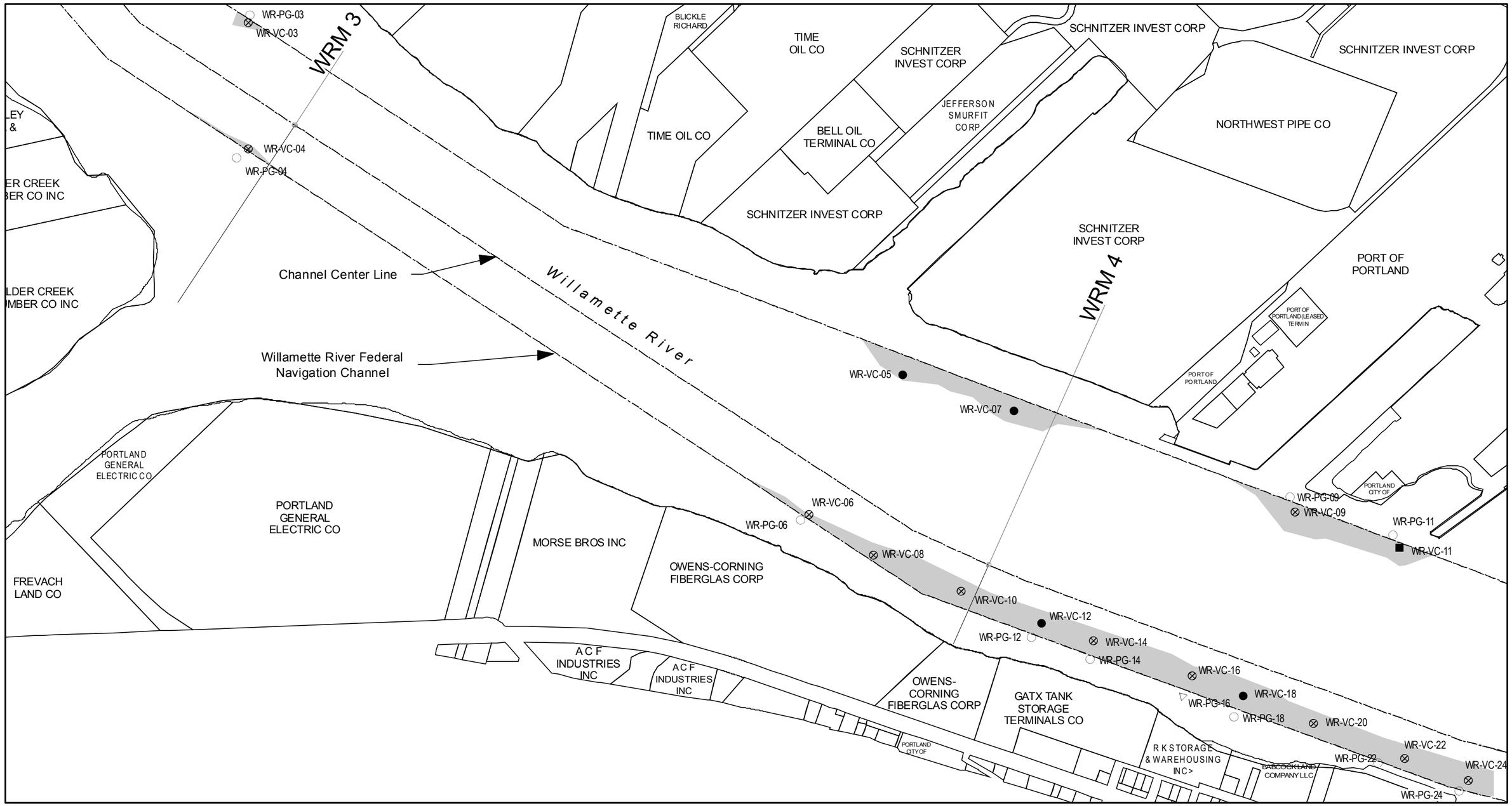
Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 315 630 1,260
Feet

Figure 2

Sediment Sample Locations
Area 1

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

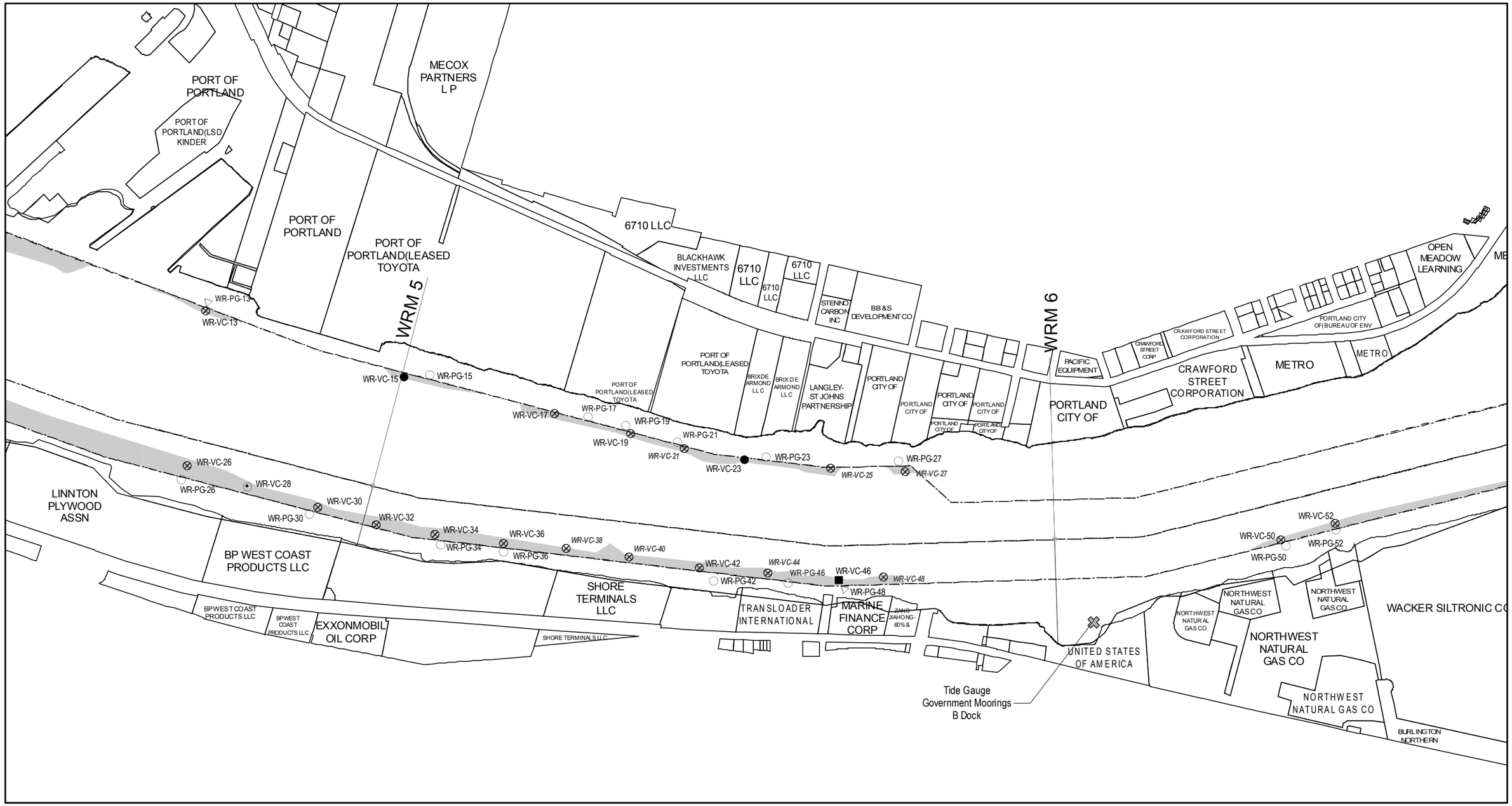
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 3

Sediment Sample Locations
Area 2

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

TETRA TECH EC, INC.

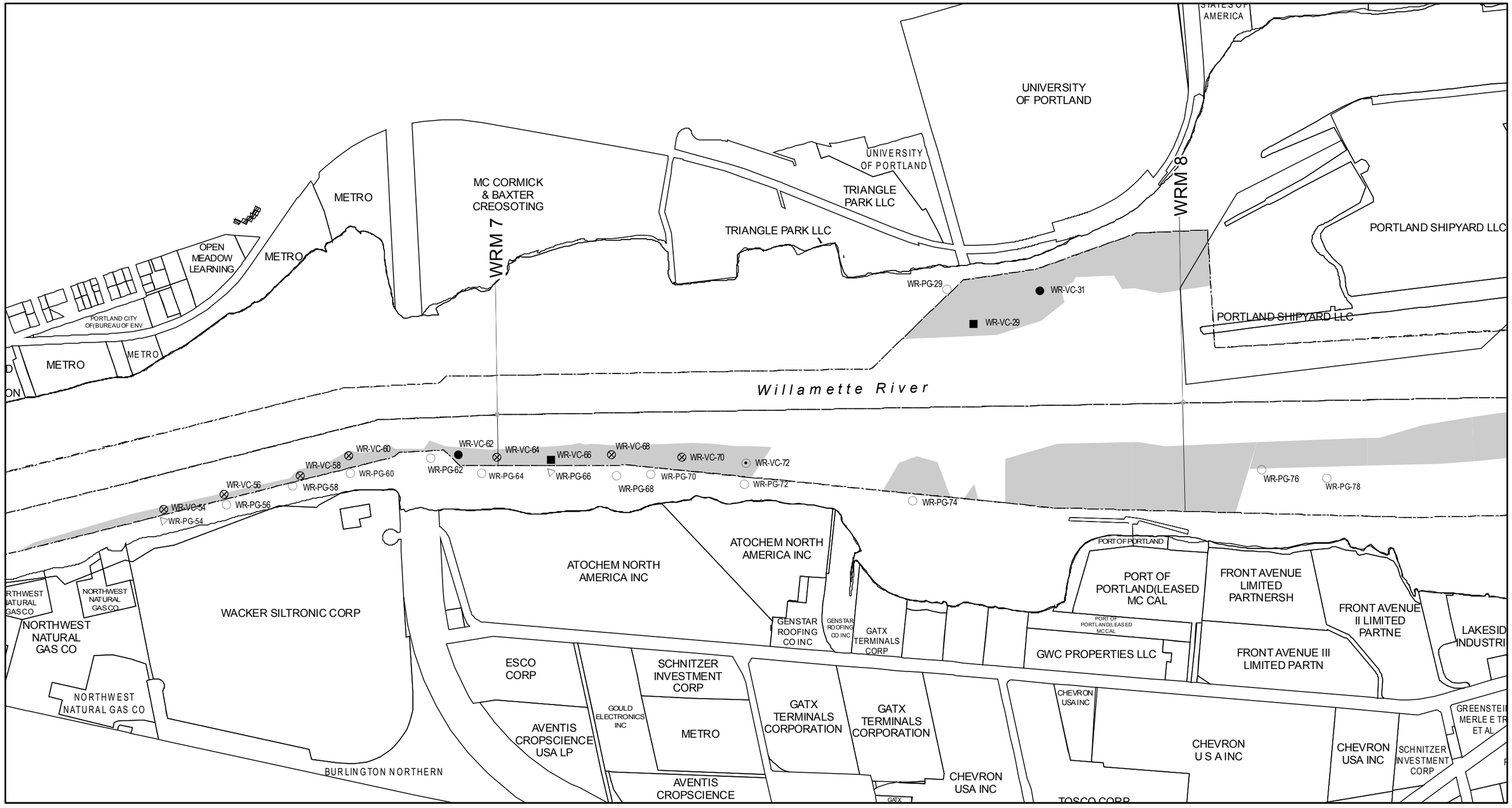
Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 315 630 1,260
Feet

Figure 4

Sediment Sample Locations
Area 3

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 315 630 1,260
Feet

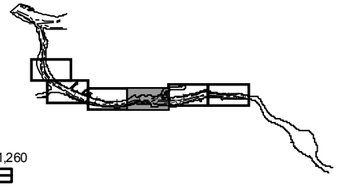
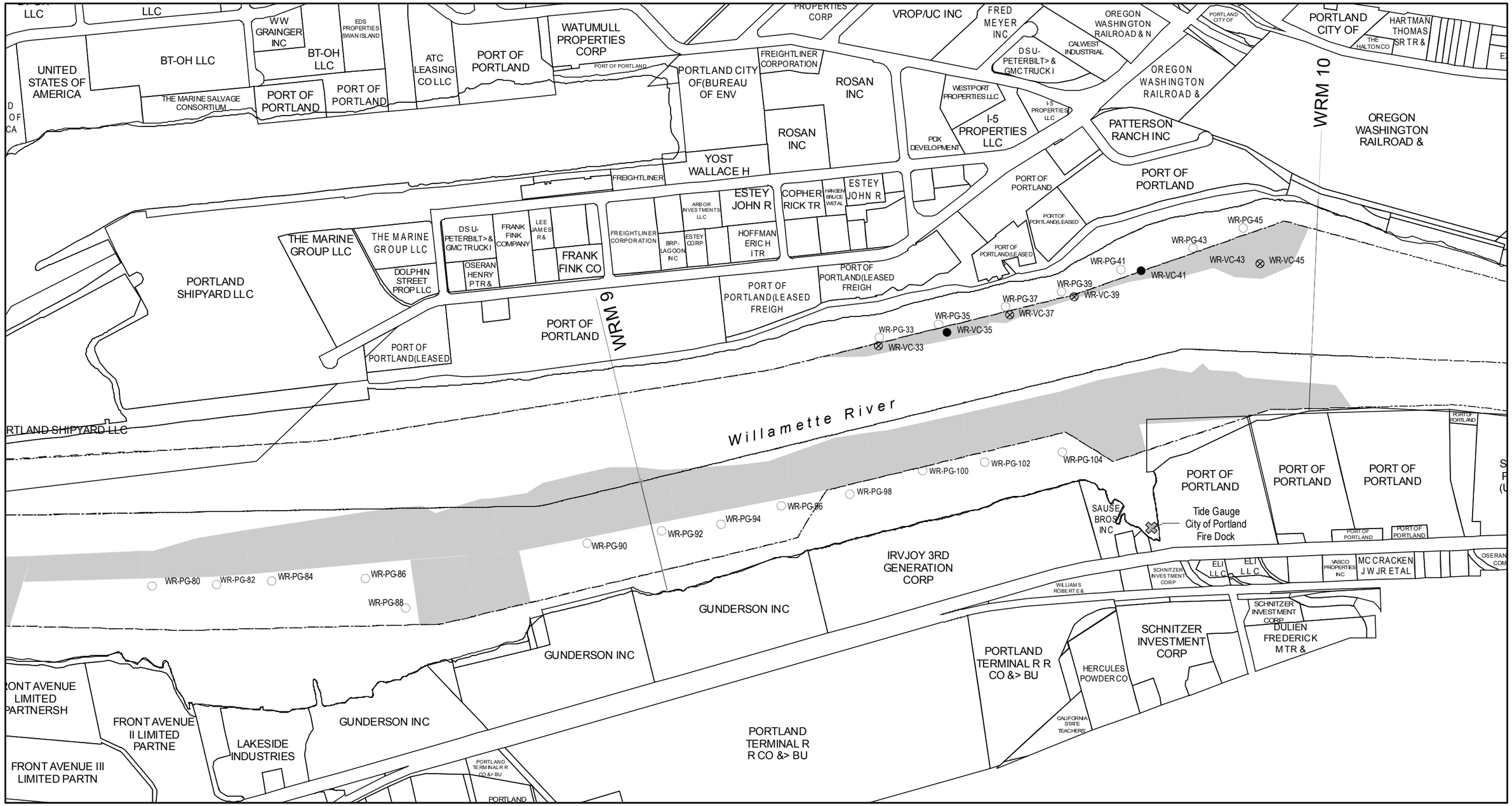


Figure 5

Sediment Sample Locations
Area 4

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

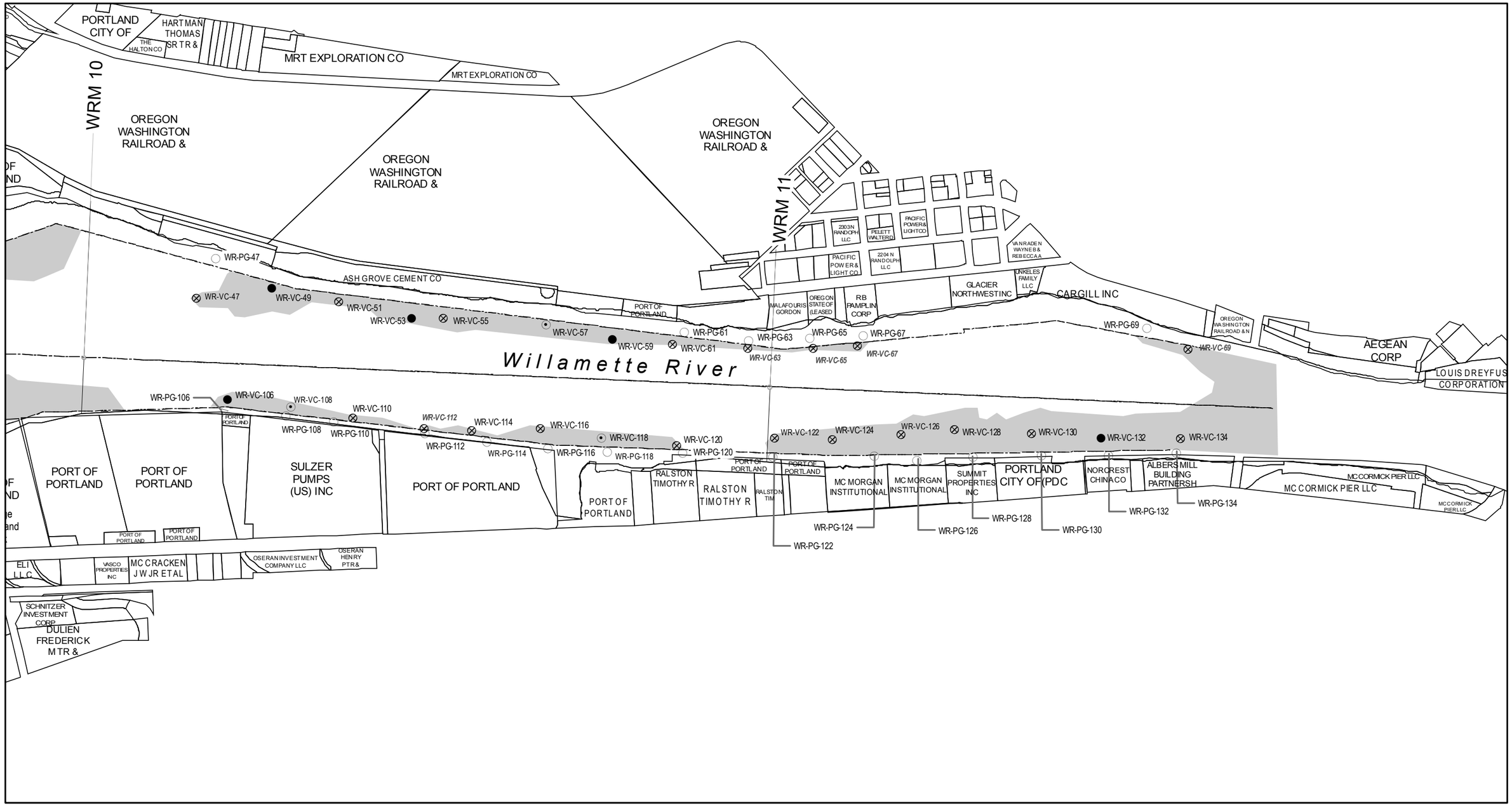
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 6

Sediment Sample Locations
Area 5

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

TETRA TECH EC, INC.

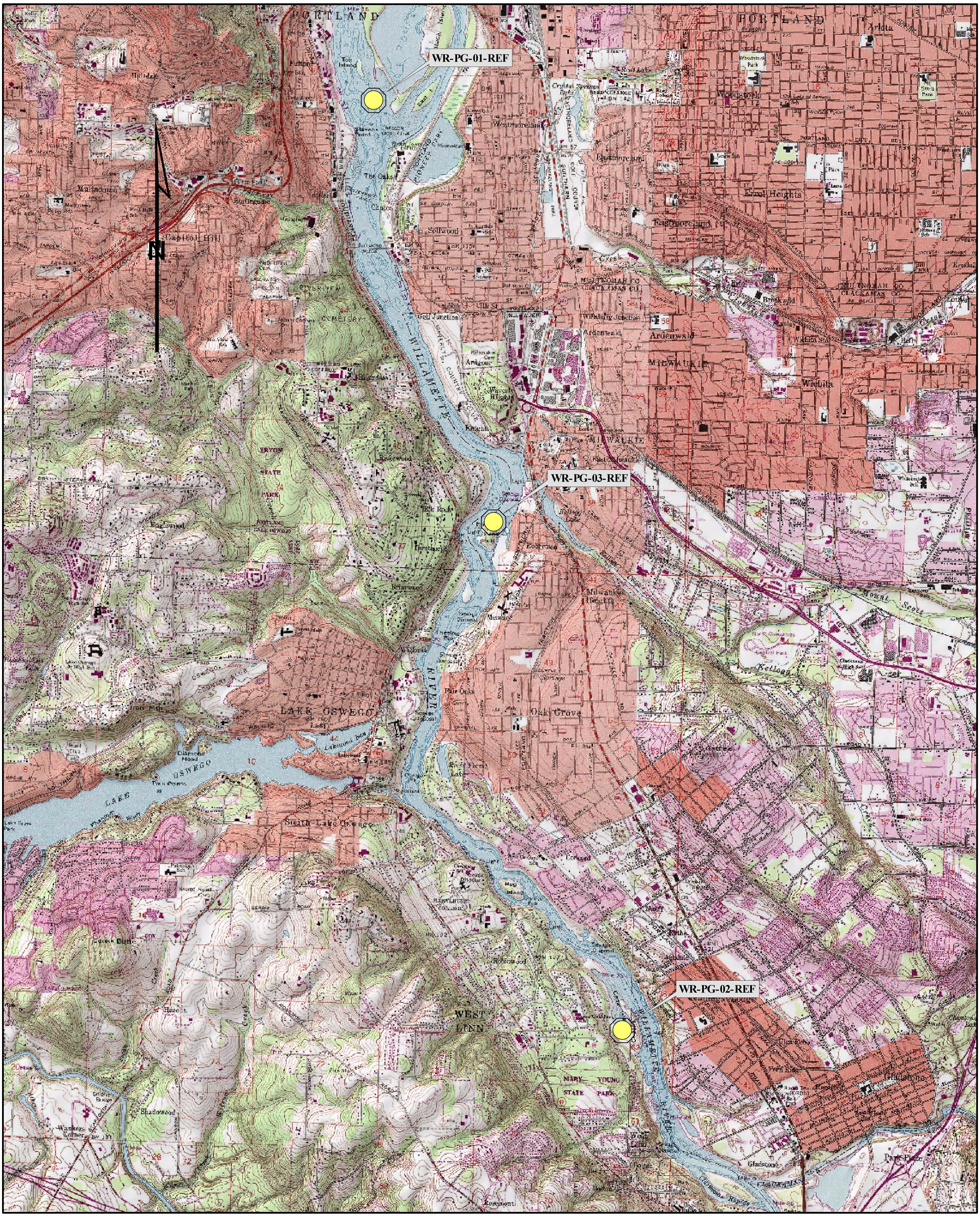
Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

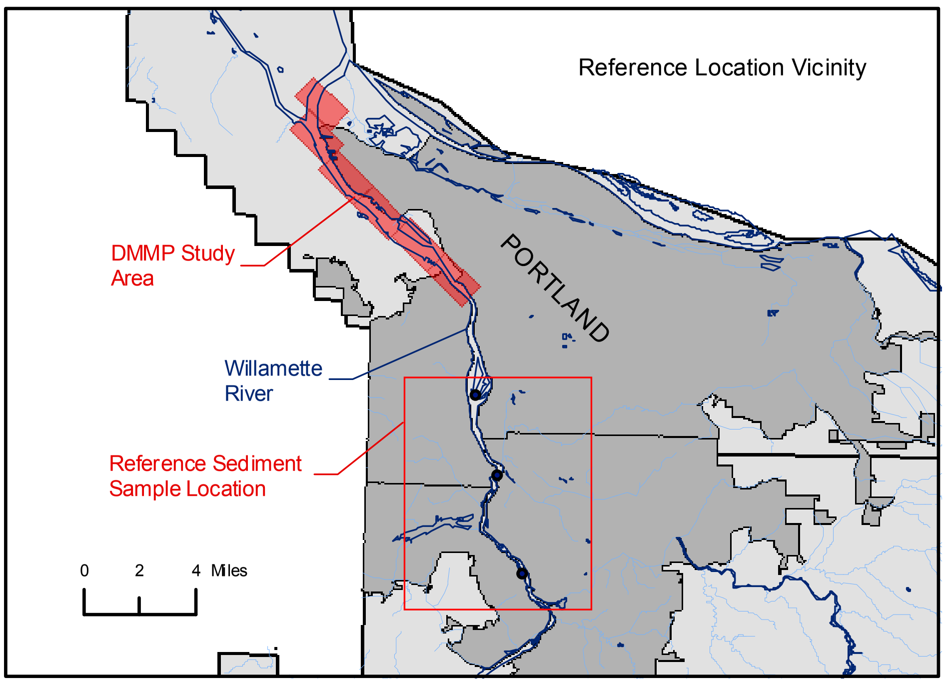
0 315 630 1,260
Feet

Figure 7

Sediment Sample Locations
Area 6

Willamette River
Portland, OR





0 0.4 0.8 1.6 Miles

Reference Sediment Sample Location

TETRA TECH EC, INC.

Figure 8

Reference Sediment Sample Locations

Willamette River DMMP

Portland, OR

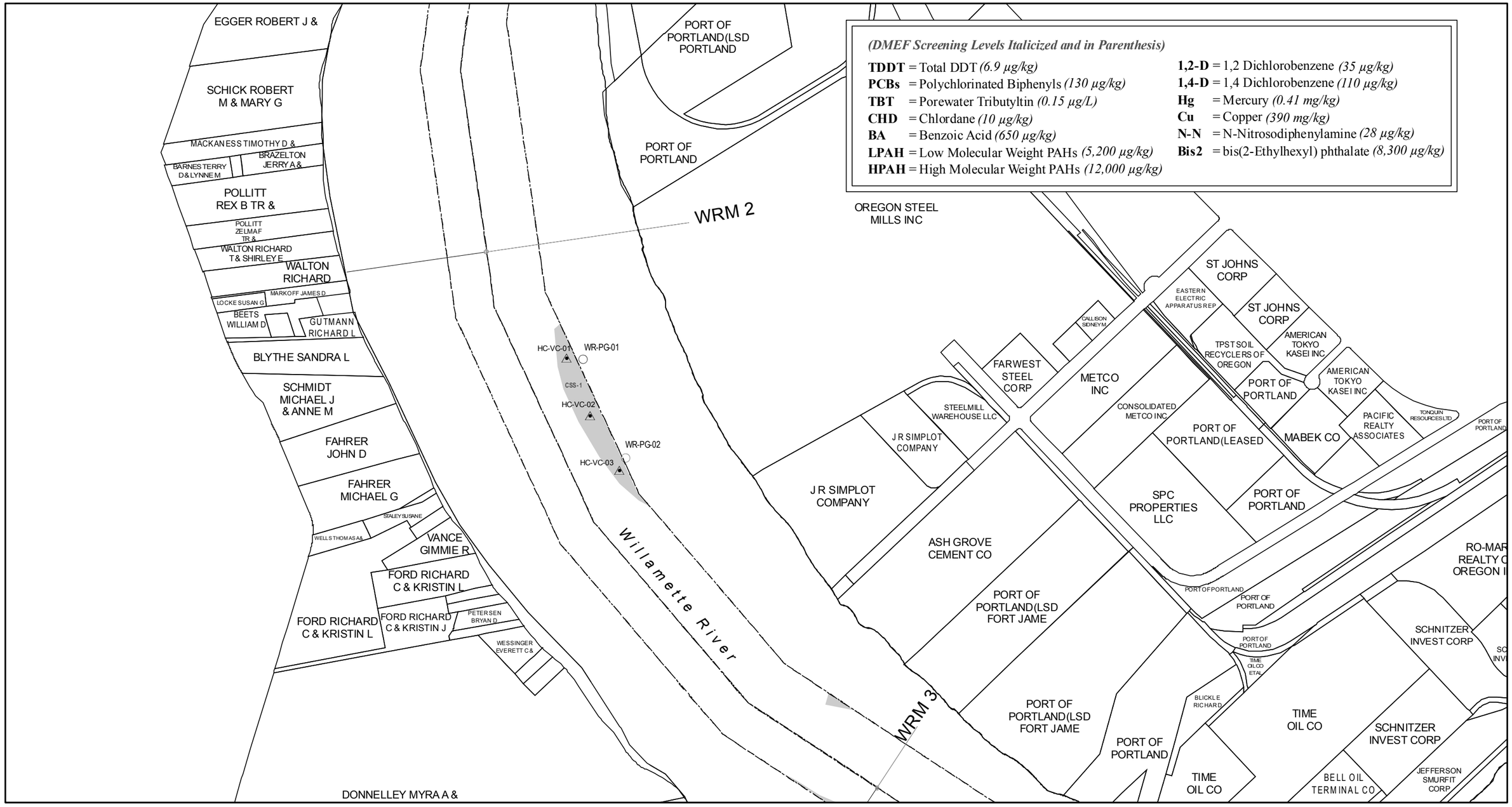
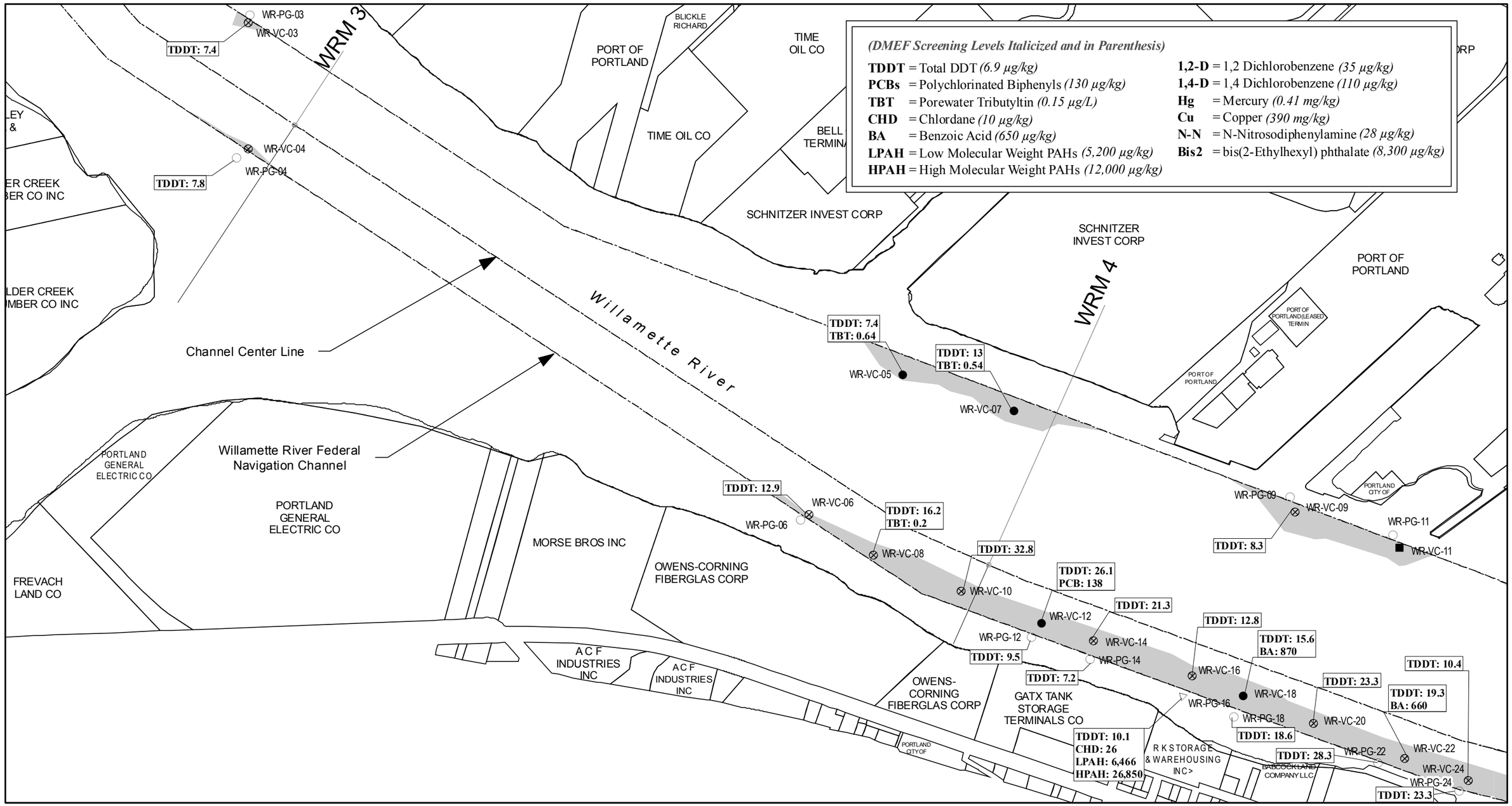


Figure 9
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 1
Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab) (Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core) (Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

USACE Sediment Sample Location (Sept 2003 - Table 1)

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 10
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 2

Willamette River
Portland, OR

(DMEF Screening Levels Italicized and in Parenthesis)

TDDT = Total DDT *(6.9 µg/kg)*
PCBs = Polychlorinated Biphenyls *(130 µg/kg)*
TBT = Porewater Tributyltin *(0.15 µg/L)*
CHD = Chlordane *(10 µg/kg)*
BA = Benzoic Acid *(650 µg/kg)*
LPAH = Low Molecular Weight PAHs *(5,200 µg/kg)*
HPAH = High Molecular Weight PAHs *(12,000 µg/kg)*
1,2-D = 1,2 Dichlorobenzene *(35 µg/kg)*
1,4-D = 1,4 Dichlorobenzene *(110 µg/kg)*
Hg = Mercury *(0.41 mg/kg)*
Cu = Copper *(390 mg/kg)*
N-N = N-Nitrosodiphenylamine *(28 µg/kg)*
Bis2 = bis(2-Ethylhexyl) phthalate *(8,300 µg/kg)*

PORT OF PORTLAND
PORT OF PORTLAND(LSD KINDER
PORT OF PORTLAND
MECOX PARTNERS L P
WRM 5
WRM 6
6710 LLC
BLACKHAWK INVESTMENTS LLC
PORT OF PORTLAND(LEASED TOYOTA
STENNO CARBON INC
BB&S DEVELOPMENT CO
BRIXDE ARMOND LLC
LANGLEY-ST JOHNS PARTNERSHIP
PORTLAND CITY OF
PACIFIC EQUIPMENT
CRAWFORD STREET CORP
CRAWFORD STREET CORPORATION
PORTLAND CITY OF(BUREAU OF ENV
OPEN MEADOW LEARNING
METRO
LINNTON PLYWOOD ASSN
BP WEST COAST PRODUCTS LLC
EXXONMOBIL OIL CORP
SHORE TERMINALS LLC
TRANSLOADER INTERNATIONAL
MARINE FINANCE CORP
ZANG JIAHONG - 60% &
UNITED STATES OF AMERICA
Tide Gauge
Government Moorings
B Dock
NORTHWEST NATURAL GAS CO
WACKER SILTRONIC CO
BURLINGTON NORTHERN
Willamette River

WR-VC-13 TDDT: 8.7 WR-PG-13 TDDT: 10 TBT: 0.29
WR-VC-15 WR-PG-15 TDDT: 9.4 TBT: 0.65
WR-VC-17 WR-PG-17 WR-PG-19 WR-VC-19 TDDT: 8.1 WR-PG-21 WR-VC-21 TDDT: 9.8
WR-VC-23 WR-PG-23 TDDT: 19.6 PCB: 187 TDDT: 9.3 TBT: 0.34
WR-VC-25 WR-PG-27 WR-VC-27 TDDT: 21 PCB: 255
WR-PG-26 WR-VC-26 TDDT: 15.8 TBT: 0.19 TDDT: 1,226 TBT: 0.31
WR-VC-28 TDDT: 23.3 TBT: 0.36
WR-PG-30 WR-VC-30 TDDT: 8.8
WR-VC-32 TDDT: 23.5 TBT: 0.24 BA: 810
WR-PG-34 WR-VC-34 TDDT: 23.5
WR-PG-36 WR-VC-36 TDDT: 9.1 TDDT: 23.8 TBT: 0.39 TDDT: 16.9 TBT: 0.68
WR-VC-38 WR-VC-40 WR-VC-42 WR-PG-42 TDDT: 8.81
WR-VC-44 WR-PG-46 WR-VC-46 WR-VC-48 WR-PG-48 TDDT: 15 LPAH: 12,030 HPAH: 63,520
LPAH: 26,030 HPAH: 84,260
TDDT: 19.8 HPAH: 21,610
WR-VC-50 WR-PG-50 WR-VC-52 WR-PG-52 TDDT: 72 TBT: 0.19 LPAH: 38,892 HPAH: 81,320
TDDT: 73 PCB: 224 LPAH: 575,600 HPAH: 404,600
TDDT: 30 PCB: 382 LPAH: 473,300 HPAH: 314,000
TDDT: 40.2 TBT: 0.26 LPAH: 19,014 HPAH: 73,980

Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab) (Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core) (Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

◬ USACE Sediment Sample Location (Sept 2003 - Table 1)

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 295 590 1,180
Feet

Figure 11
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 3

Willamette River
Portland, OR

(DMEF Screening Levels Italicized and in Parenthesis)

TDDT = Total DDT *(6.9 µg/kg)*
PCBs = Polychlorinated Biphenyls *(130 µg/kg)*
TBT = Porewater Tributyltin *(0.15 µg/L)*
CHD = Chlordane *(10 µg/kg)*
BA = Benzoic Acid *(650 µg/kg)*
LPAH = Low Molecular Weight PAHs *(5,200 µg/kg)*
HPAH = High Molecular Weight PAHs *(12,000 µg/kg)*
1,2-D = 1,2 Dichlorobenzene *(35 µg/kg)*
1,4-D = 1,4 Dichlorobenzene *(110 µg/kg)*
Hg = Mercury *(0.41 mg/kg)*
Cu = Copper *(390 mg/kg)*
N-N = N-Nitrosodiphenylamine *(28 µg/kg)*
Bis2 = bis(2-Ethylhexyl) phthalate *(8,300 µg/kg)*

WRM 7
WRM 8
METRO
OPEN MEADOW LEARNING
PORTLAND CITY OF(BUREAU OF ENV
MC CORMICK & BAXTER CREOSOTING
TRIANGLE PARK LLC
PORTLAND SHIPYARD LLC
WACKER SILTRONIC CORP
NORTHWEST NATURAL GAS CO
ATOCHEM NORTH AMERICA INC
ESCO CORP
SCHNITZER INVESTMENT CORP
AVENTIS CROPSCIENCE USA LP
GOULD ELECTRONICS INC
METRO
AVENTIS CROPSCIENCE
GATX TERMINALS CORPORATION
CHEVRON USA INC
GENSTAR ROOFING CO INC
GWC PROPERTIES LLC
FRONT AVENUE LIMITED PARTNERSH
FRONT AVENUE II LIMITED PARTNE
FRONT AVENUE III LIMITED PARTN
PORT OF PORTLAND
BURLINGTON NORTHERN

WR-PG-29
WR-VC-31
WR-VC-29
TDDT: 7.6
TBT: 0.39
TBT: 0.58
HC-VC-04
HC-VC-05
HC-VC-06
CSS-2
TDDT: 1170
LPAH: 8,897
HPAH: 20,770
TDDT: 10.3
LPAH: 11,749
1,2-D: 91
1,4-D: 240
TDDT: 57.2
TBT: 0.7
BA: 740
TDDT: 149.5
TBT: 0.45
TDDT: 32
PCB: 196
LPAH: 40,620
HPAH: 31,070
TDDT: 74.4
1,2-D: 42
TDDT: 50.3
TBT: 1.2
TDDT: 69
TBT: 0.38
TDDT: 202
TBT: 0.36
BA: 980
TDDT: 39.8
TBT: 0.31
WR-VC-62
WR-VC-64
WR-VC-66
WR-VC-68
WR-VC-70
WR-VC-72
WR-VC-60
WR-VC-58
WR-VC-56
WR-VC-54
WR-PG-62
WR-PG-60
WR-PG-58
WR-PG-56
WR-PG-54
WR-PG-64
WR-PG-66
WR-PG-68
WR-PG-70
WR-PG-72
WR-PG-74
WR-PG-76
WR-PG-78
TDDT: 19.8
TDDT: 297
TDDT: 69.9
TDDT: 540
TDDT: 889
TDDT: 14.9
TDDT: 1,050
TDDT: 25.3
PCB: 327
TDDT: 133.6
TDDT: 169
TDDT: 97.4
HPAH: 17,240
HC-VC-07
HC-VC-08
CSS-3
CSS-4
CSS-5
CSS-6
HC-VC-09
HC-VC-10
HC-VC-11
HC-VC-12
HC-VC-13
HC-VC-14
HC-VC-15
HC-VC-16
HC-VC-17

Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab) (Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core) (Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

USACE Sediment Sample Location (Sept 2003 - Table 1)

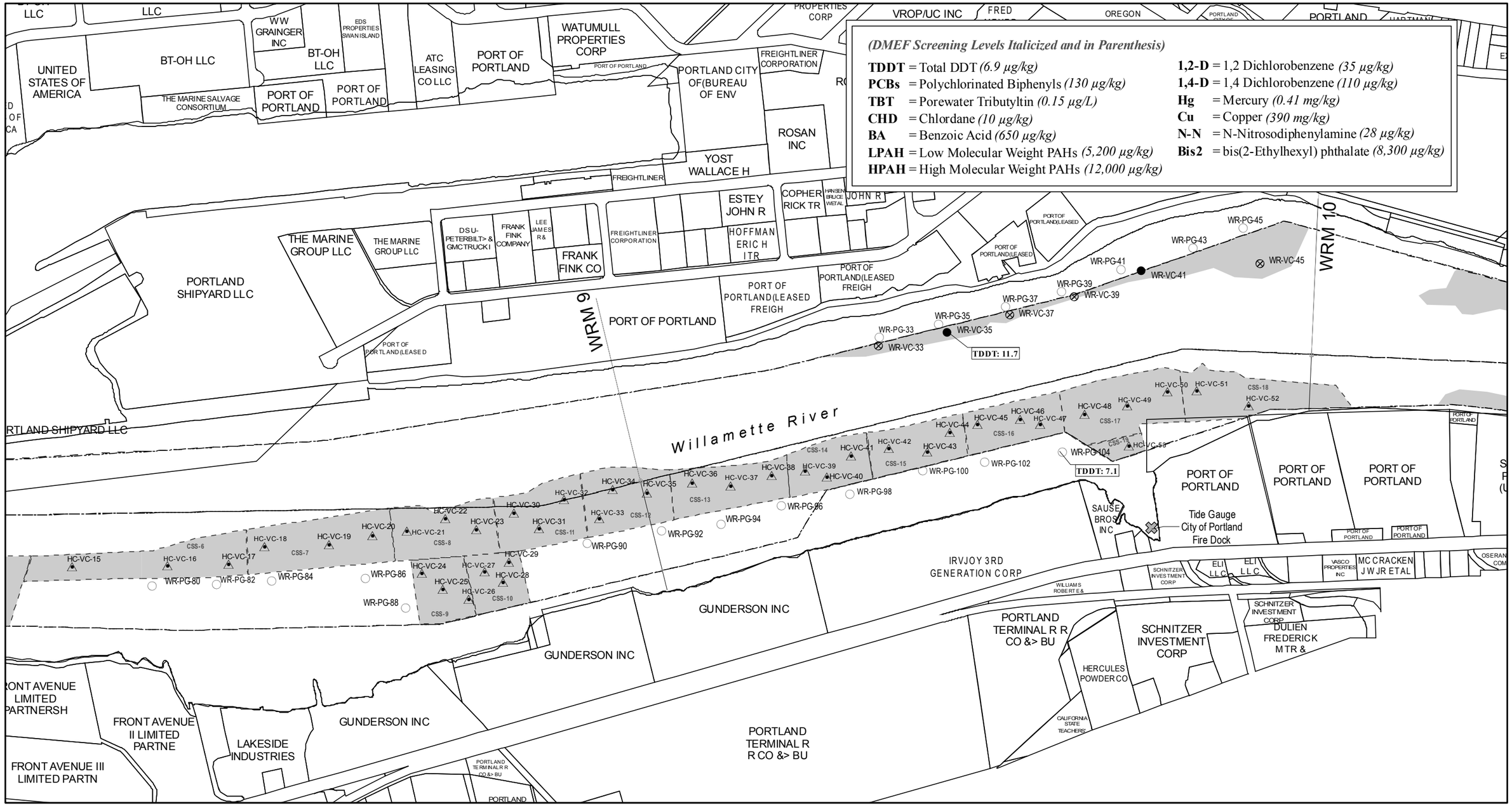
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 295 590 1,180
Feet

Figure 12
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 4

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab) (Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core) (Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

USACE Sediment Sample Location (Sept 2003 - Table 1)

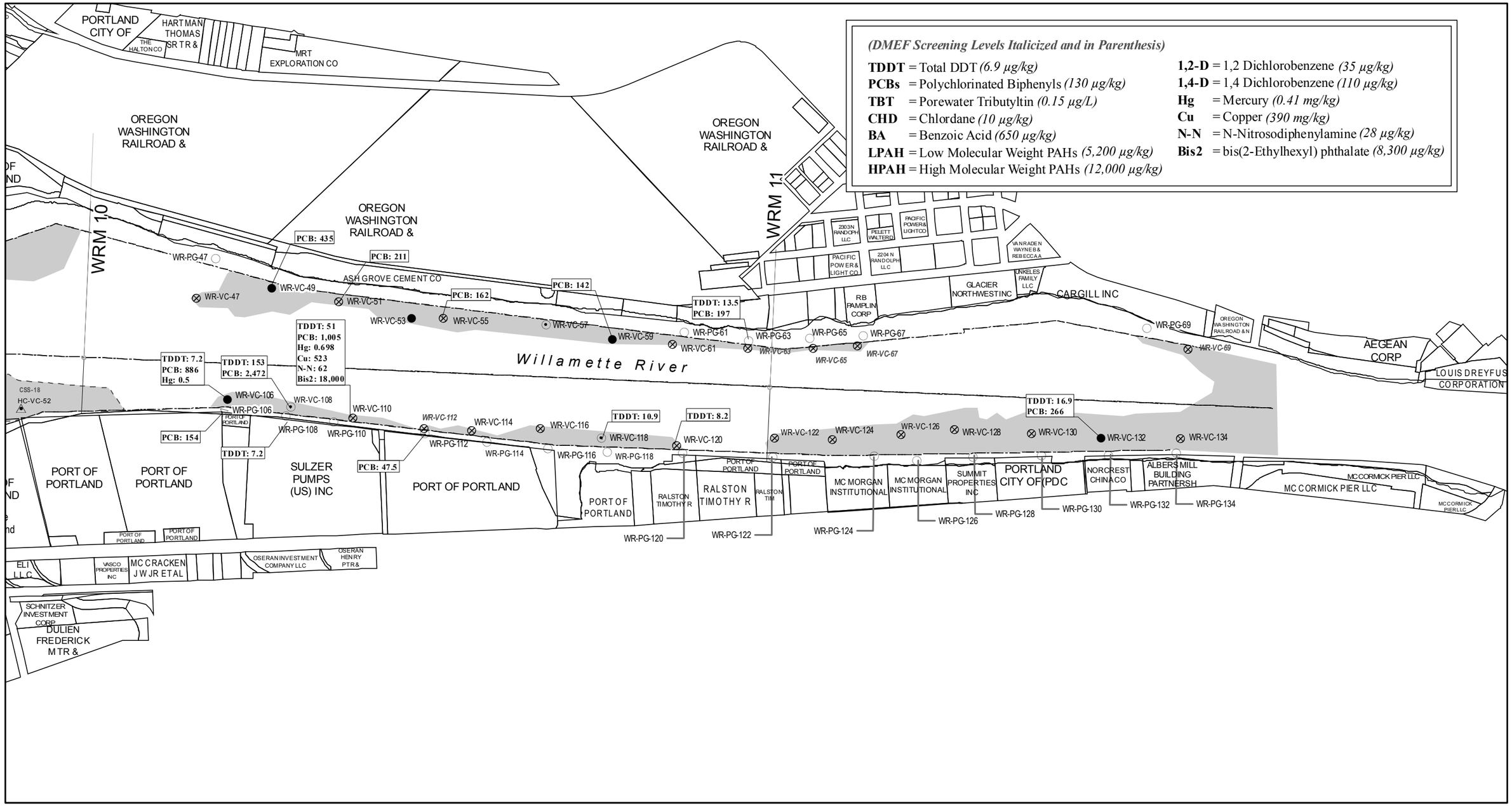
0 295 590 1,180 Feet

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 13
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 5

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

○ Surface Sediment Sample Location (Grab)
(Even Numbers on West Bank, Odd Numbers on East Bank)

⊕ Subsurface Sediment Sample Location (Core)
(Even Numbers on West Bank, Odd Numbers on East Bank)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

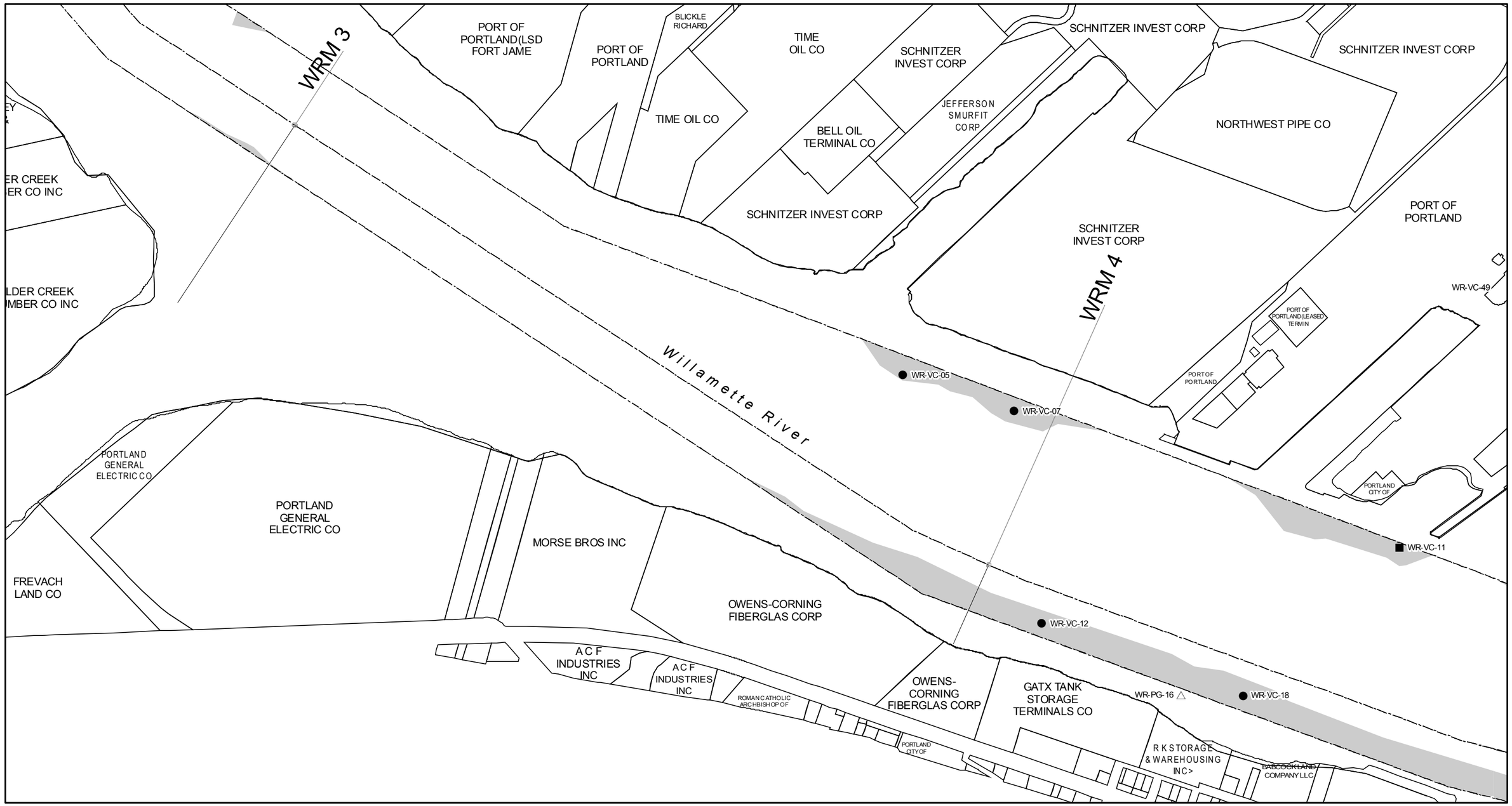
USACE Sediment Sample Location (Sept 2003 - Table 1)

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 14
Sediment Sample Locations &Chemistry Results Exceeding DMEF-SLs
Area 6

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

- Subsurface Sediment Sample Bioaccumulation Location (Core)
- Subsurface Sediment Sample Bioassay Location (Core)
- Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)
- Surface Sediment Sample Bioassay Location (Grab)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

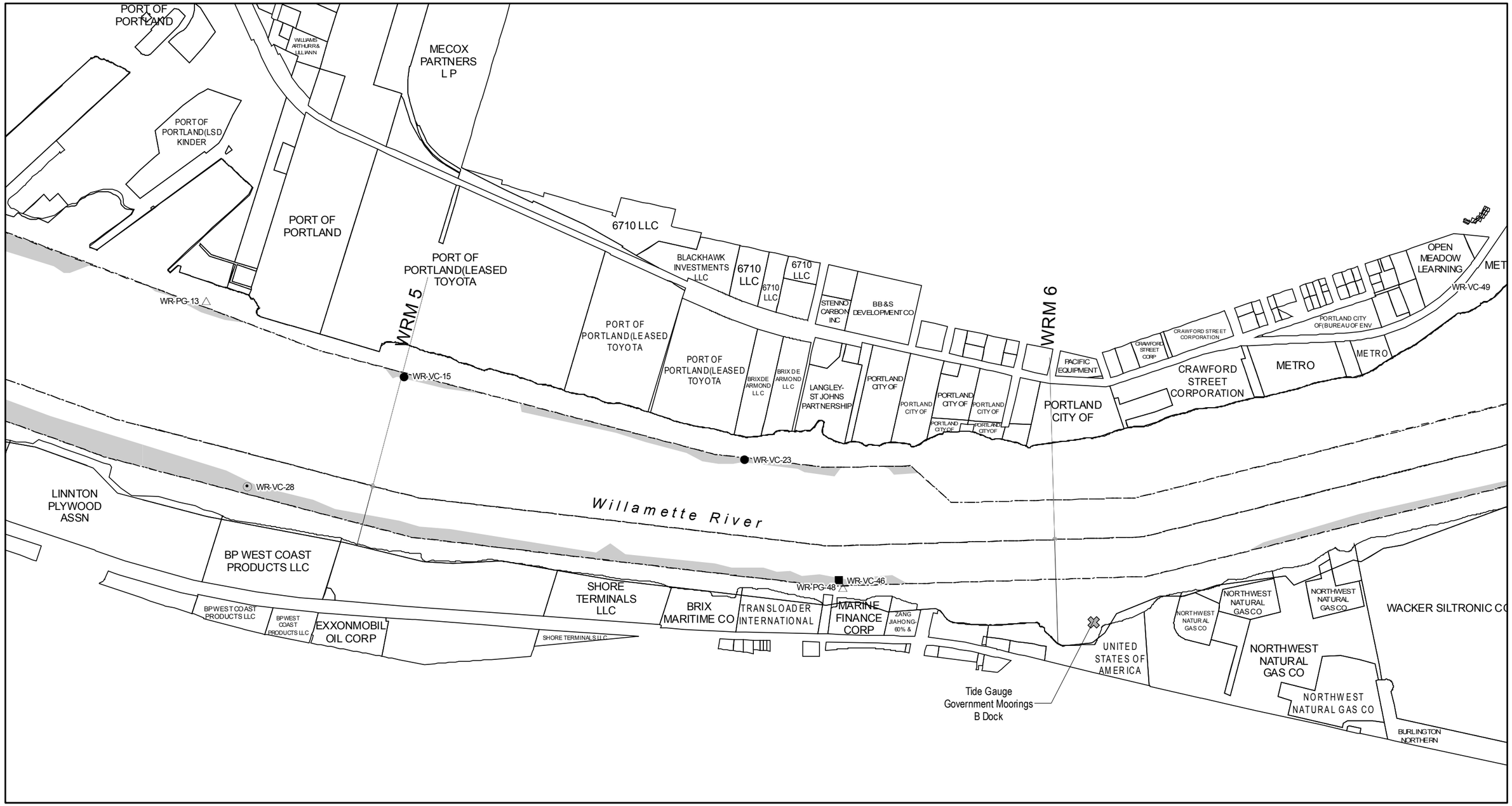
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 250 500 1,000
Feet

Figure 15
Bioassay and/or Bioaccumulation Testing Sediment Sample Locations Area 2

Willamette River Portland, OR



Legend:

Proposed Dredge Area

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

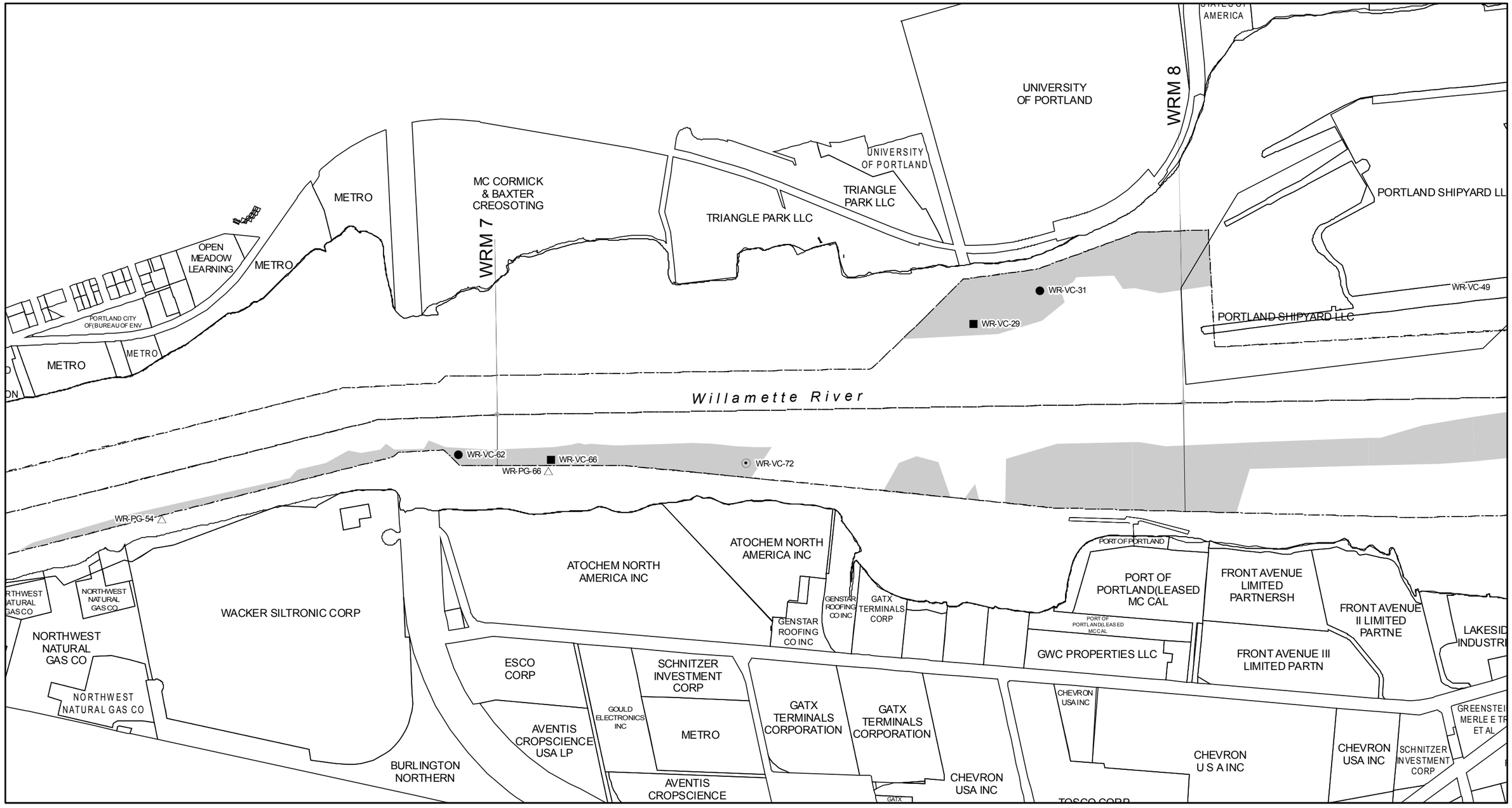
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 300 600 1,200
Feet

Figure 16
Bioassay and/or Bioaccumulation Testing Sediment Sample Locations Area 3

Willamette River
Portland, OR



Legend:

Proposed Dredge Area

- ◉ Subsurface Sediment Sample Bioaccumulation Location (Core)
- ● Subsurface Sediment Sample Bioassay Location (Core)
- ■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)
- △ Surface Sediment Sample Bioassay Location (Grab)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

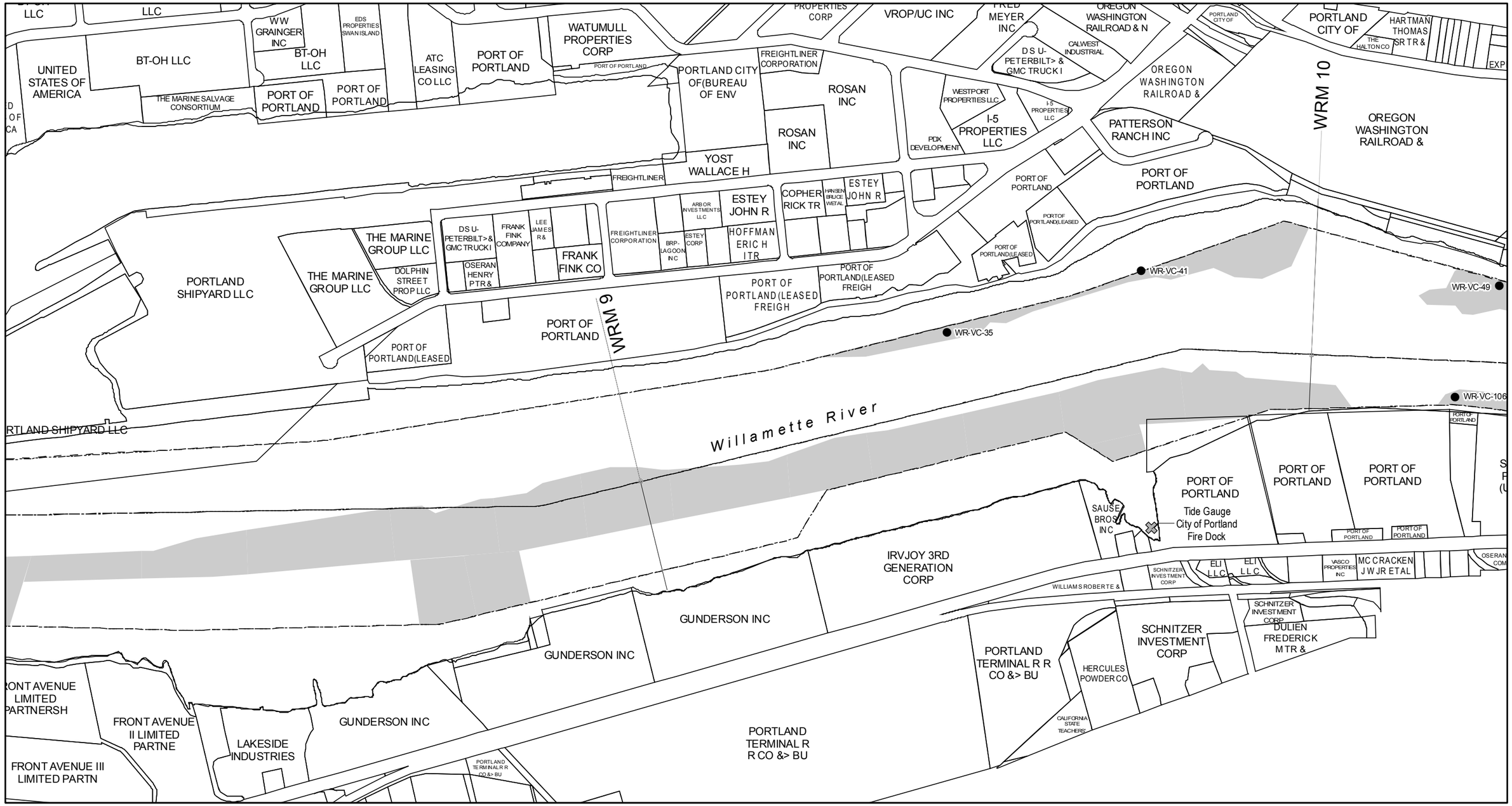
TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 300 600 1,200
Feet

Figure 17
Bioassay and/or Bioaccumulation Testing Sediment Sample Locations Area 4

Willamette River Portland, OR



Legend:

Proposed Dredge Area

◉ Subsurface Sediment Sample Bioaccumulation Location (Core)

● Subsurface Sediment Sample Bioassay Location (Core)

■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)

△ Surface Sediment Sample Bioassay Location (Grab)

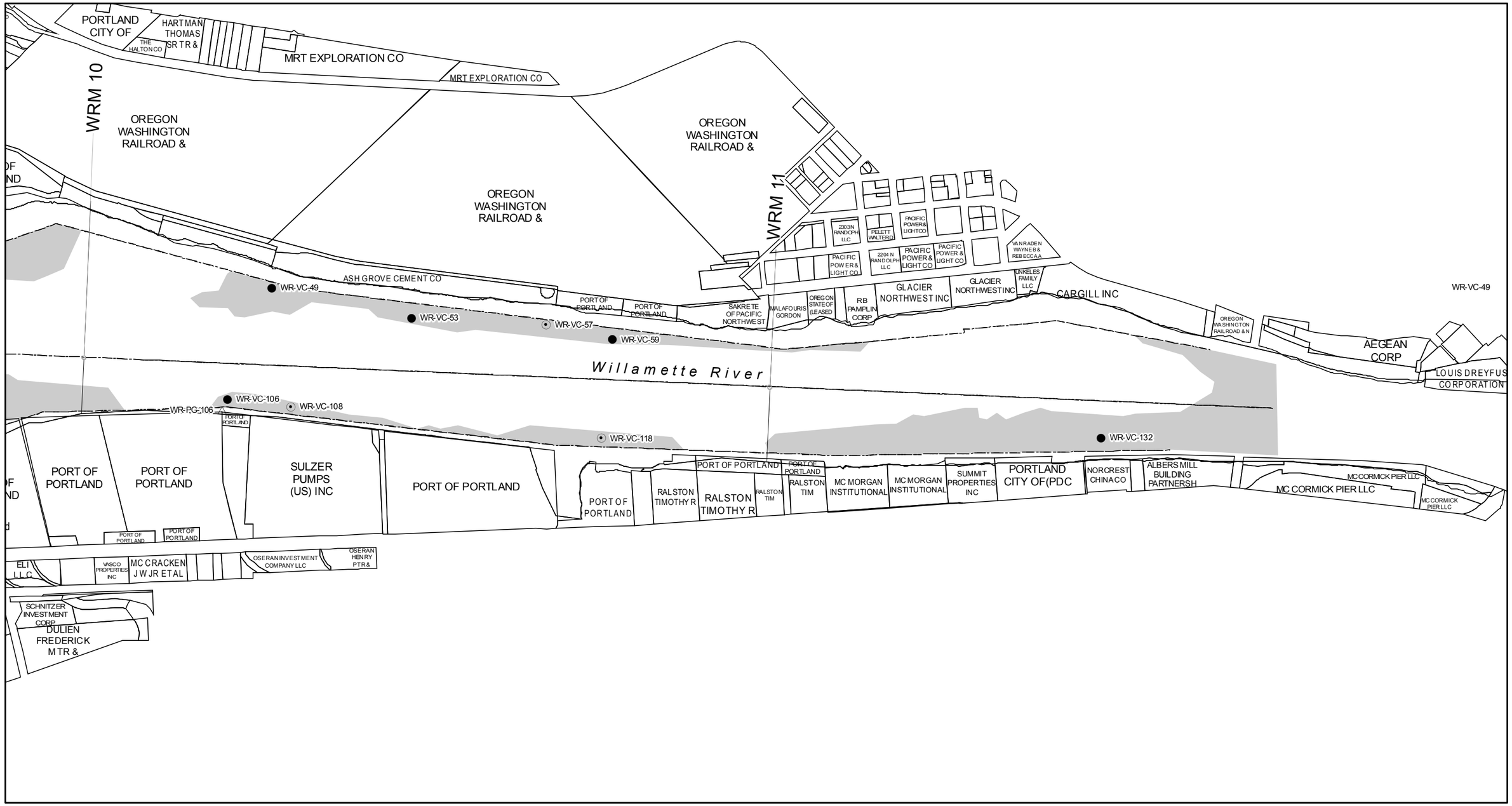
Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

Figure 18
Bioassay and/or Bioaccumulation Testing Sediment Sample Locations Area 5

Willamette River Portland, OR



Legend:

Proposed Dredge Area

- ◉ Subsurface Sediment Sample Bioaccumulation Location (Core)
- ● Subsurface Sediment Sample Bioassay Location (Core)
- ■ Subsurface Sediment Sample Bioassay and Bioaccumulation Location (Core)
- △ Surface Sediment Sample Bioassay Location (Grab)

Italics Indicates a proposed sample location rejected due to refusal. No sample collected.

TETRA TECH EC, INC.

Notes: 1. Base map prepared from a Corps of Engineers AutoCAD file.
2. Coordinates are based on Oregon Stateplane, North Zone, NAD 83.

0 300 600 1,200
Feet

Figure 19
Bioassay and/or Bioaccumulation Testing Sediment Sample Locations Area 6

Willamette River Portland, OR

Figure 20 - Bioaccumulation of Antimony in *Lumbriculus variegatus*

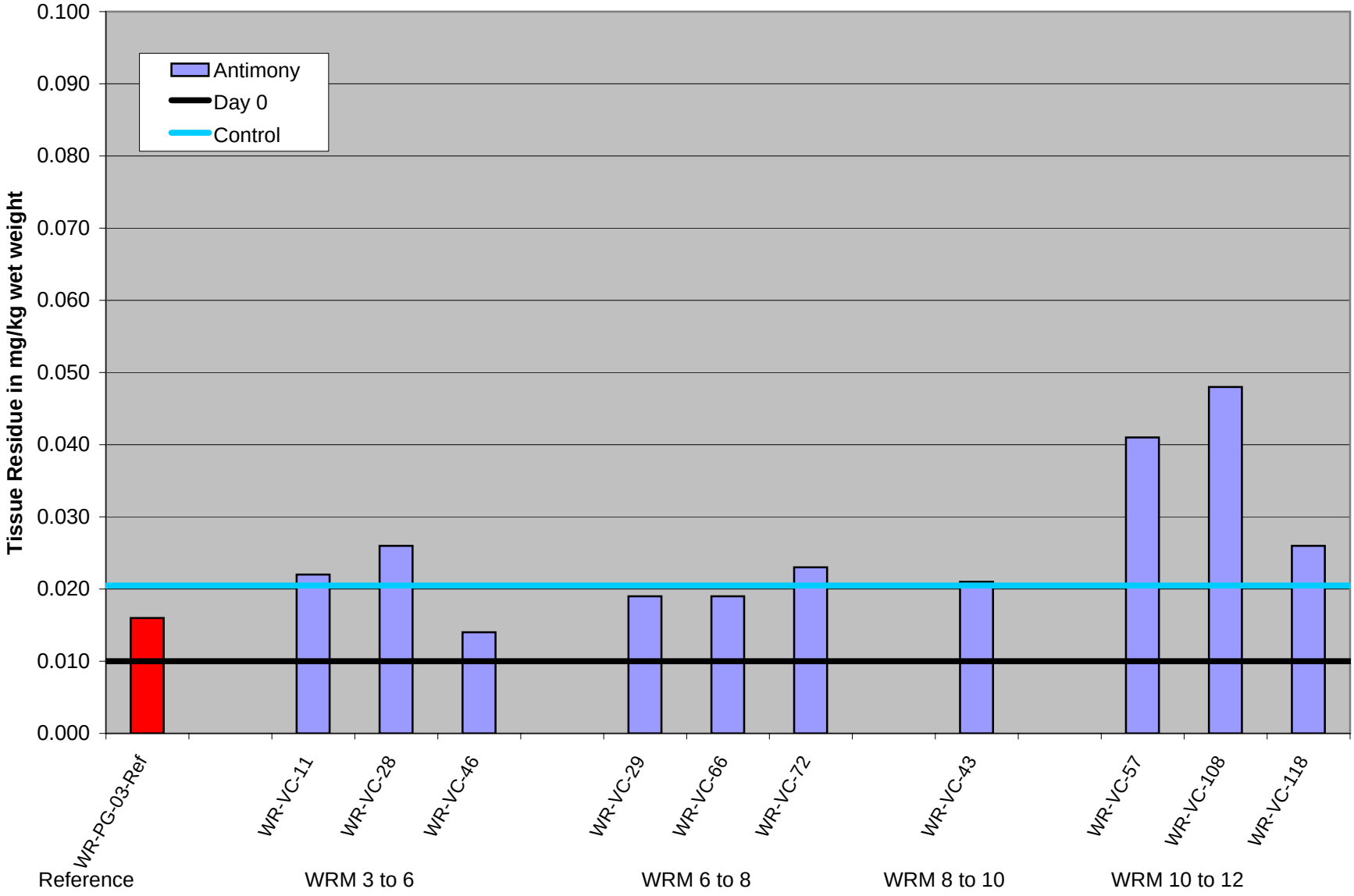
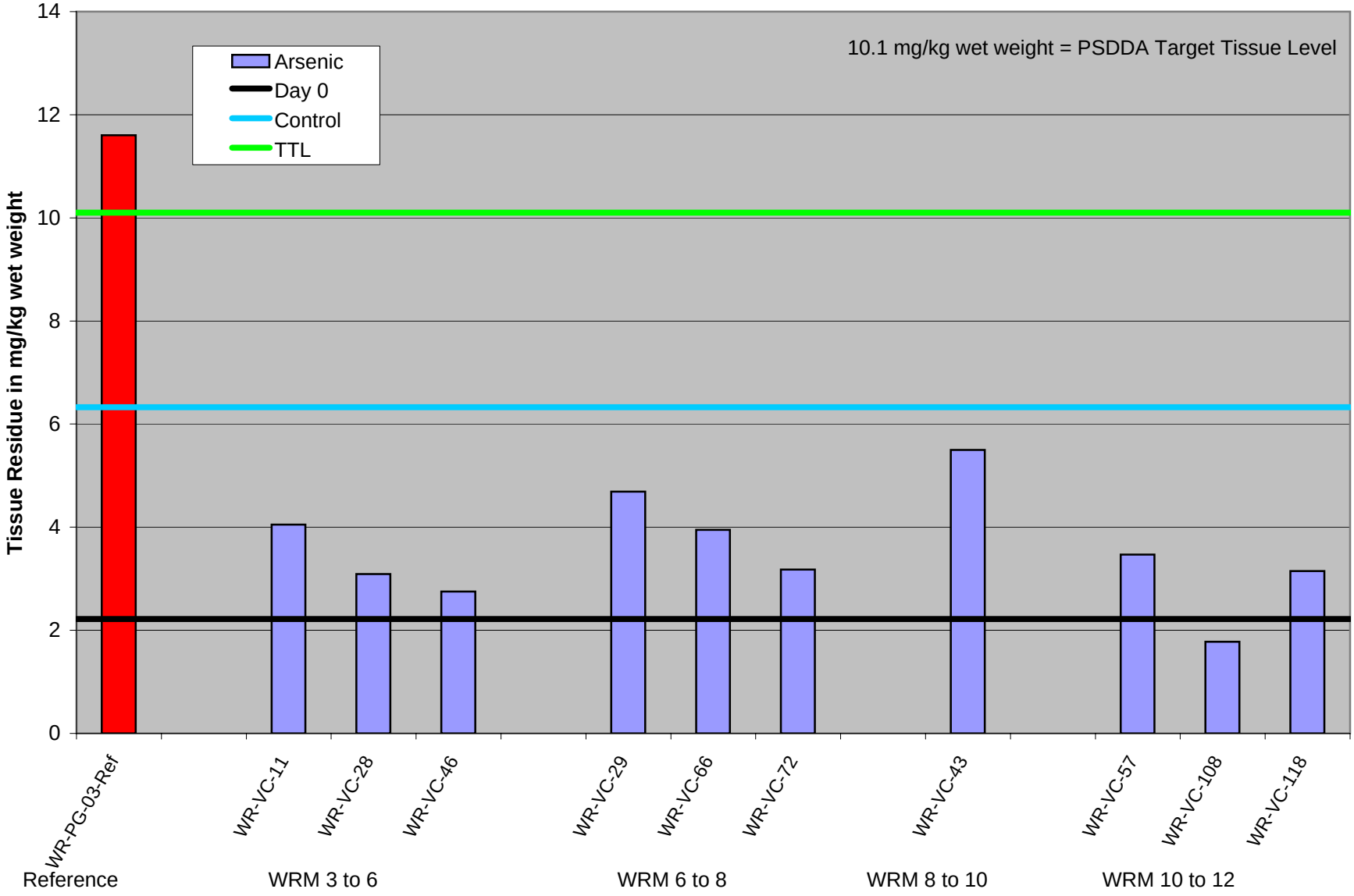


Figure 21 - Bioaccumulation of Arsenic in *Lumbriculus variegatus*



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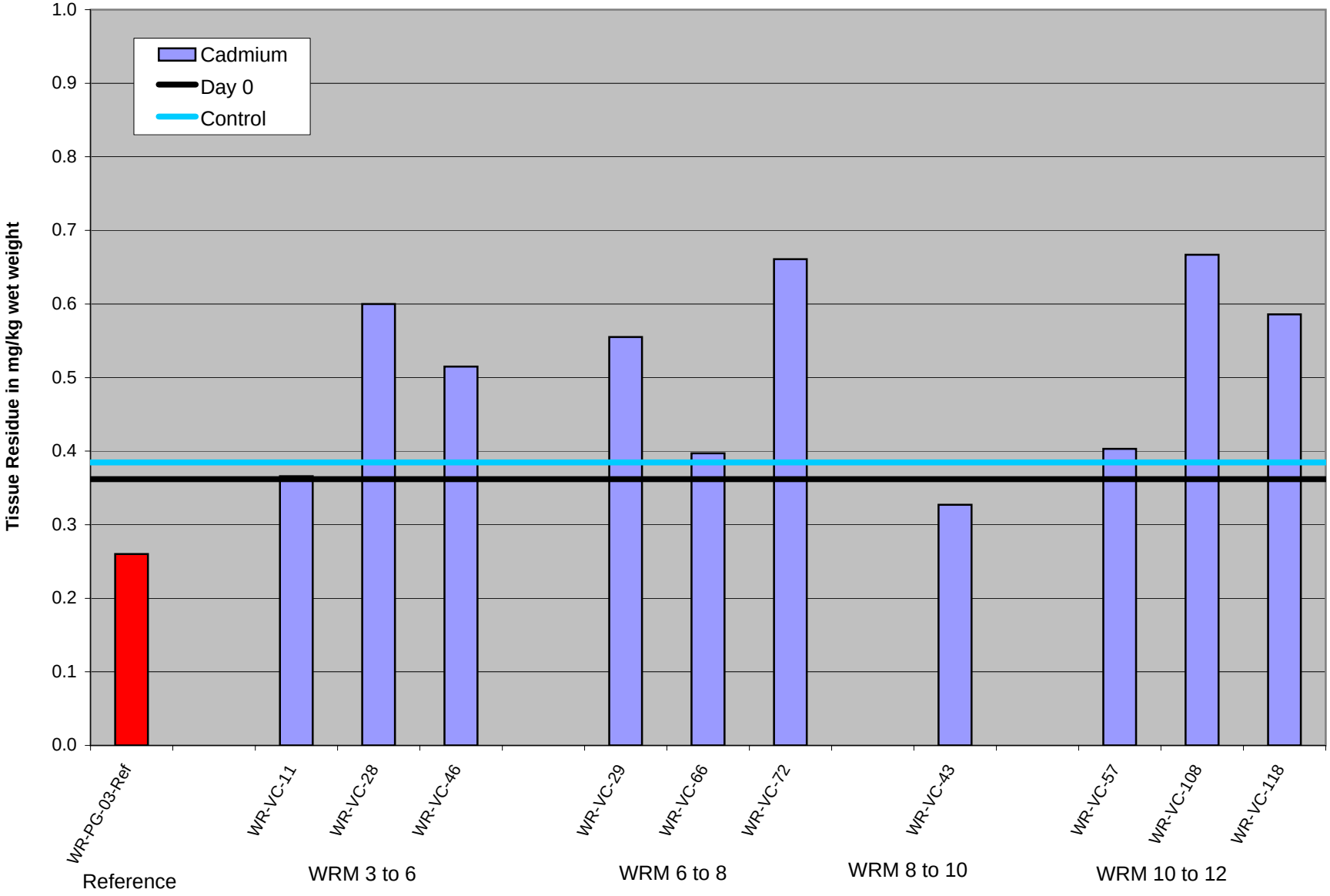

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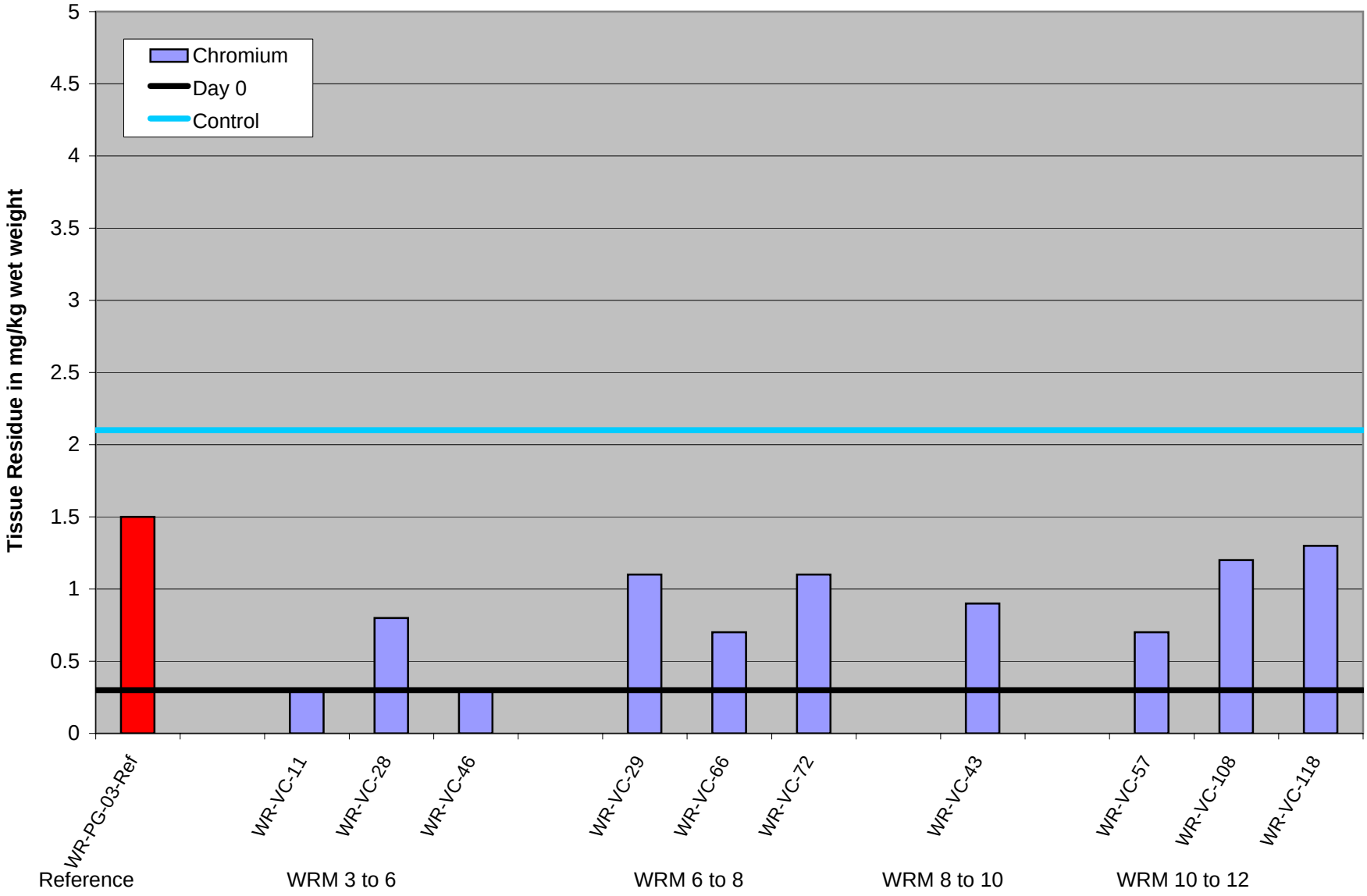

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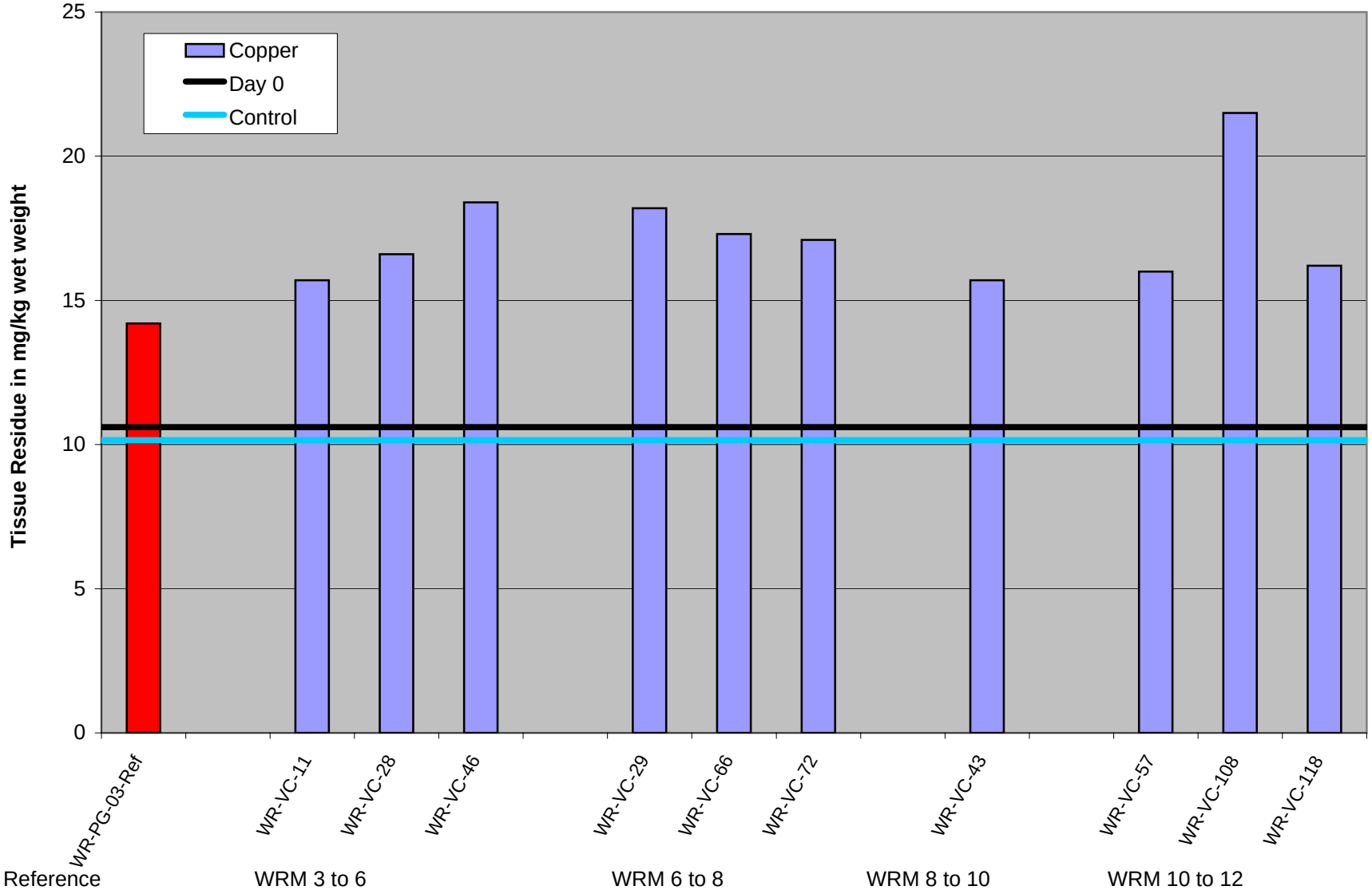

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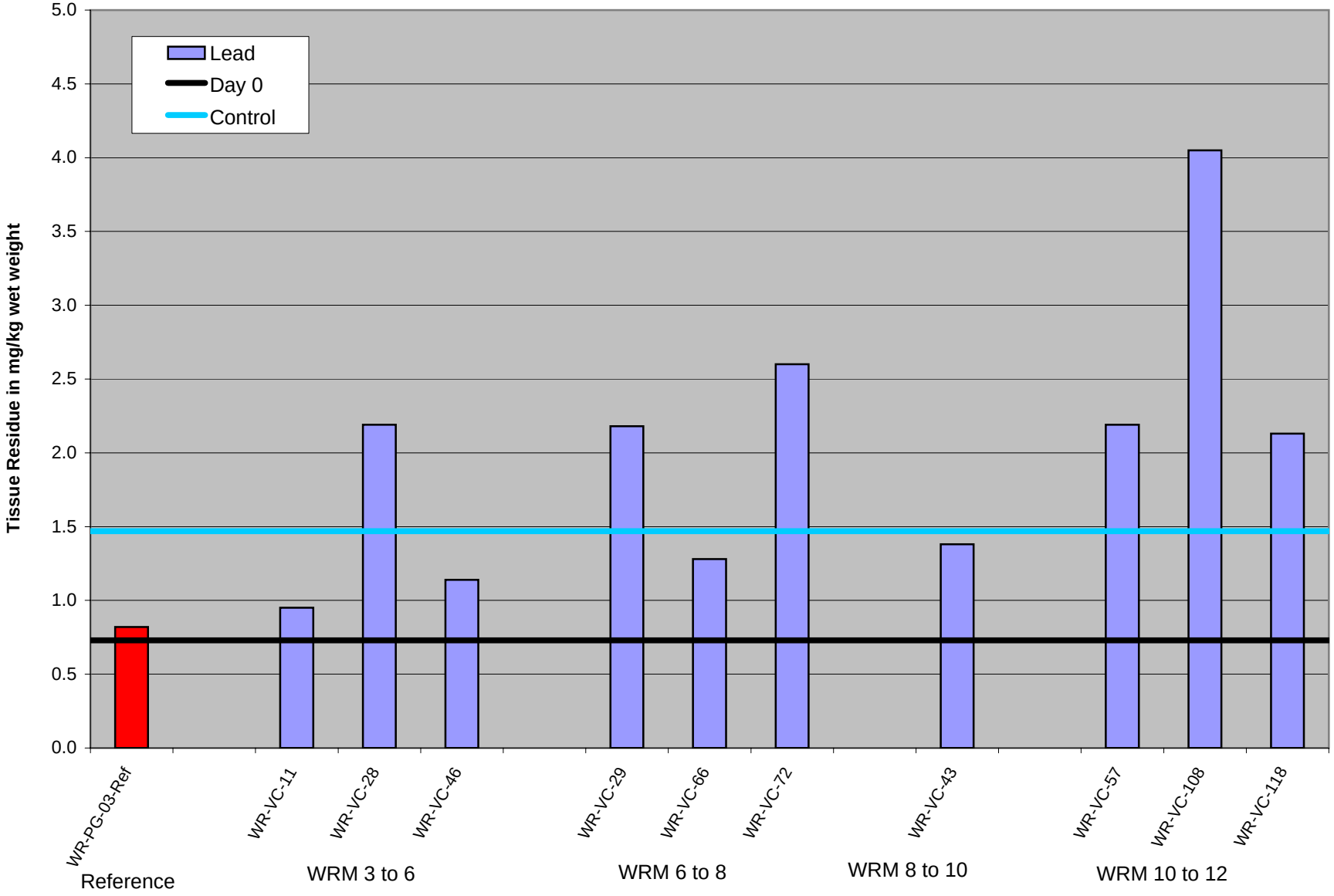

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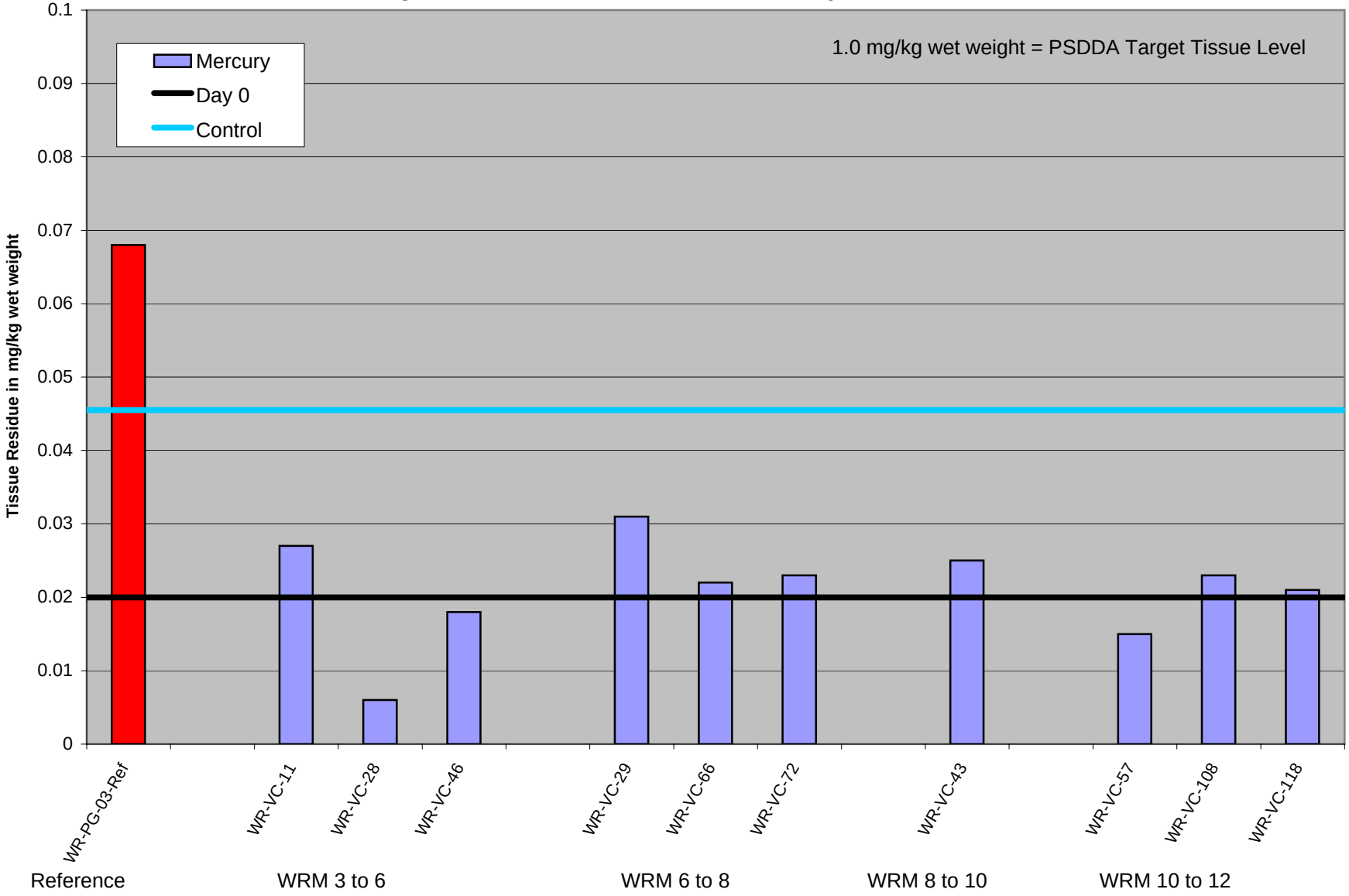

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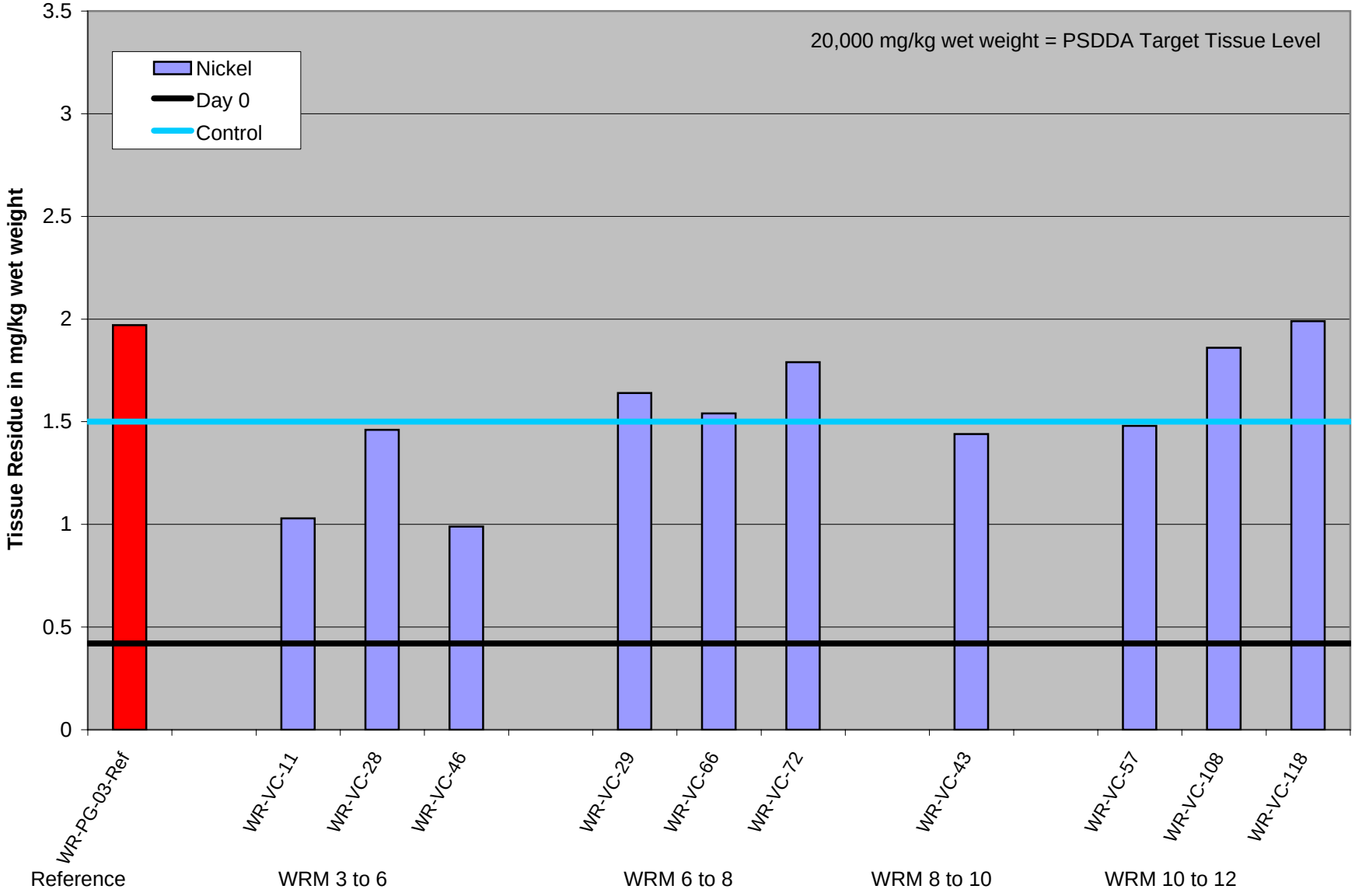

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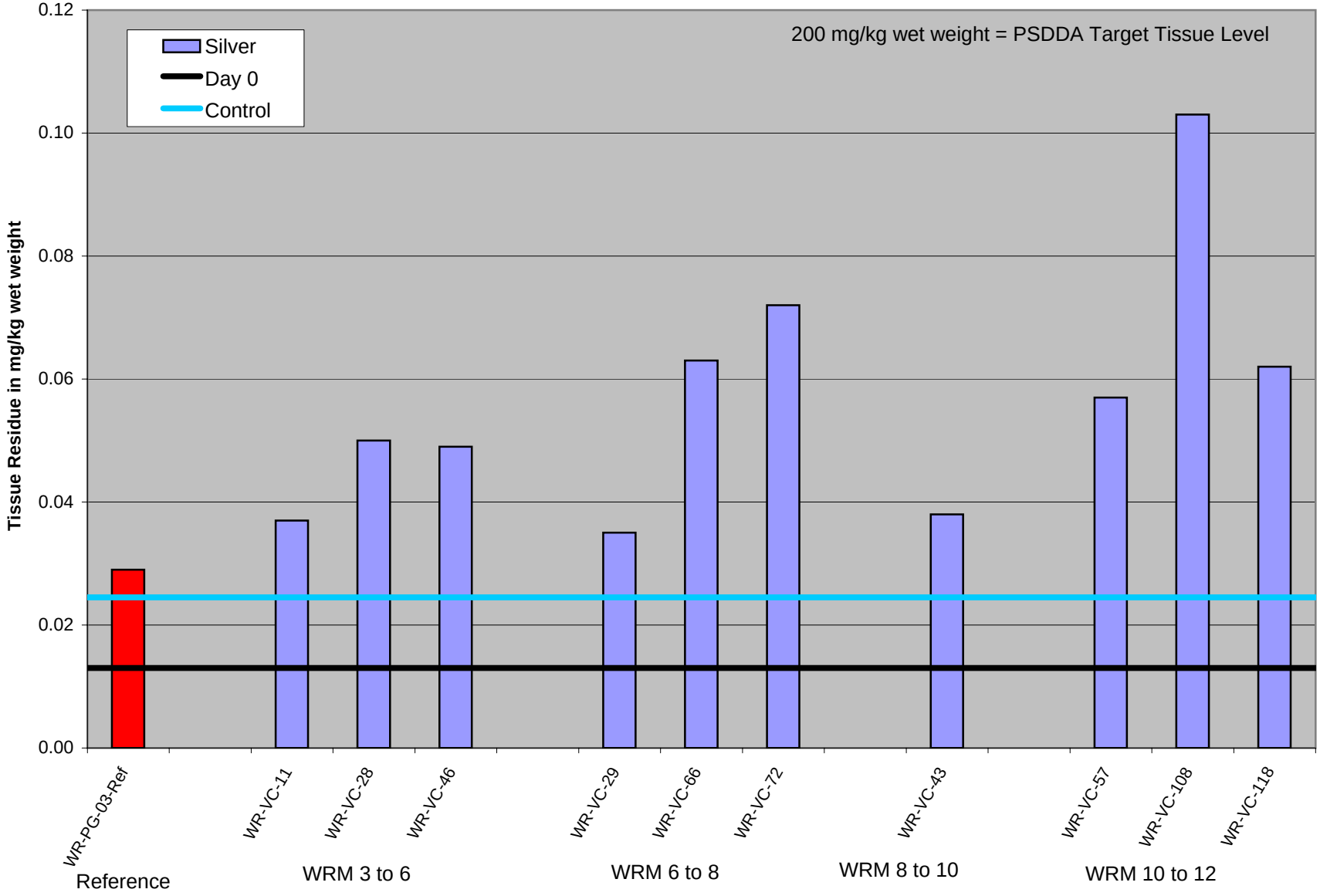

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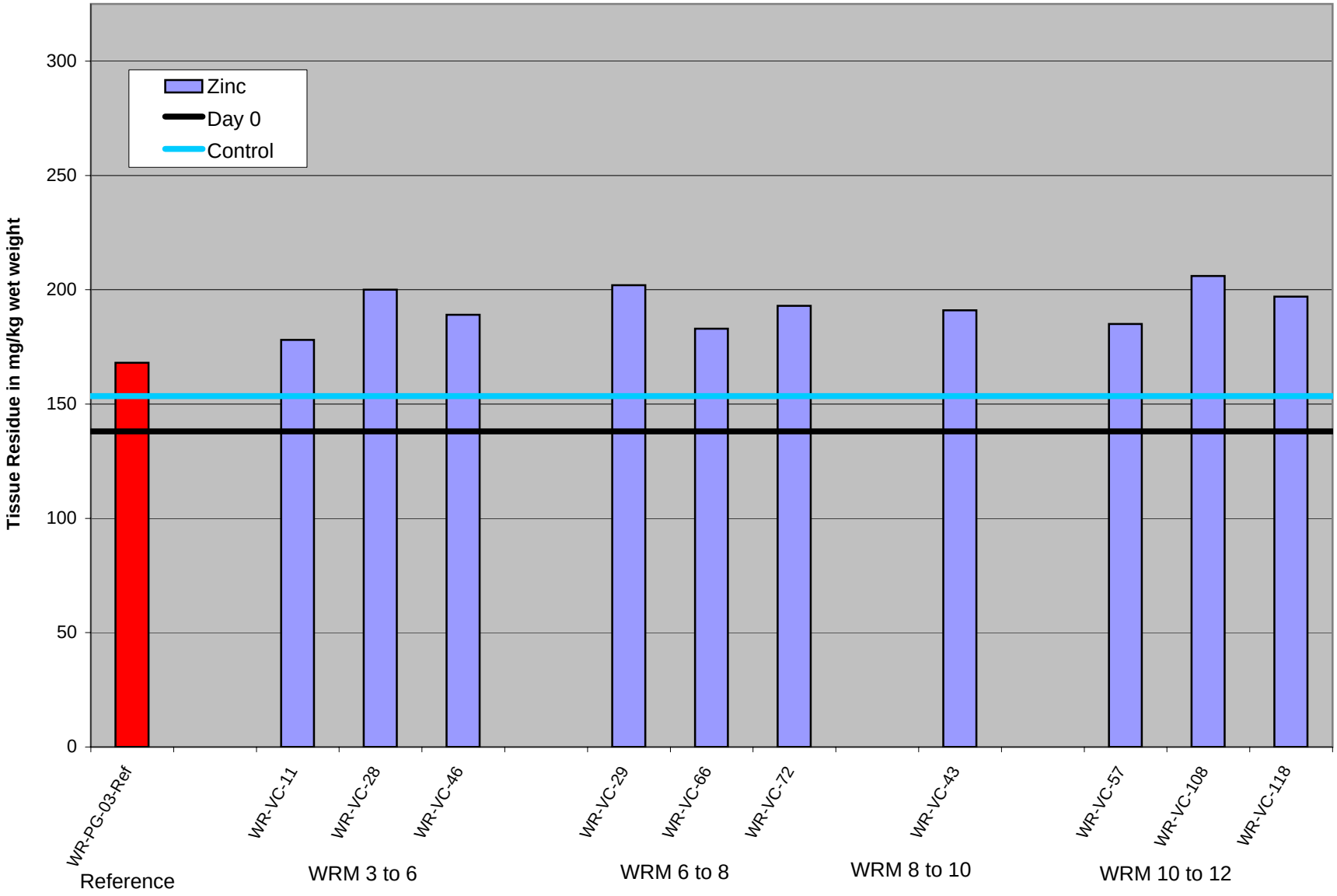

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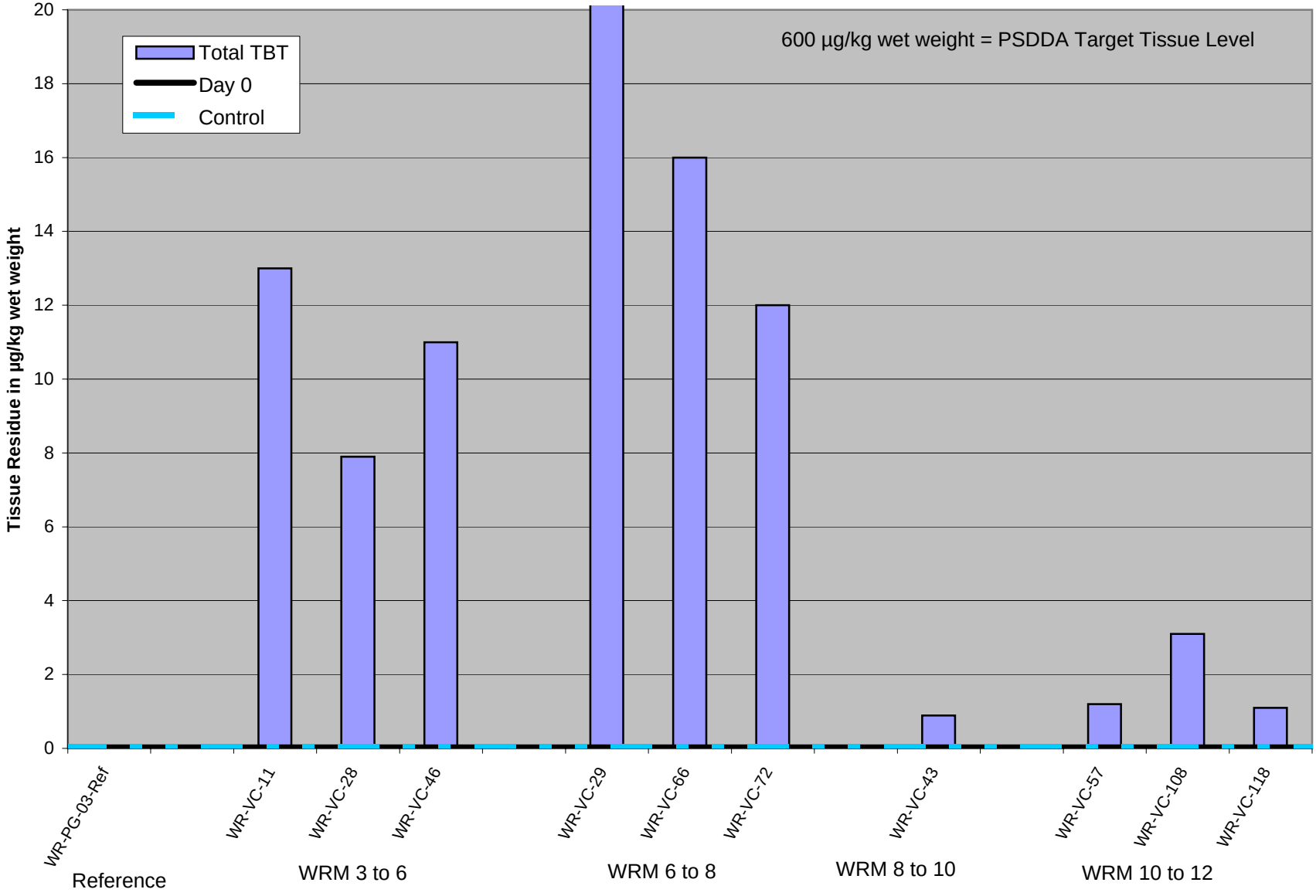

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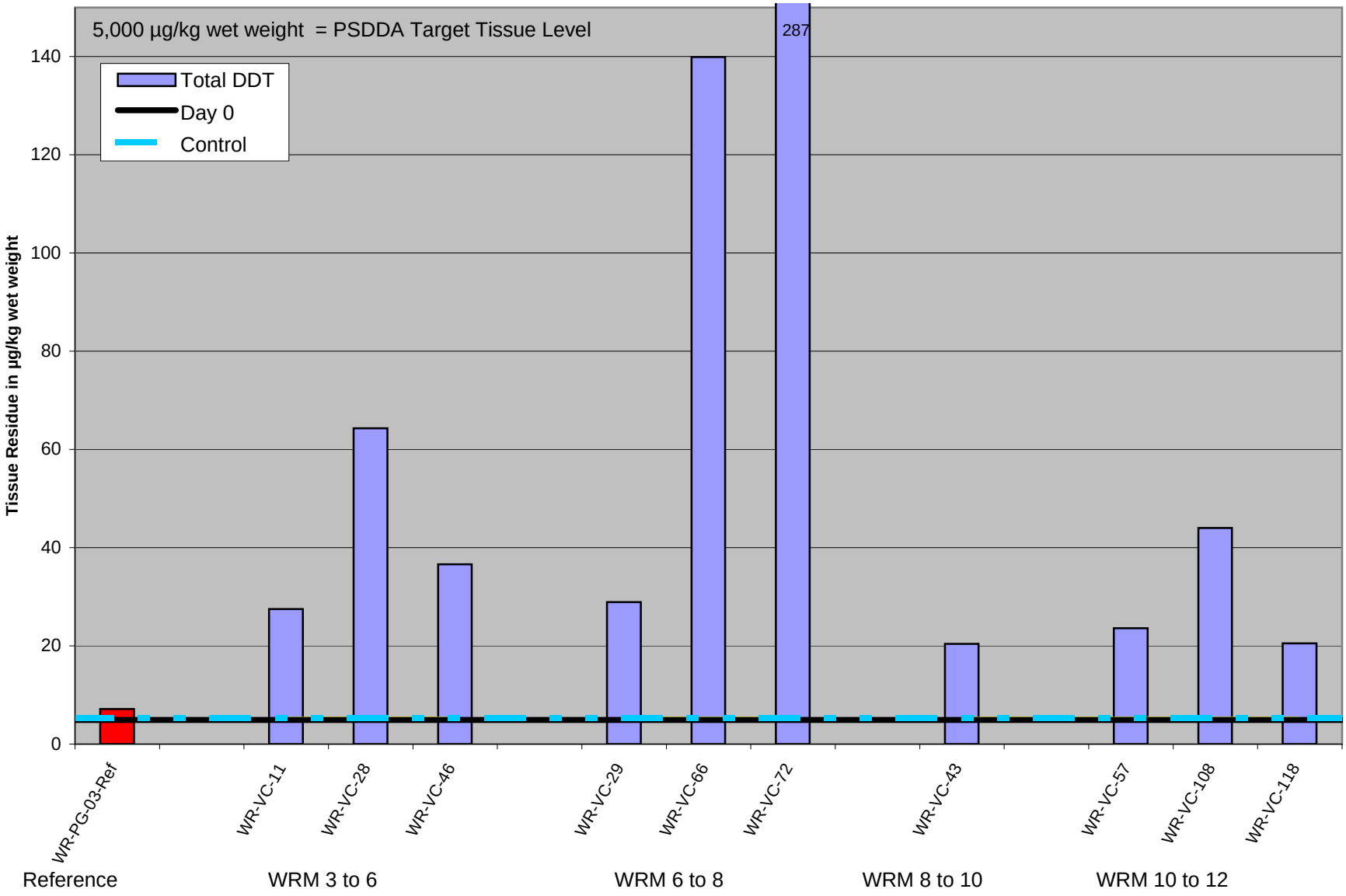

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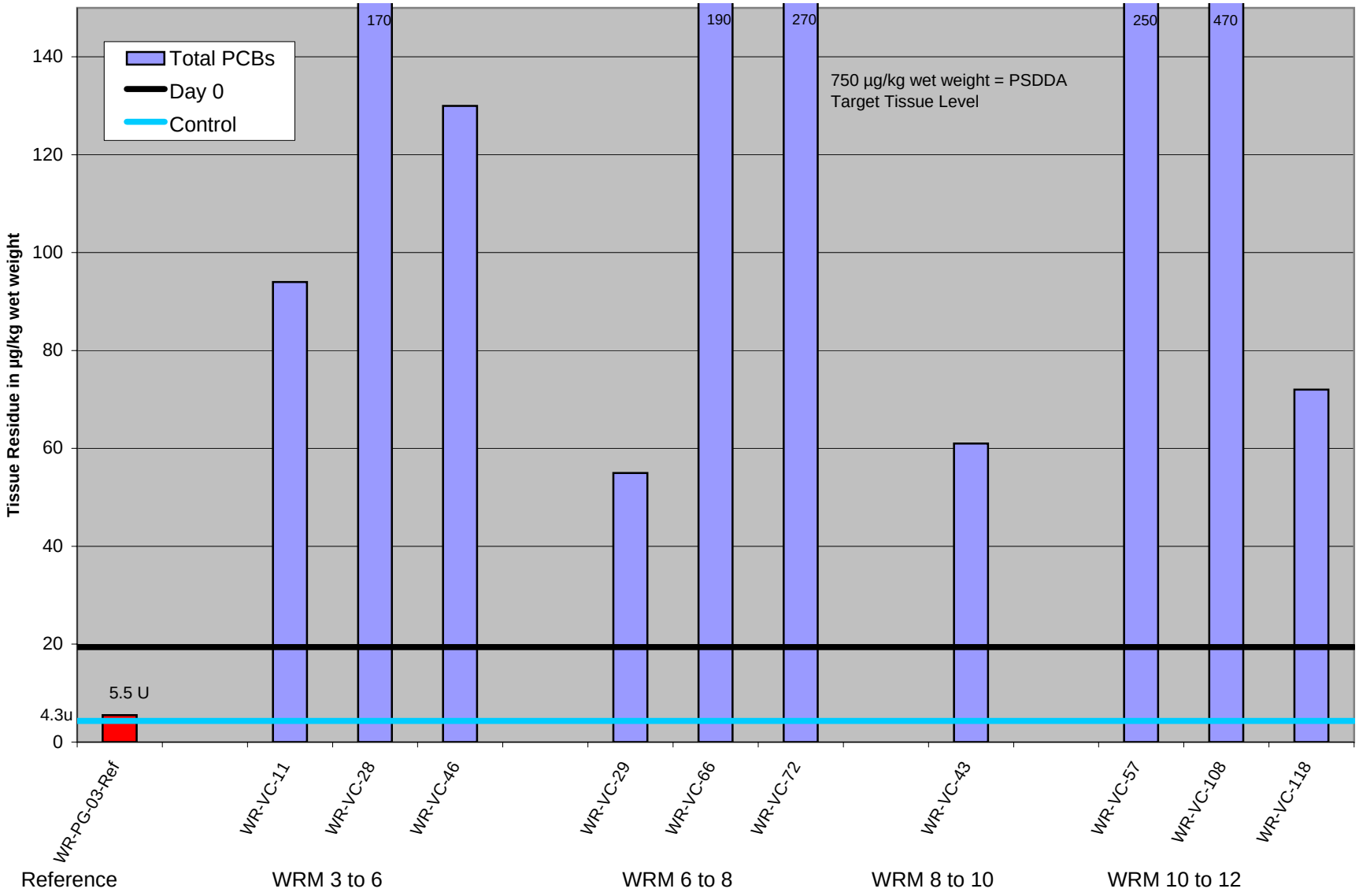

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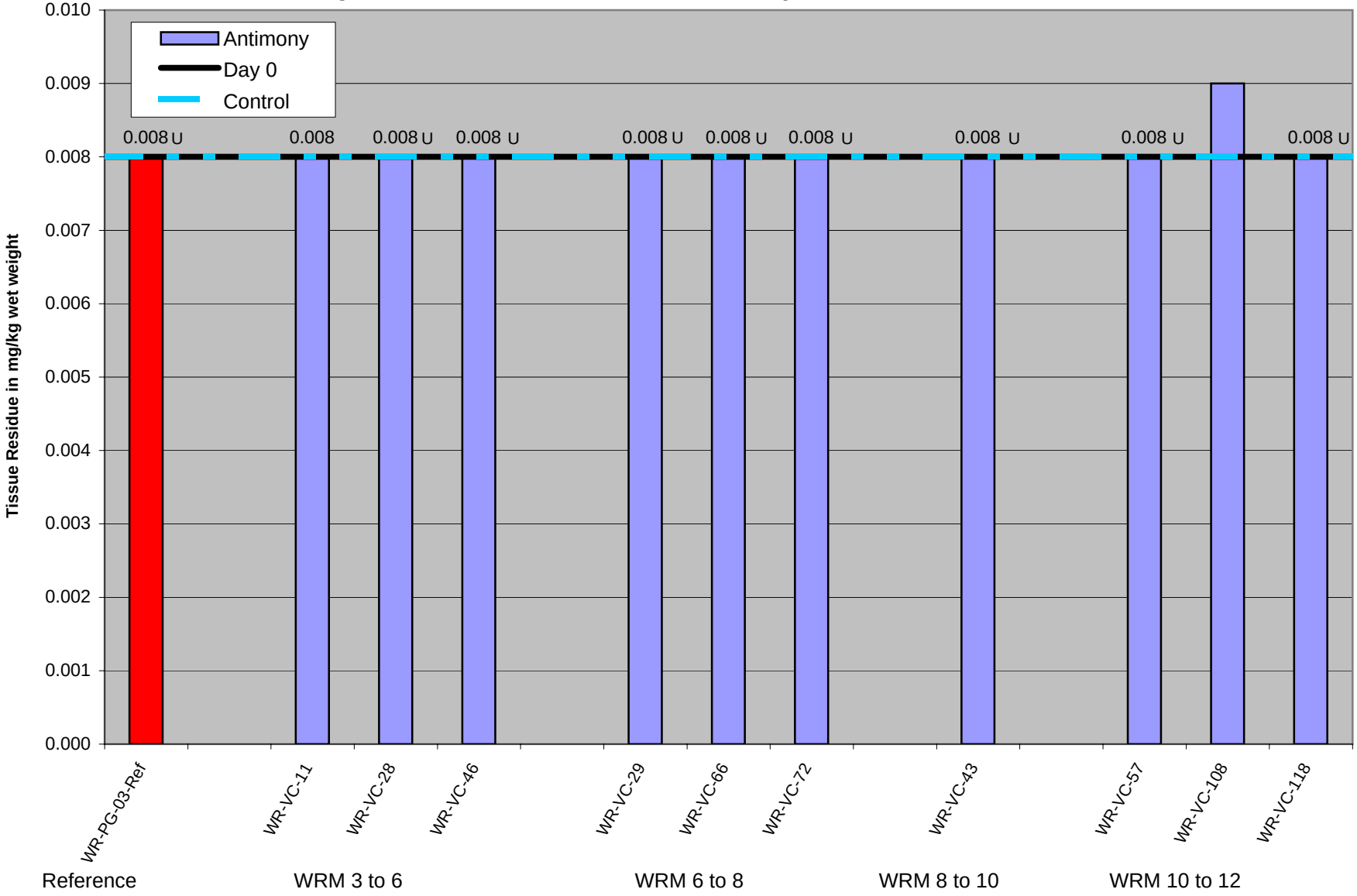

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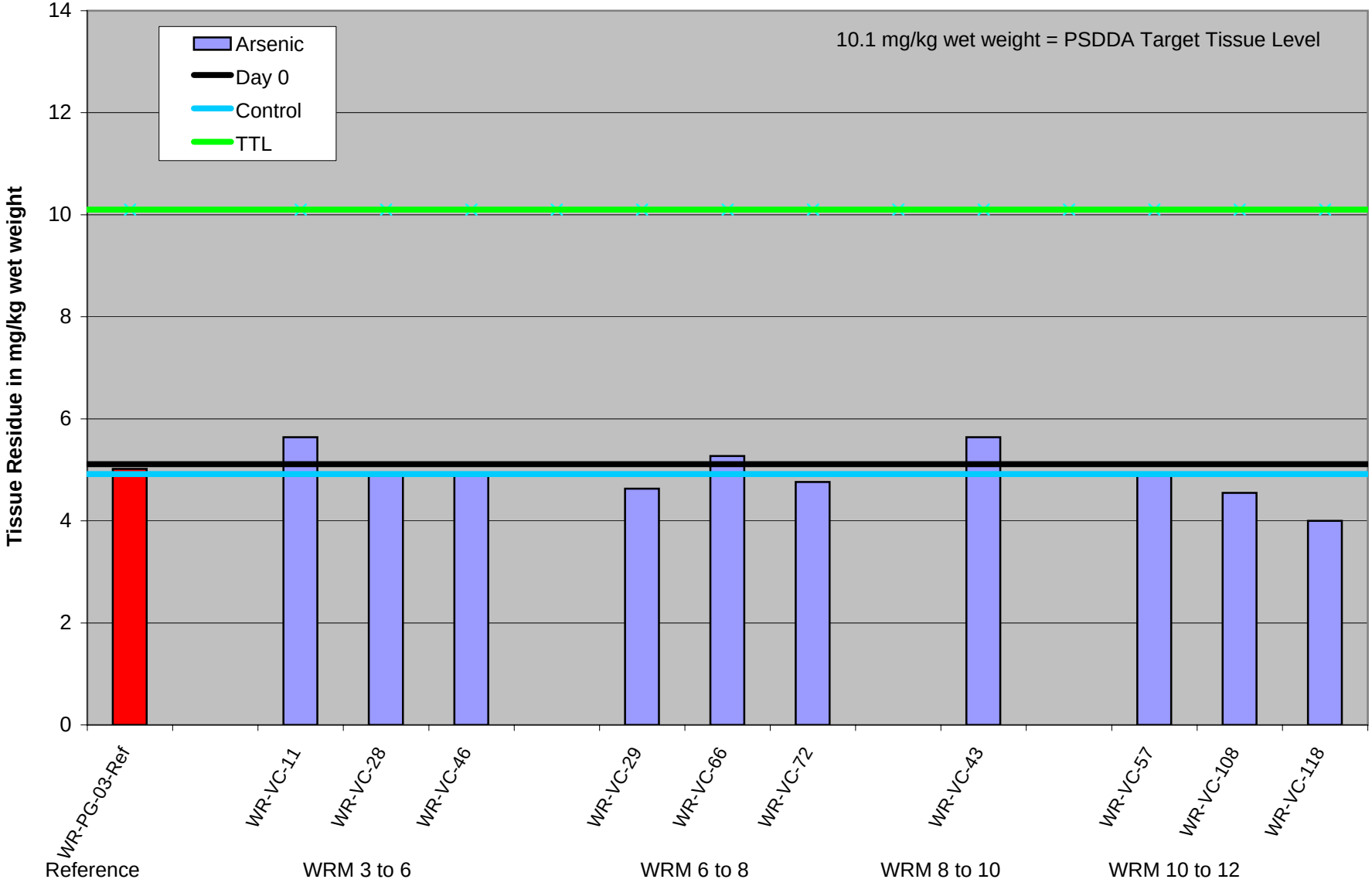

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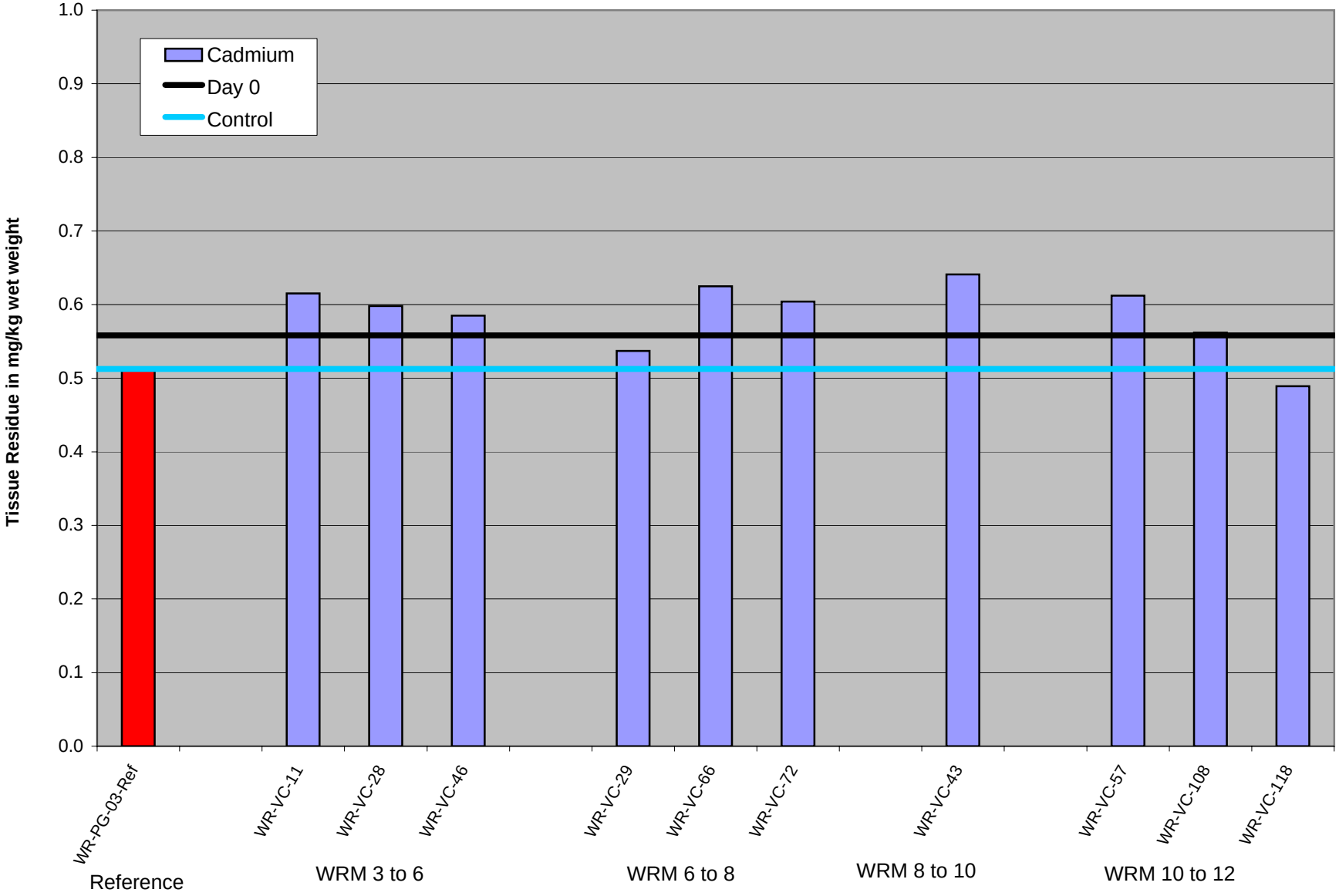

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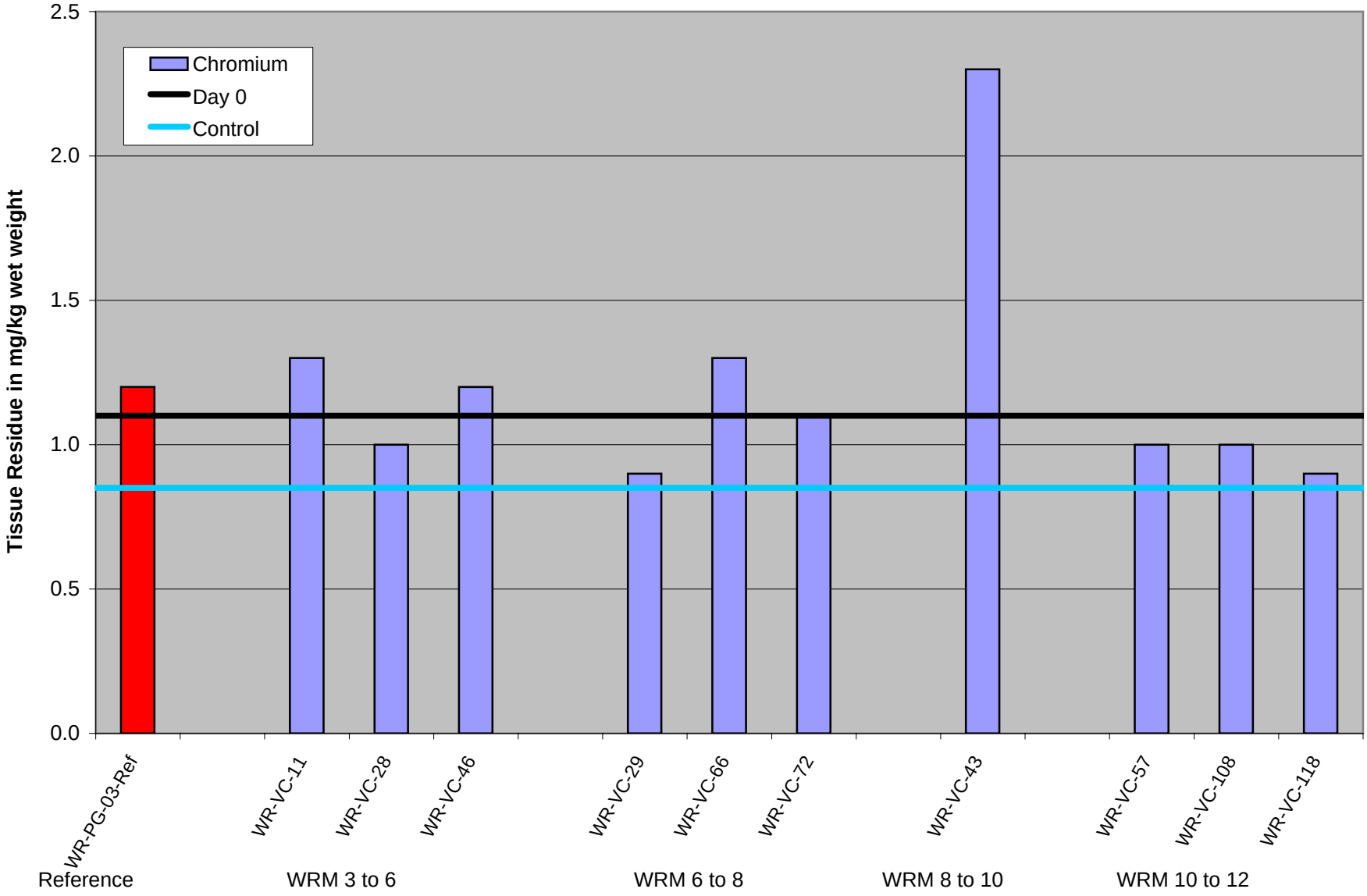

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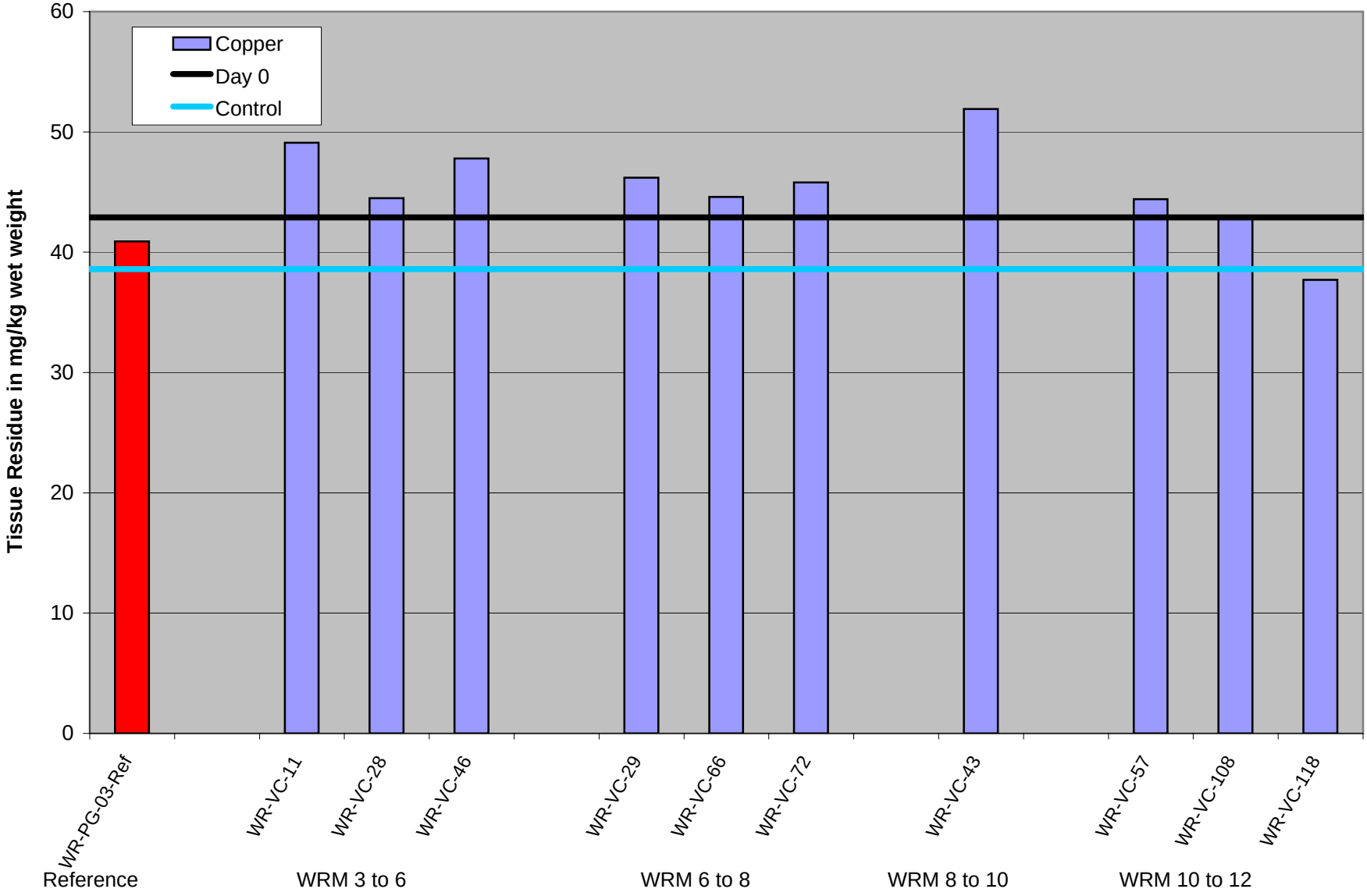

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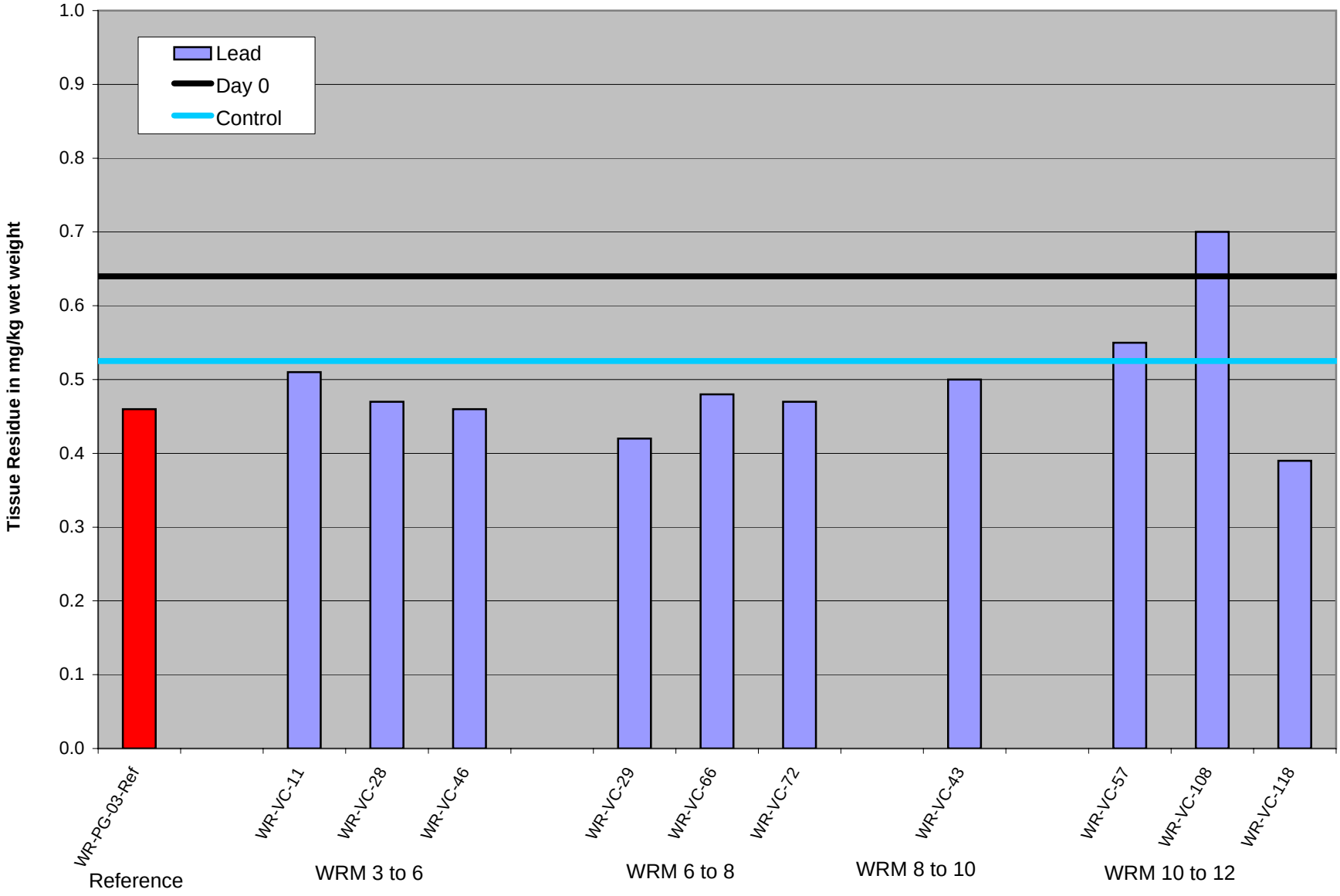

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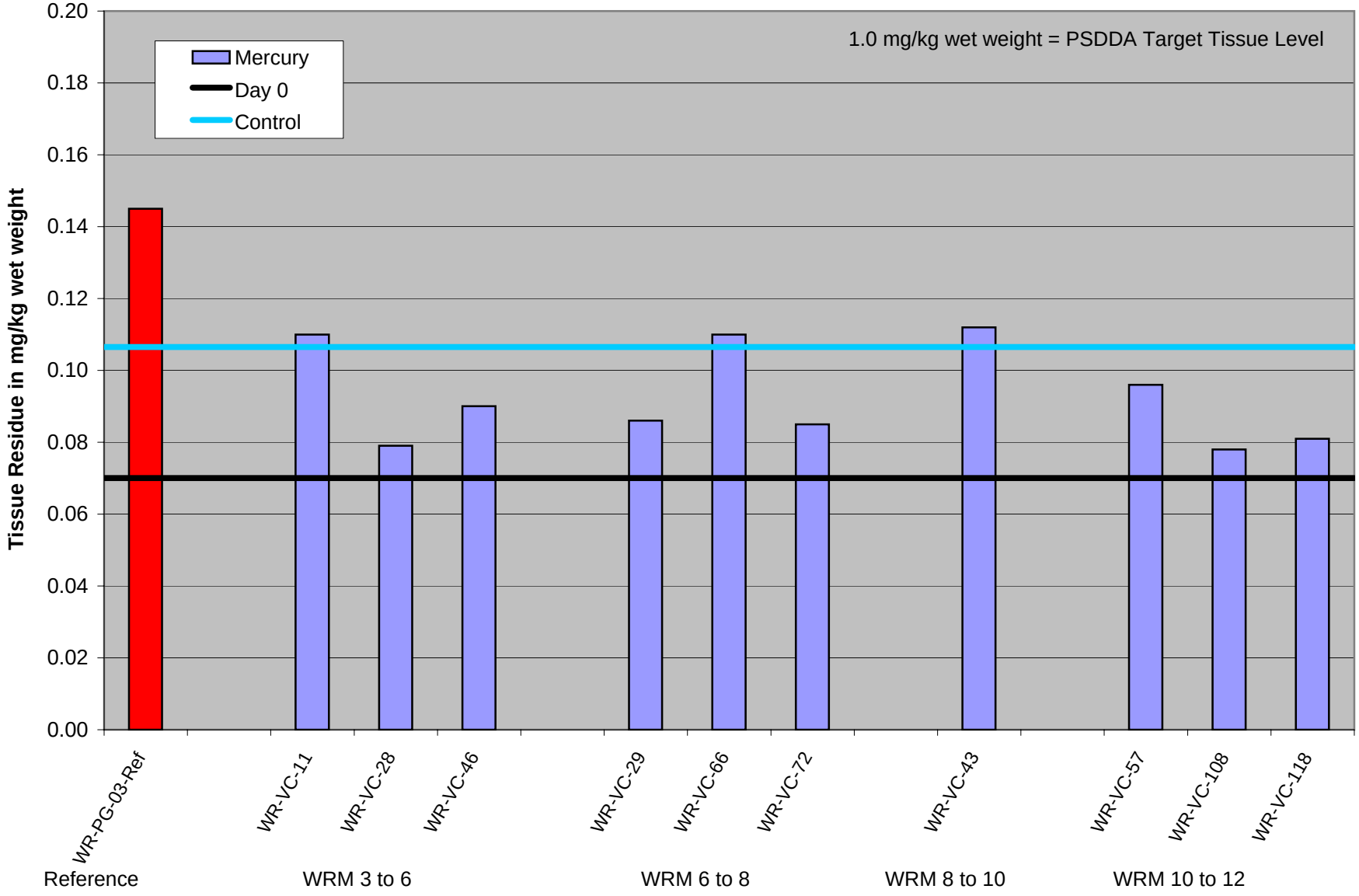

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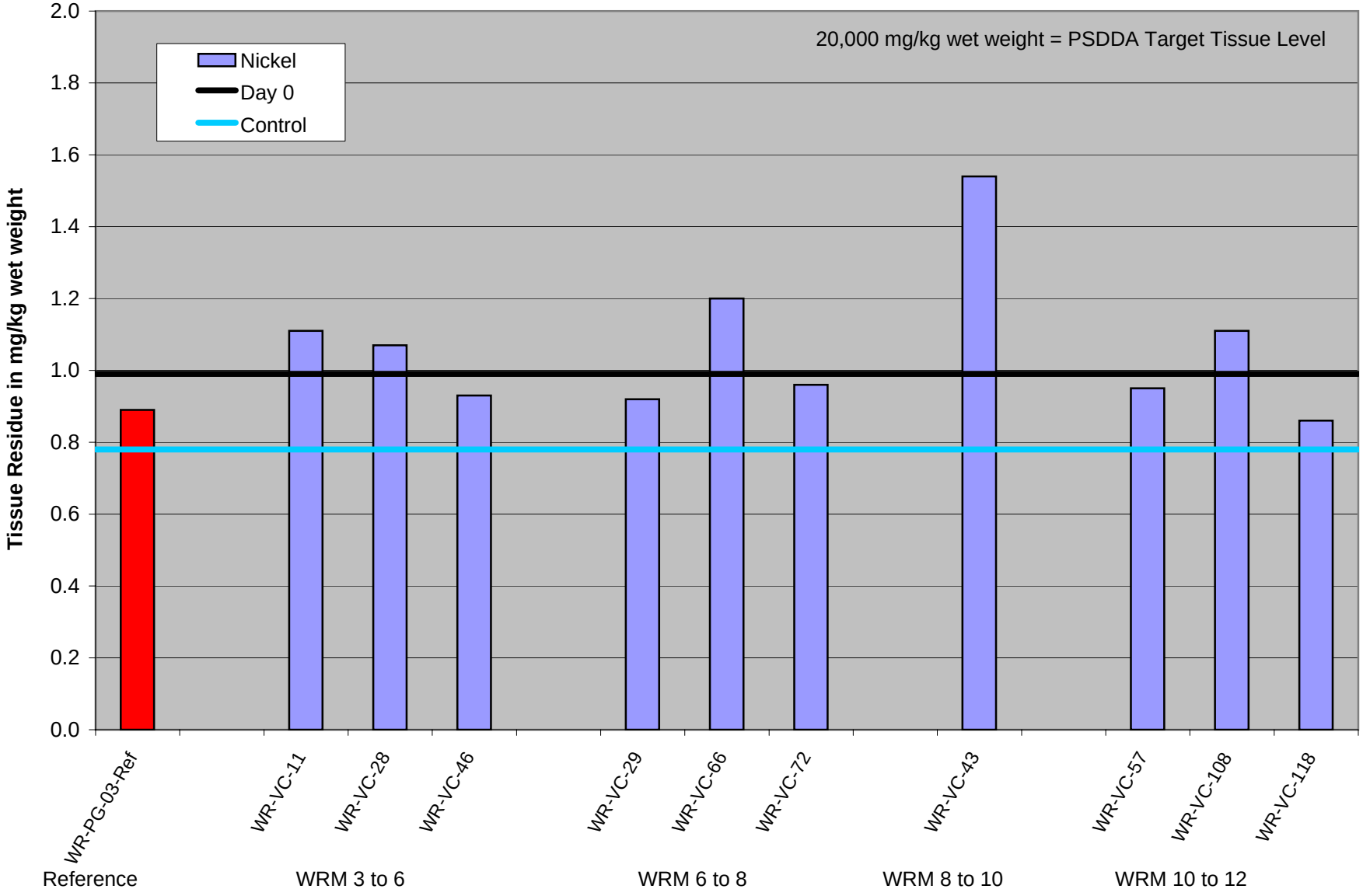

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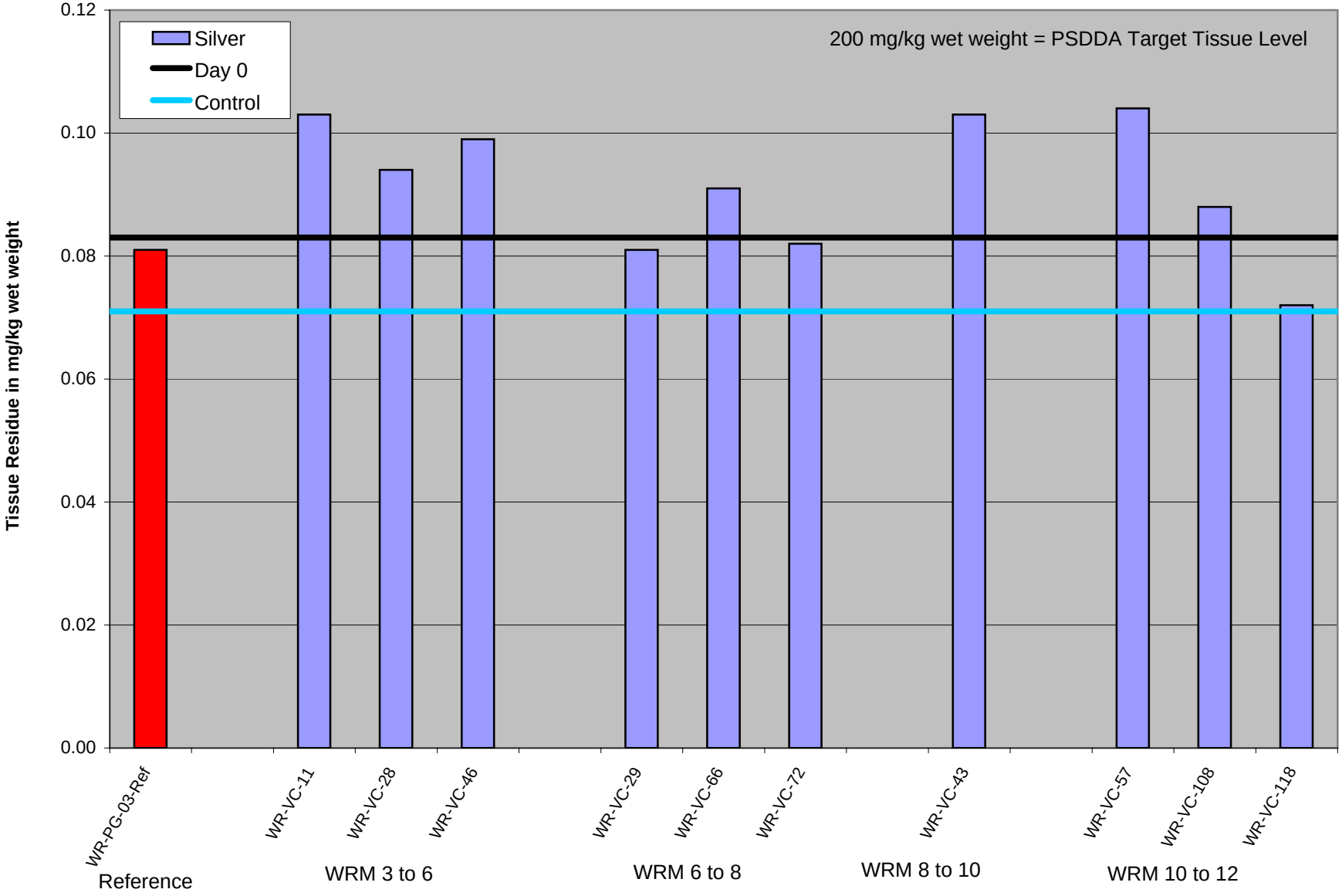

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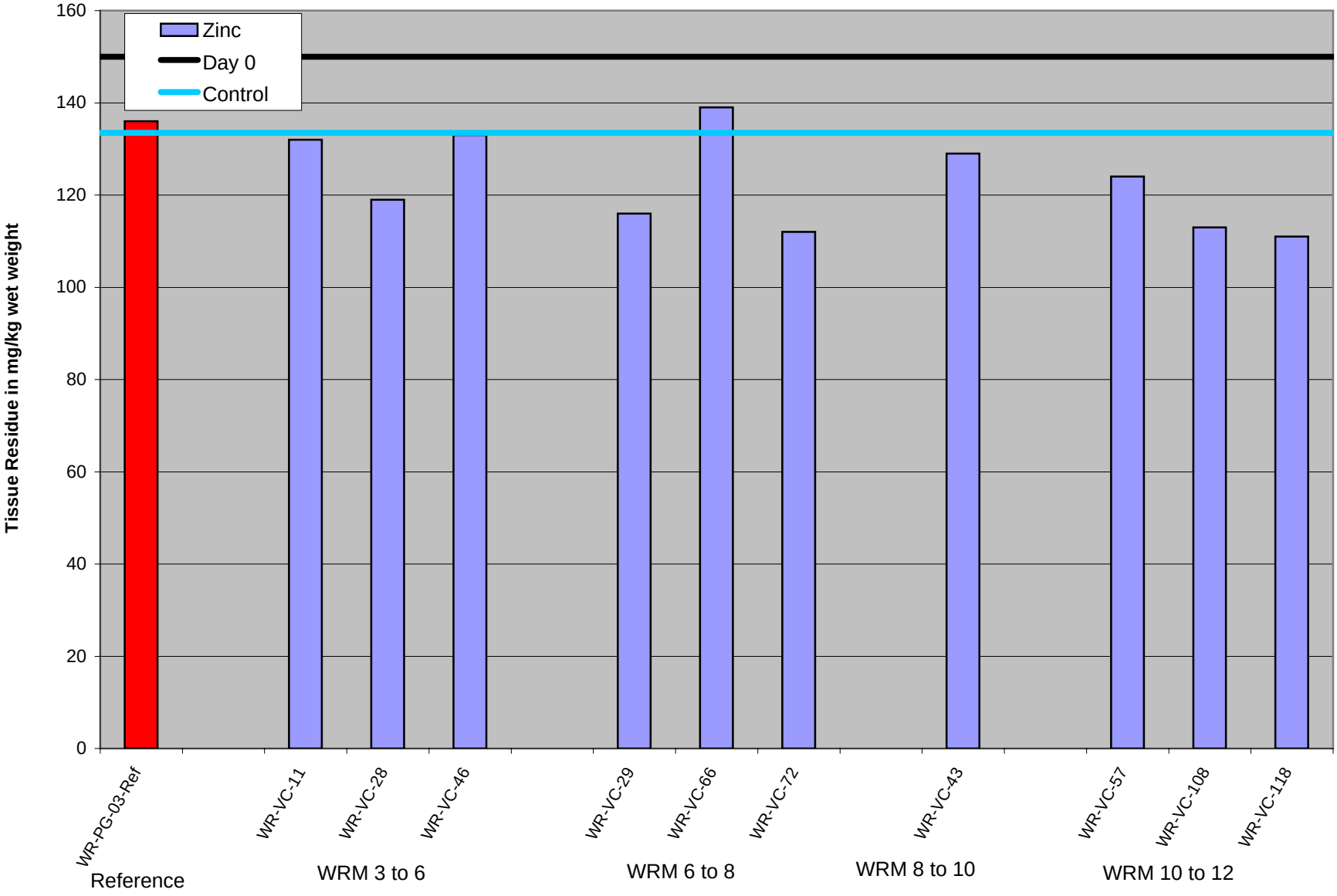

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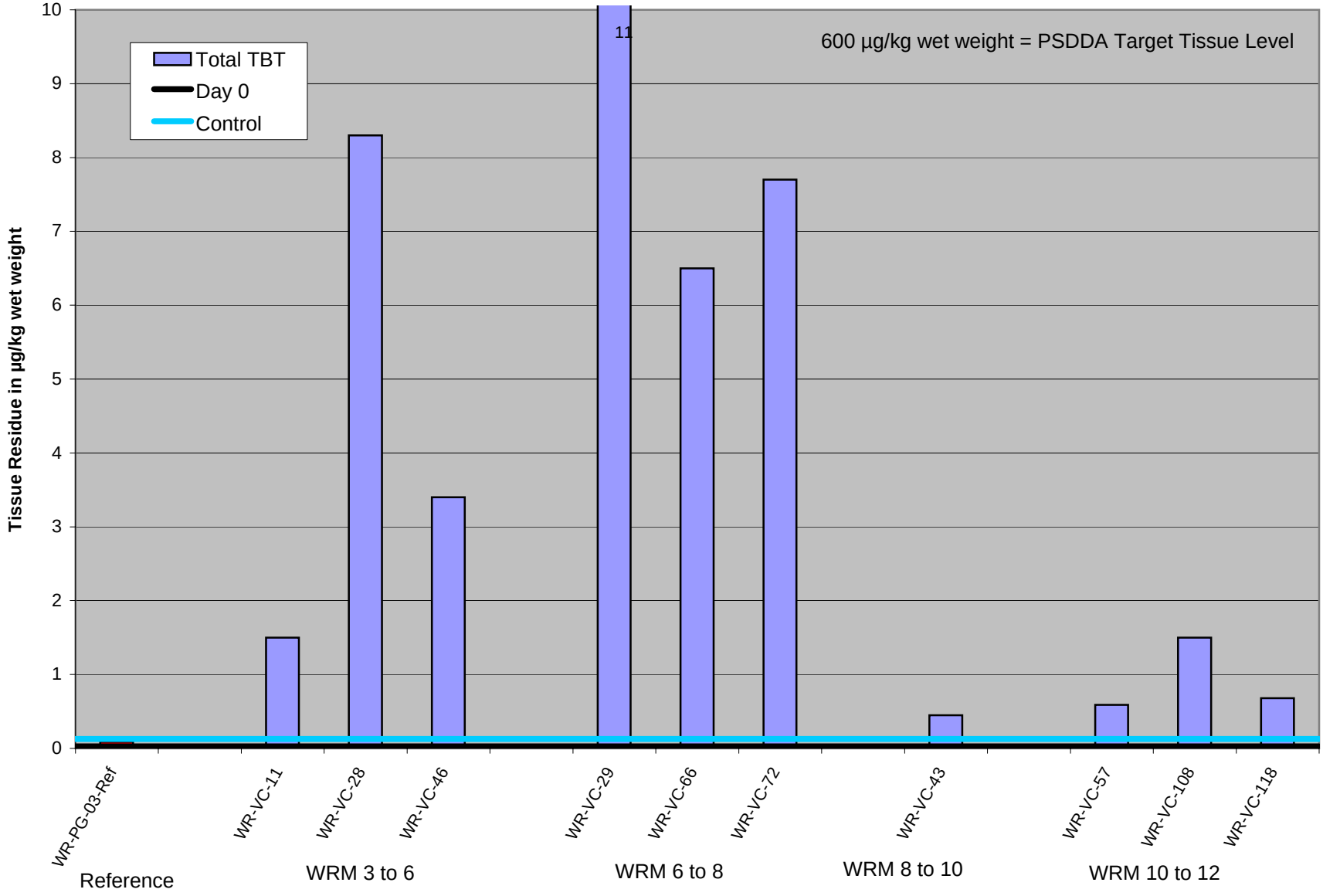

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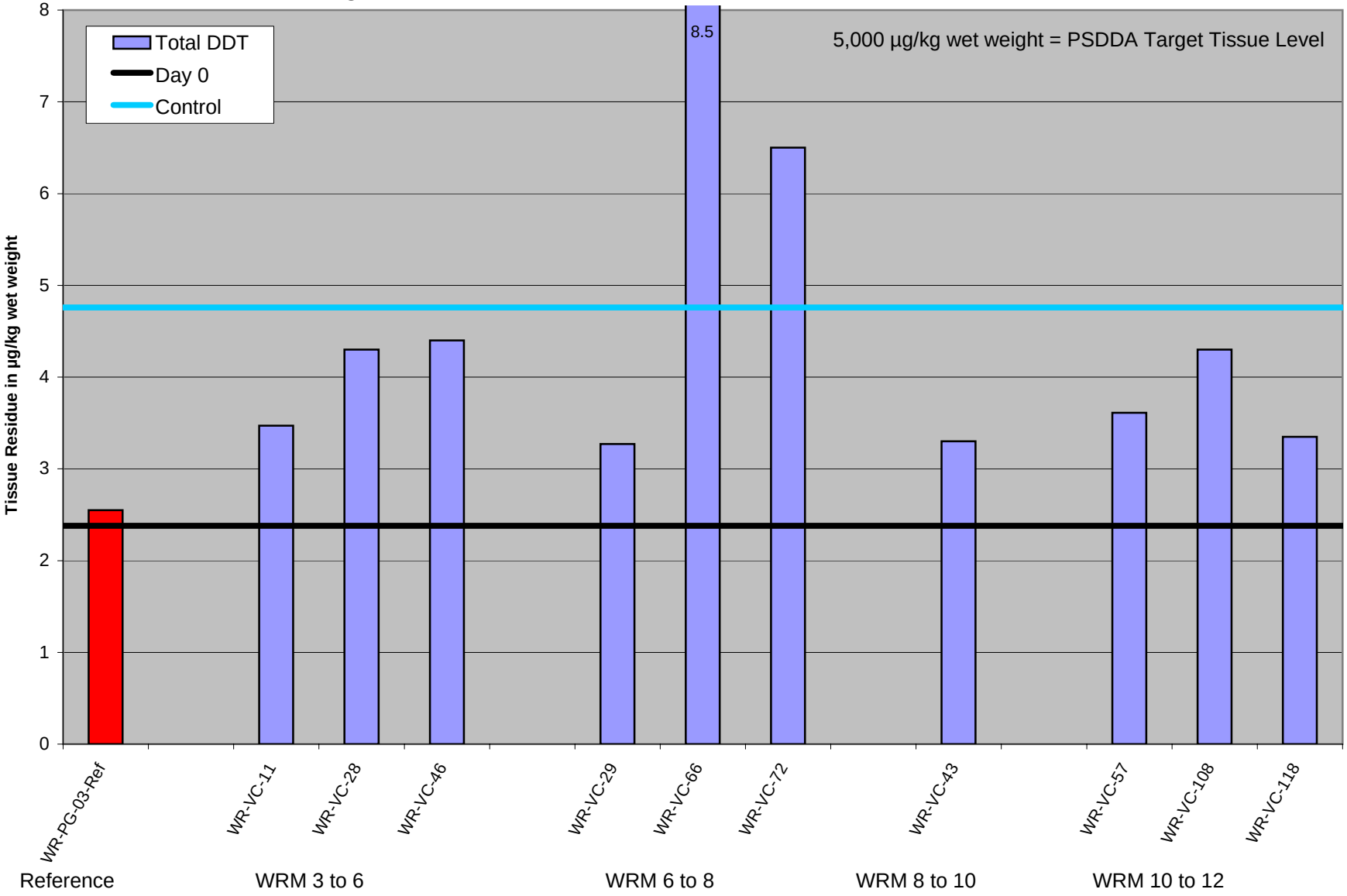

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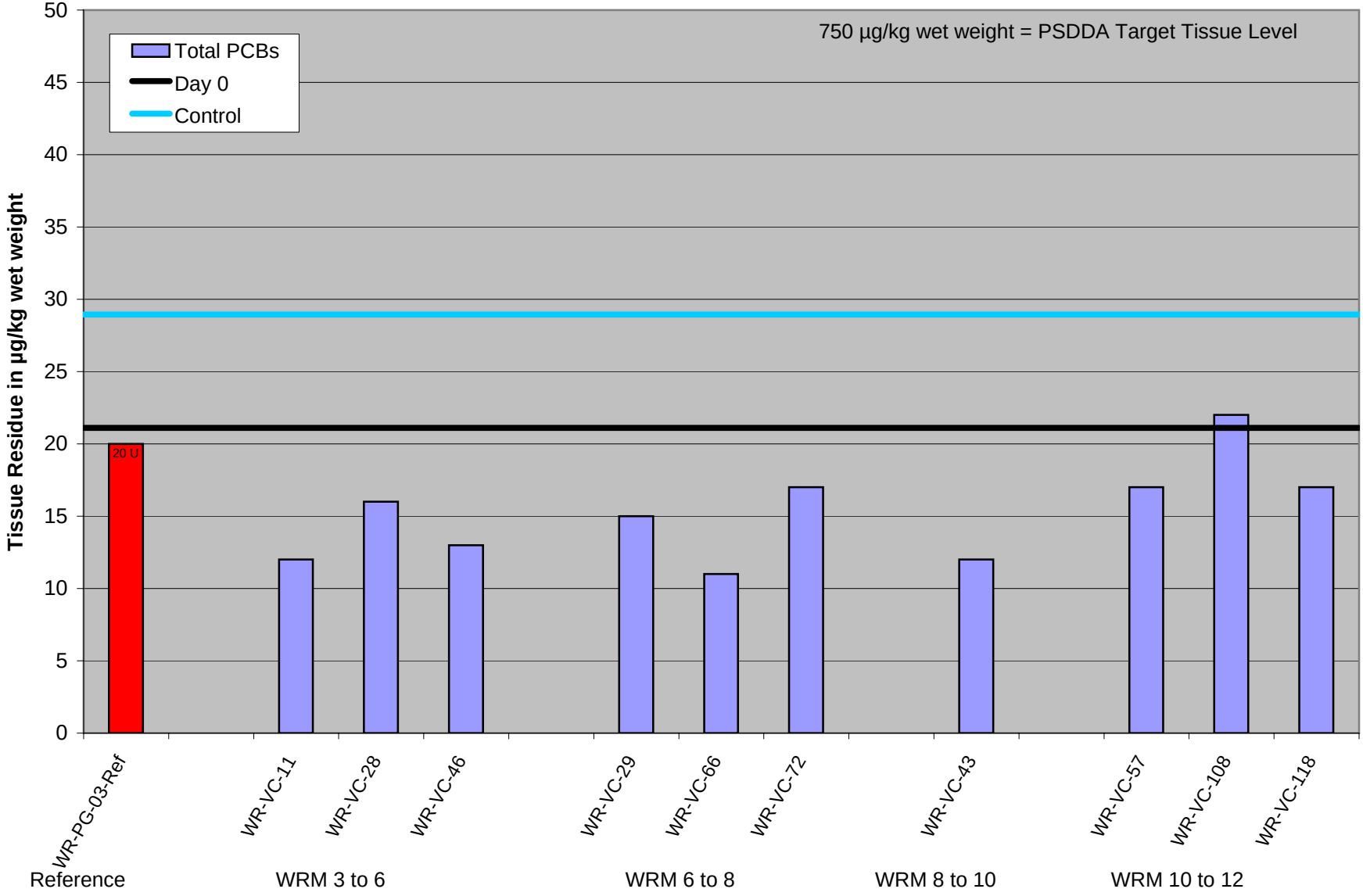

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Table 1 - Analytical Results (USACE 2003) for Sediment Samples

	DMEF Screening Criteria			Dredge Prism Unit Identification																			Reference Identification	
	SL	BT	ML	CSS 1	CSS 2	CSS 3	CSS 4	CSS 5	CSS 6	CSS 7	CSS 8	CSS 9	CSS 10	CSS 11	CSS 12	CSS 13	CSS 14	CSS 15	CSS 16	CSS 17	CSS 18	CSS 19	HC-REF-01	HC-REF-02
Conventionals in mg/kg																								
Ammonia as Nitrogen	--	--	--	290	240	305	295	294	300	87	104	233	258	128	132	148	157	214	224	251	229	106	54	52
Sulfide	--	--	--	1.5	1.7	1.9	1.1	2.2	1.5	1.1	1.3	1.2	1	1	1.1	1.1	0.9	4.6	1.6	2.3	4.1	6.6	5	1.7
Conventionals in Percent																								
Carbon, Total Organic (TOC)	--	--	--	2.31	2.12	2.27	2.51	2.59	2.47	1.89	1.98	2.16	2.52	1.82	1.72	2.06	4.19	3.52	4.29	3.7	4.25	3.59	1.21	1.71
Total Volatile Solids	--	--	--	6.89	4.38	6.84	7.41	7.63	7.46	7	6.59	7.2	7.14	6.42	6.96	7	7.4	7.9	8.33	8.16	8.19	5.03	5.1	6.33
Total Solids	--	--	--	52.5	49.6	53.7	51	49.7	54.4	49.9	52.3	52.1	52.9	53.9	53	52	51.3	50.8	50.5	49.8	48.4	59.5	53.5	51.1
Metals in mg/kg																								
Antimony, Total	150	150	200	0.14 J	0.22 J	0.16 J	0.19 J	0.15 J	0.16 J	0.1 J	0.13 J	0.15 J	0.12 J	0.15 J	0.11 J	0.11 J	0.13 J	0.17 J	0.11 J	0.14 J	0.14 J	0.1 J	0.1 J	0.11 J
Arsenic, Total	57	507	700	3.7 J	4.6 J	3.7 J	3.6 J	3.3 J	3.5 J	3.3	3.3	3.5	4	3.9	3.1 J	3.4 J	3.7 J	3.8 J	3.5 J	3.7 J	3.9 J	2.4 J	2.9 J	2.5 J
Cadmium, Total	5.1	--	14	0.43	0.33	0.36	0.3	0.25	0.29	0.26	0.22	0.27	0.31	0.28	0.21	0.23	0.24	0.23	0.23	0.3	0.25	0.18 J	0.21	0.21
Copper, Total	390	--	1,300	38.5 J	116 J	45.1 J	41.4 J	36.2 J	39.4 J	36.1	35.2	38.7	42.8	40.9	33.2 J	35.4 J	37.3 J	38.1 J	36.2 J	39.5 J	39.5 J	26.3 J	30.7	30.4
Lead, Total	450	--	1,200	15.8	22.3	24.9	14.6	13.5	16.8	11	11	14.2	16.7	13.8	11.8	10.5	10.9	11.3	10.9	12.4	13.5	12.3	7.48	7.18
Mercury, Total	0.41	1.5	2.3	0.08	0.08	0.08	0.06	0.07	0.08	0.05	0.25	0.07	0.07	0.06	0.05	0.05	0.04	0.05	0.05	0.05	0.06	0.05	0.03	0.03
Nickel, Total	140	370	370	23.8 J	24.3 J	25.5 J	24.1 J	20.2 J	23.4 J	23.2 J	22.7 J	23.3 J	27.1 J	26.8 J	22 J	23.4 J	25.1 J	24.5 J	22.1 J	24.5 J	24.7 J	17.6 J	22.8 J	21.9 J
Silver, Total	6.1	6.1	8.4	0.19	0.31	0.33	0.27	0.28	0.29	0.18	0.14	0.21	0.24	0.25	0.14	0.14	0.16	0.16	0.17	0.37	0.18	0.1	0.09	0.09
Zinc, Total	410	--	3,800	105 J	133 J	112 J	97.2 J	86.1 J	95 J	79.7 J	75.4 J	86.1 J	97.2 J	95.6 J	72.7 J	78.2 J	83.9 J	84.5 J	77.2 J	86.1 J	86.1 J	82 J	68.5 J	67.4 J
Butyltins (pore water) in µg/L																								
Tributyltin (TBT)	0.15	0.15	--	0.008 J	3.9 D	0.18	0.16	0.07	0.11	0.004 U	0.006 U	0.012 J	0.016 J	0.016 J	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.006 J	0.0039 U	0.0039 U
LPAHs in µg/kg																								
Acenaphthene	500	--	2,000	50	19	8.7 J	3 J	3.1 J	5 J	2.1 U	2 U	4.7 J	1.9 U	1.9 U	1.9 U	2 U	2.8 J	2 U	2 U	2.1 U	2.1 U	4.2 J	1.9 UJ	2 UJ
Acenaphthylene	560	--	1,300	12	10 J	8.7 J	5.9 J	3.9 J	7 J	2.9 U	2.7 U	6.1 J	4.2 J	6.6 J	2.7 U	2.7 U	4.4 J	2.8 U	3 J	2.9 U	2.9 U	10	2.7 UJ	2.8 UJ
Anthracene	960	--	13,000	32	27	11	5.8 J	4.5 J	5.4 J	3.1 J	4.7 J	10 J	4.1 J	5.4 J	3.9 J	2.7 U	4.4 J	3.2 J	5.7 J	4.7 J	5.4 J	11	2.7 UJ	2.8 UJ
Fluorene	540	--	3,600	35	25	13	5.2 J	5 J	5 J	3.5 U	3.3 U	5.2 J	4.9 J	4.3 J	3.3 U	3.3 U	4 J	3.4 U	3.4 U	3.5 U	3.6 U	6.4 J	3.2 UJ	3.4 UJ
Naphthalene	2,100	--	2,400	200	20	32	14	10 J	23	5.7 J	6.8 J	11	12	15	7.7 J	2.5 U	10 J	5 J	5.1 J	5.2 J	4.2 J	6.4 J	4.1 J	3.2 J
Phenanthrene	1,500	--	21,000	150	120	45	23	19	24	10 J	15	32	19	17	11	5.3 J	20	12 J	14	13	15	45	4.3 J	3.9 J
2-Methylnaphthalene	670	--	1,900	49	9 J	11	3.6 J	3 J	6.7 J	2.5 U	2.3 U	4.7 J	3.8 J	3.6 J	2.8 J	2.4 U	3.8 J	2.4 U	2.4 U	2.6 J	2.5 U	3.0 J	2.3 U	2.4 UJ
Total LPAHs	5,200	--	29,000	528	230	129.4	60.5	48.5	76.1	24.3	31.65	73.7	48.95	52.85	29.35	13.1 J	49.4	25.5	30.2	29.75	30.15	67	14.8	13.8
HPAHs in µg/kg																								
Benz(a)anthracene	1,300	--	5,100	51	73	23	14	12 J	14	8 J	14	26	10 J	16	9.1 J	5.7 J	15	7.7 J	14	9 J	12 J	37	4.6 J	5 J
Benzo(a)pyrene	1,600	3,600	3,600	70	86	26	14	18	18	7 J	13	19	7.2 J	3 U	11	10 J	7.4 J	10 J	12 J	13	12	57	6.9 J	3.5 J
Benzo(b)fluoranthene	--	--	--	48	93	31	16	15	17	8.3 J	19	22	15	25	9.7 J	6.2 J	12	11 J	10 J	12 J	13	44	4.7 UJ	4.9 UJ
Benzo(k)fluoranthene	--	--	--	48	64	20	13	11	16	7.7 J	13	24	9.2 J	14	6.6 J	4.9 U	13	6 J	13	7.8 J	11 J	39	4.7 UJ	4.9 UJ
Total Benzofluoranthenes (b+k)	3,200	--	9,900	96	157	51	29	26 J	33	16 J	32	46	24.2 J	39	16.3 J	8.65 J	25	17	23	19.8	24	83	4.7 UJ	4.9 UJ
Benzo(g,h,i)perylene	670	--	3,200	63	48	30	16	15	18	4.7 U	4.4 U	4.5 U	4.4 U	4.3 U	12	5.7 J	4.5 U	14	12	12 J	14	62	5.8 J	4.6 UJ
Chrysene	1,400	--	21,000	65	88	35	18	15	21	9.3 J	18	34	14	18	10 J	8.1 J	16	11 J	22	13	15	52	6 J	5.5 J
Dibenz(a,h)anthracene	230	--	1,900	10 J	16	4.1 U	4.4 U	4.5 U	4.1 U	4.5 U	4.3 U	4.3 U	4.2 U	4.1 U	4.2 U	4.3 U	4.3 U	4.4 U	4.4 U	4.5 U	4.6 U	6.8 J	4.2 UJ	4.4 UJ
Fluoranthene	1,700	4,600	30,000	130	160	59	33	26	36	17	26	46	28	22	18	11	33	19	21	23	29	110	8.3 J	9.4 J
Indeno(1,2,3-cd)pyrene	600	--	16,000	55	63	21	14	12	13	5.6 J	10 J	11	7.5 J	3.6 U	11 J	7.1 J	8.1 J	6.8 J	9.8 J	12	11 J	50	6.2 J	4.1 J
Pyrene	2,600	--	16,000	150	140	58	33	27	34	17	28	44	20	11	17	8.1 J	22	19	20	20	25	110	7.7 J	8.3 J
Total HPAHs	12,000	--	69,000	690	831	305.1	173.2	153.3	189.1	84.5	145.4	230.4	115.2	113.5	106.5	66.5	130.9	106.7	136	124.1	144.3	567.8	49.95	42.75
Phenols in µg/kg																								
2,4-Dimethylphenol	29	--	210	11 U	12 U	11 U	11 U	12 U	11 U	12 U	11 U	11 U	11 U	11 U	11 U	11 UJ	11 U	11 U	11 U	12 U	12 U	9.3 U	11 UJ	11 UJ
2-Methylphenol	63	--	77	6.5 U	6.9 U	6.4 U	6.7 U	6.9 U	6.3 U	6.9 U	6.6 U	6.6 U	6.5 U	6.4 U	6.5 U	6.6 UJ	6.7 U	6.7 U	6.8 U	6.9 U	7.1 U	5.8 U	6.4 UJ	6.7 UJ
4-Methylphenol	670	--	3,600	65	43	70	40	24	66	15	13	80	94	39	19	11 J	28	37	60	49	8.7 J	14	5.5 UJ	6.4 J
Pentachlorophenol (PCP)	400	504	690	17 U	18 U	16 U	17 U	18 U	16 U	18 U	17 U	17 U	17 U	16 U	17 U	17 UJ	17 U	17 U	17 U	18 U	18 U	15 U	16 UJ	17 UJ
Phenol	420	876	1,200	3.7 U	3.9 U	3.6 U	3.8 U	3.9 U	3.5 U	3.9 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	3.2 U	3.6 UJ	3.8 UJ
Semivolatiles in µg/kg																								
Benzoic Acid	650	--	760	190 U	200 U	180 U	190 U	200 U	180 U	200 U	190 U	190 U	190 U	180 U	190 U	190 UJ	190 U	190 U	200 U	200 U	200 U	170 U	180 UJ	190 UJ
Benzyl Alcohol	57	--	870	7.1 U	7.5 U	6.9 U	7.3 U	7.5 U	13	7.5 U	11 J	7.2 U	7 U	6.9 U	7 U	7.2 UJ	7.3 U	13	10 J	7.5 U	7.7 U	6.3 U	7 UJ	7.3 UJ
Dibenzofuran	540	--	1,700	13	10 J	7 J	2.6 U	2.7 U	4.5 J	2.7 U	2.5 U	2.8 J	2.5 U	2.5 U	2.5 U	2.5 U	3.4 J	2.6 U	2.6 U	2.7 U	2.7 U	2.2 U	2.5 UJ	2.6 UJ
Hexachlorobutadiene	29	212	270	2.7 U	2.9 U	2.7 U	2.8 U	2.9 U	2.6 U	2.9 U	2.7 U	2.7 U	2.7 U	2.6 U	2.7 U	2.7 U	2.8 U	2.8 U	2.8 U	2.9 U	2.9 U	2.4 U	2.7 UJ	2.8 UJ
Hexachloroethane	1,400	10,220	14,000	4.2 U	4.5 U	4.1 U	4.4 U	4.5 U	4.1 U	4.5 U	4.3 U	4.3 U	4.2 U	4.1 U	4.2 U	4.3 U	4.3 U	4.4 U	4.4 U	4.5 U	4.6 U	3.7 U	4.2 UJ	4.4 UJ
N-Nitrosodiphenylamine	28	130	130	4.2 U	4.5 U	4.1 U	4.4 U	4.5 U	4.1 U	4.5 U	4.3 U	4.3 U	4.2 U	4.1 U	4.2 U	4.3 U	4.3 U	4.4 U	4.4 U	4.5 U	4.6 U	3.7 U	4.2 UJ	4.4 UJ
1,2-Dichlorobenzene	35	37	110	2.5 U	2.7 U	2.5 U	2.6 U	2.7 U	2.4 U	2.7 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.6 U	2.6 U	2.6 U	2.7 U	2.7 U	2.2 U	2.5 UJ	2.6 UJ
1,3-Dichlorobenzene	170	1,241	--	3.1 U	3.3 U	3 U	3.2 U	3.3 U	3 U	3.3 U	3.1 U	3.1 U	3.1 U	3 U	3.1 U	3.1 U	3.2 U	3.2 U	3.2 U	3.3 U	3.4 U	2.7 U	3 UJ	3.2 UJ
1,4-Dichlorobenzene	110	120	120	3.7 U	3.9 U	3.6 U	3.8 U	3.9 U	3.5 U	3.9 U	3.7 U	3.7 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.8 U	3.8 U	3.9 U	4 U	3.2 U	3.6 UJ	3.8 UJ
1,2,4-Trichlorobenzene	31	--	64	2.9 U	3.1 U	2.8 U	3 U	3.1 U	2.8 U	3.1 U	2.9 U	2.9 U	2.9 U	2.8 U	2.9 U	2.9 U	3 U	3 U	3 U	3.1 U	3.1 U	2.6 U	2.9 UJ	3 UJ
Hexachlorobenzene	22	168	230	4 U	4.3 U	4 U	4.2 U	4.3 U	3.9 U	4.3 U	4.1 U	4.1 U	4 U	3.9 U	4 U	4.1 U	4.1 U	4.2 U	4.2 U	4.3 U	4.4 U	3.6 U	4 UJ	4.2 UJ

Please refer to the Notes at the end of this table.

Table 1 - Analytical Results (USACE 2003) for Sediment Samples

	DMEF Screening Criteria			Dredge Prism Unit Identification																			Reference Identification	
	SL	BT	ML	CSS 1	CSS 2	CSS 3	CSS 4	CSS 5	CSS 6	CSS 7	CSS 8	CSS 9	CSS 10	CSS 11	CSS 12	CSS 13	CSS 14	CSS 15	CSS 16	CSS 17	CSS 18	CSS 19	HC-REF-01	HC-REF-02
Phthalates in µg/kg																								
bis(2-Ethylhexyl) Phthalate	8,300	13,870	--	45 J	560	290	87 J	61 J	65 J	58 J	110 J	78 J	65 J	62 J	58 J	39 J	510	75 J	75 J	280	97 J	71 J	3.2 UJ	29 J
Butyl Benzyl Phthalate	970	--	--	2.9 U	20	2.8 U	17	3.1 U	2.8 U	11 J	15	15	13	8.5 J	2.9 U	2.9 U	3 U	5.8 J	3.0 U	10 J	3.1 U	2.6 U	2.9 UJ	3 UJ
Di-n-butyl Phthalate	5,100	10,220	--	6.9 J	26	12	15	8.9 J	7.9 J	13	8.3 J	12	11	11 J	7.3 J	64	9.1 J	7.6 J	6.4 J	7.9 J	7.5 J	4.9 J	12 J	5.1 UJ
Di-n-octyl Phthalate	6,200	--	--	2.3 U	2.5 U	2.3 U	2.4 U	2.5 U	2.3 U	2.5 U	2.3 U	2.4 U	2.3 U	2.3 U	2.3 U	2.4 U	2.4 U	2.4 U	2.4 U	33	11 J	2.1 U	2.3 UJ	2.4 UJ
Diethyl Phthalate	1,200	--	--	6.7 U	7.1 U	12	11 J	13	6.5 U	8 J	8.4 J	6.8 U	6.7 U	6.5 U	7.6 J	6.8 U	8 J	6.9 U	7.0 U	7.1 U	7.3 U	5.9 U	6.6 UJ	6.9 UJ
Dimethyl Phthalate	1,400	1,400	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 UJ	3.6 UJ
Pesticides/PCBs in µg/kg																								
4,4'-DDE	--	--	--	4.4	3.8	4.6	2.6	2.6	2.7	1.7	1.7	3.6	2.9	2	1.7	1.4	1.7	1.7	1.8	2	1.8	2.4	1.3	1.3
4,4'-DDD	--	--	--	7.6	2.6	4.7	2	1.6	1.3	0.88 J	0.82 J	2.2	1.4	1	0.84 JP	0.91 J	0.95 J	0.99	0.91 J	1.1 J	0.97 J	1.7	0.18 U	0.54 UJ
4,4'-DDT	--	--	--	2.3	2.1 UJ	7.3	0.34 U	1.1 UJ	1.3 UJ	0.35 U	0.33 U	0.33 U	1.6 P	0.32 U	0.33 U	0.33 U	0.34 U	1.1 P	0.34 U	0.35 U	1.3 P	0.93 UJ	1.0 JP	0.34 U
Total DDT	6.9	50	69	14.3	7.45	16.6	4.6	4.2	4	2.58	2.52	5.8	5.9	3	2.54	2.31	2.65	3.79	2.71	3.1	4.07	4.1	2.39	1.74
gamma-BHC (Lindane)	10	--	--	0.19 U	1 UJ	1 UJ	0.2 U	0.2 U	1 UJ	0.2 U	0.19 U	0.2 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.21 U	0.17 U	0.19 U	0.20 U
Heptachlor	10	37	--	0.19 U	0.2 U	0.19 U	0.2 U	0.2 U	0.18 U	0.2 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U	0.19 U	0.19 U	0.2 U	0.2 U	0.2 U	0.21 U	0.17 U	1.1 UJ	1.1 UJ
Aldrin	10	37	--	0.48 U	0.51 U	0.47 U	0.5 U	0.51 U	0.46 U	0.51 U	0.48 U	0.48 U	0.48 U	0.47 U	0.48 U	0.49 U	0.49 U	0.5 U	0.5 U	0.51 U	0.52 U	0.43 U	0.47 U	0.49 U
gamma-Chlordane	--	--	--	0.073 U	1 UJ	0.071 U	0.77 UJ	0.26 JP	0.28 UJ	0.91 UJ	1.1 UJ	0.94 UJ	0.35 JP	0.24 JP	0.68 UJ	0.96 UJ	1.1 UJ	0.41 JP	0.99 UJ	1.1 UJ	1.1 UJ	0.84 UJ	0.35 JP	0.12 UJ
alpha-Chlordane	10	37	--	0.28 J	0.48 J	0.3 J	0.27 J	0.28 J	0.29 J	0.13 U	0.94 UJ	0.49 J	0.28 J	0.2 J	0.94 UJ	0.12 U	0.13 U	0.98 UJ	0.13 U	1.1 UJ	1.1 UJ	0.36 J	0.12 U	0.13 U
Dieldrin	10	37	--	0.25 JP	0.43 JP	0.16 U	0.17 U	0.17 U	0.16 U	0.17 JP	0.27 JP	0.19 JP	0.51 JP	0.16 U	0.16 U	0.19 JP	0.21 JP	0.31 J	0.21 J	0.23 J	0.19 JP	0.17 JP	0.16 U	0.17 U
Aroclor 1016	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	3.6 U
Aroclor 1221	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	3.6 U
Aroclor 1232	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	3.6 U
Aroclor 1242	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	3.6 U
Aroclor 1248	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	3.7 U	3.5 U	11	7.4 J	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	3.6 U
Aroclor 1254	--	--	--	22	32	32	12	14	18	3.7 U	3.5 U	3.5 U	3.5 U	3.4 U	3.4 U	3.5 U	3.6 U	3.6 U	3.6 U	3.7 U	3.8 U	3.1 U	3.4 U	4.7 J
Aroclor 1260	--	--	--	3.5 U	3.7 U	3.4 U	3.6 U	3.7 U	3.4 U	6.7 J	5.1 J	11	14	6.8 J	6 JP	5.8 JP	6.7 J	7.7 J	6.7 J	8.2 J	7.7 J	21	3.4 U	3.6 U
Total PCBs	130	38†	3,100	22	32	32	12	14	18	6.7 J	5.1 J	22	21.4	6.8 J	6 JP	5.8 JP	6.7 J	7.7 J	6.7 J	8.2 J	7.7 J	21	3.4 U	4.7 J

Notes:

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level

-- = Not available

U = Not detected at the indicated detection limits

J = Estimated value

D = The reported result is from a dilution.

P = The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than the 40% between the two analytical results (25% for CLP Pesticides).

† This value is normalized to TOC and is expressed in mg/kg (TOC normalized).

Sums for total LPAHs, HPAHs, and total DDT include half of the indicated detection limit for non-detect metals.

Shading indicates an exceedence of DMEF-SL.

☐ indicates an exceedence of DMEF-BT.

Table 2 - Sediment Sampling Testing Parameters

	Conventionals	Grain Size	Metals	Butyltins		TPHs	SVOCs	Pest/PCBs	CL Herb	Dioxin/ Furans	VOCs	Biological Testing	
				PW	Dry Wt.							Bioassay	Bioaccumulation
Reference Locations													
WR-PG-01-REF	X	X	X	X		X	X	X	X	X	X		
WR-PG-02-REF	X	X	X	X		X	X	X	X	X	X		
WR-PG-03-REF	X	X	X	X		X	X	X	X	X	X	X	X
WRM 0 to 3													
East													
WR-PG-01	X	X	X	X		X	X	X					
WR-PG-02	X	X	X	X		X	X	X					
WR-PG-03	X	X	X	X		X	X	X					
WR-VC-03	X	X	X	X		X	X	X					
West													
WR-PG-04	X	X	X	X		X	X	X					
WR-VC-04	X	X	X	X		X	X	X					
WRM 3 to 6													
East													
WR-VC-05	X	X	X	X		X	X	X				X	
WR-VC-07	X	X	X	X		X	X	X				X	
WR-PG-09	X	X	X	X		X	X	X					
WR-VC-09	X	X	X	X		X	X	X					
WR-PG-11	X	X	X	X		X	X	X					
WR-VC-11	X	X	X	X		X	X	X				X	
WR-PG-13	X	X	X	X		X	X	X				X	X
WR-VC-13	X	X	X	X		X	X	X					
WR-PG-15	X	X	X	X		X	X	X					
WR-VC-15	X	X	X	X		X	X	X				X	
WR-PG-17	X	X	X	X	X	X	X	X					
WR-VC-17	X	X	X	X		X	X	X					
WR-PG-19	X	X	X	X	X	X	X	X					
WR-VC-19	X	X	X	X		X	X	X					
WR-PG-21	X	X	X	X	X	X	X	X					
WR-PG-23	X	X	X	X	X	X	X	X					
WR-VC-23	X	X	X	X		X	X	X				X	
WR-PG-27	X	X	X	X	X	X	X	X					
West													
WR-PG-06	X	X	X	X		X	X	X	X				
WR-VC-06	X	X	X	X		X	X	X					
WR-VC-08	X	X	X	X		X	X	X					
WR-VC-10	X	X	X	X		X	X	X					
WR-PG-12	X	X	X	X		X	X	X					
WR-VC-12	X	X	X	X		X	X	X				X	
WR-PG-14	X	X	X	X		X	X	X			X		
WR-VC-14	X	X	X	X		X	X	X					
WR-PG-16	X	X	X	X		X	X	X				X	
WR-VC-16	X	X	X	X		X	X	X					
WR-PG-18	X	X	X	X		X	X	X					
WR-VC-18	X	X	X	X		X	X	X				X	
WR-VC-20	X	X	X	X		X	X	X					
WR-PG-22	X	X	X	X		X	X	X					
WR-VC-22	X	X	X	X		X	X	X					
WR-PG-24	X	X	X	X		X	X	X					
WR-VC-24	X	X	X	X		X	X	X					
WR-PG-26	X	X	X	X		X	X	X					
WR-VC-26	X	X	X	X		X	X	X					
WR-VC-28	X	X	X	X		X	X	X					X
WR-PG-30	X	X	X	X		X	X	X					
WR-VC-30	X	X	X	X		X	X	X					
WR-VC-32	X	X	X	X		X	X	X					
WR-PG-34	X	X	X	X		X	X	X					
WR-VC-34	X	X	X	X		X	X	X					
WR-PG-36	X	X	X	X		X	X	X		X			
WR-VC-36	X	X	X	X		X	X	X					
WR-PG-42	X	X	X	X	X	X	X	X			X		
WR-VC-42	X	X	X	X		X	X	X					
WR-VC-46	X	X	X	X		X	X	X				X	X
WR-PG-48	X	X	X	X	X	X	X	X				X	
WRM 6 to 8													
East													
WR-PG-29	X	X	X	X	X	X	X	X					
WR-VC-29	X	X	X	X		X	X	X				X	X
WR-VC-31	X	X	X	X		X	X	X				X	
West													
WR-PG-50	X	X	X	X		X	X	X			X		
WR-VC-50	X	X	X	X		X	X	X					
WR-PG-52	X	X	X	X		X	X	X			X		
WR-VC-52	X	X	X	X		X	X	X					
WR-PG-54	X	X	X	X		X	X	X			X	X	
WR-VC-54	X	X	X	X		X	X	X					
WR-PG-56	X	X	X	X		X	X	X		X	X		
WR-VC-56	X	X	X	X		X	X	X					
WR-PG-58	X	X	X	X		X	X	X	X	X	X		
WR-VC-58	X	X	X	X		X	X	X	X				
WR-PG-60	X	X	X	X		X	X	X	X	X	X		
WR-VC-60	X	X	X	X		X	X	X					
WR-PG-62	X	X	X	X		X	X	X	X	X	X		
WR-VC-62	X	X	X	X		X	X	X	X			X	
WR-PG-64	X	X	X	X		X	X	X	X	X	X		
WR-VC-64	X	X	X	X		X	X	X					
WR-PG-66	X	X	X	X		X	X	X		X	X	X	
WR-VC-66	X	X	X	X		X	X	X				X	X
WR-PG-68	X	X	X	X		X	X	X		X	X		
WR-VC-68	X	X	X	X		X	X	X					
WR-PG-70	X	X	X	X		X	X	X		X	X		
WR-VC-70	X	X	X	X		X	X	X					
WR-PG-72	X	X	X	X		X	X	X		X	X		
WR-VC-72	X	X	X	X		X	X	X					X
WR-PG-74	X	X	X	X		X	X	X			X		

Please refer to the Notes at the end of this table.

Table 2 - Sediment Sampling Testing Parameters

	Conventionals	Grain Size	Metals	Butyltins		TPHs	SVOCs	Pest/PCBs	CL Herb	Dioxin/ Furans	VOCs	Biological Testing	
				PW	Dry Wt.							Bioassay	Bioaccumulation
WRM 8 to 10													
East													
WR-PG-33	X	X	X	X		X	X	X					
WR-VC-33	X	X	X	X		X	X	X					
WR-PG-35	X	X	X	X		X	X	X					
WR-VC-35	X	X	X	X		X	X	X				X	
WR-PG-37	X	X	X	X		X	X	X					
WR-VC-37	X	X	X	X		X	X	X					
WR-PG-39	X	X	X	X		X	X	X					
WR-VC-39	X	X	X	X		X	X	X					
WR-PG-41	X	X	X	X		X	X	X					
WR-VC-41	X	X	X	X		X	X	X				X	
WR-PG-43	X	X	X	X		X	X	X					
WR-VC-43	X	X	X	X		X	X	X					X
WR-PG-45	X	X	X	X		X	X	X					
WR-VC-45	X	X	X	X		X	X	X					
West													
WR-PG-76	X	X	X	X		X	X	X					
WR-PG-78	X	X	X	X		X	X	X					
WR-PG-80	X	X	X	X		X	X	X					
WR-PG-82	X	X	X	X		X	X	X					
WR-PG-84	X	X	X	X		X	X	X			X		
WR-PG-86	X	X	X	X		X	X	X			X		
WR-PG-88	X	X	X	X		X	X	X			X		
WR-PG-90	X	X	X	X		X	X	X					
WR-PG-92	X	X	X	X		X	X	X					
WR-PG-94	X	X	X	X		X	X	X					
WR-PG-96	X	X	X	X		X	X	X					
WR-PG-98	X	X	X	X		X	X	X					
WR-PG-100	X	X	X	X		X	X	X					
WR-PG-102	X	X	X	X		X	X	X					
WR-PG-104	X	X	X	X		X	X	X					
WRM 10 to 12													
East													
WR-PG-47	X	X	X	X		X	X	X					
WR-VC-47	X	X	X	X		X	X	X					
WR-VC-49	X	X	X	X		X	X	X				X	
WR-VC-51	X	X	X	X		X	X	X					
WR-VC-53	X	X	X	X		X	X	X				X	
WR-VC-55	X	X	X	X		X	X	X					
WR-VC-57	X	X	X	X		X	X	X					X
WR-VC-59	X	X	X	X		X	X	X				X	
WR-VC-61	X	X	X	X		X	X	X					
WR-PG-61	X	X	X	X		X	X	X					
WR-PG-63	X	X	X	X		X	X	X					
West													
WR-PG-106	X	X	X	X		X	X	X				X	
WR-VC-106	X	X	X	X		X	X	X				X	
WR-PG-108	X	X	X	X		X	X	X					
WR-VC-108	X	X	X	X		X	X	X					X
WR-VC-110	X	X	X	X		X	X	X					
WR-PG-112	X	X	X	X		X	X	X					
WR-PG-114	X	X	X	X		X	X	X					
WR-VC-114	X	X	X	X		X	X	X					
WR-PG-116	X	X	X	X		X	X	X					
WR-VC-116	X	X	X	X		X	X	X					
WR-PG-118	X	X	X	X		X	X	X					
WR-VC-118	X	X	X	X		X	X	X					X
WR-PG-120	X	X	X	X		X	X	X					
WR-VC-120	X	X	X	X		X	X	X					
WR-PG-122	X	X	X	X		X	X	X					
WR-VC-122	X	X	X	X		X	X	X					
WR-PG-124	X	X	X	X		X	X	X					
WR-VC-124	X	X	X	X		X	X	X					
WR-PG-126	X	X	X	X		X	X	X					
WR-VC-126	X	X	X	X		X	X	X					
WR-PG-128	X	X	X	X		X	X	X					
WR-VC-128	X	X	X	X		X	X	X					
WR-PG-130	X	X	X	X		X	X	X					
WR-VC-130	X	X	X	X		X	X	X					
WR-PG-132	X	X	X	X		X	X	X					
WR-VC-132	X	X	X	X		X	X	X				X	
WR-PG-134	X	X	X	X		X	X	X					
WR-VC-134	X	X	X	X		X	X	X					

Notes:

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

East = East Side of Willamette River Federal Navigation Channel; West = West Side of Willamette River Federal Navigation Channel

Conventionals include total solids, total volatile solids, ammonia as nitrogen, total sulfides, and total organic carbon

Metals include Al, Sb, Ar, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, and Zn

PW = Porewater; TPHs = Total Petroluem Hydrocarbons; SVOCs = Semivolatile Organic Compounds

Pest/PCBs = Pesticides/Polychlorinated Biphenyls; CL Herb = Chlorinated Herbicides; VOCs = Volatile Organic Compounds

Table 3 - Surface Sediment Sample Locations, Coordinates, and Mudline Elevations

Sample Identification	Sample Date	Northing	Easting	Latitude	Longitude	Approximate Mudline Elevation (CRD)	Sample Depth (cm)
Reference Locations							
WR-PG-01-REF	5/21/2005	7,646,933	668,177	45.4790	122.6646	-6.6	27
WR-PG-02-REF	5/21/2005	7,655,908	634,569	45.3875	122.6262	-6.6	30
WR-PG-03-REF	5/21/2005	7,651,268	652,937	45.4376	122.6462	-17	30
WRM 0 to 3							
East							
WR-PG-01	5/27/2005	724,420	7,616,798	45.6309	122.7883	-36.2	30
WR-PG-02	5/27/2005	723,665	7,616,494	45.6289	122.7894	-37.1	30
WR-PG-03	5/27/2005	721,242	7,616,370	45.6222	122.7896	-37.8	30
West							
WR-PG-04	5/27/2005	720,663	7,615,671	45.6206	122.7923	-31.2	27
WRM 3 to 6							
East							
WR-PG-09	5/26/2005	714,485	7,618,909	45.6039	122.7789	-35.2	30
WR-PG-11	5/26/2005	713,810	7,619,148	45.6020	122.7779	-27.4	30
WR-PG-13	5/26/2005	712,730	7,619,657	45.5991	122.7758	-26.3	30
WR-PG-15	5/26/2005	711,136	7,620,458	45.5948	122.7725	-32.1	29
WR-PG-17	5/26/2005	710,068	7,621,079	45.5919	122.7700	-33.9	30
WR-PG-19	5/26/2005	709,788	7,621,217	45.5912	122.7694	-38.6	28
WR-PG-21	5/26/2005	709,452	7,621,425	45.5903	122.7686	-29.5	30
WR-PG-23	5/26/2005	708,894	7,621,820	45.5888	122.7669	-33.3	20
WR-PG-27	5/26/2005	708,161	7,622,505	45.5868	122.7642	-28.4	20
West							
WR-PG-06	5/26/2005	716,524	7,616,570	45.6093	122.7883	-33.4	30
WR-PG-12	5/26/2005	714,966	7,617,081	45.6051	122.7861	-32.6	30
WR-PG-14	5/26/2005	714,609	7,617,245	45.6041	122.7854	-33.2	30
WR-PG-16	5/26/2005	714,042	7,617,490	45.6025	122.7844	-14.2	23
WR-PG-18	5/26/2005	713,707	7,617,629	45.6016	122.7838	-14.5	30
WR-PG-22	5/26/2005	712,858	7,618,068	45.5993	122.7820	-23.4	30
WR-PG-24	5/26/2005	712,371	7,618,301	45.5980	122.7811	-16.3	30
WR-PG-26	5/26/2005	711,909	7,618,567	45.5968	122.7800	-9.5	30
WR-PG-30	5/26/2005	711,035	7,619,069	45.5944	122.7779	-31.5	28
WR-PG-34	5/26/2005	710,170	7,619,603	45.5921	122.7757	-29	30
WR-PG-36	5/26/2005	709,797	7,619,907	45.5911	122.7745	-18.8	30
WR-PG-42	5/26/2005	708,514	7,620,877	45.5877	122.7706	-14.7	30
WR-PG-48	5/26/2005	707,784	7,621,535	45.5857	122.7679	-27.8	30
WRM 6 to 8							
East							
WR-PG-29	5/25/2005	702,243	7,630,278	45.5712	122.7332	-27.2	30
West							
WR-PG-50	5/27/2005	705,638	7,624,128	45.5800	122.7576	-31.5	30
WR-PG-52	5/27/2005	705,455	7,624,479	45.5795	122.7562	-34.5	28
WR-PG-54	5/27/2005	705,215	7,624,836	45.5789	122.7548	-30.6	28
WR-PG-56	5/25/2005	704,948	7,625,256	45.5782	122.7531	-17.3	30
WR-PG-58	5/25/2005	704,692	7,625,713	45.5776	122.7513	-27.4	26
WR-PG-60	5/25/2005	704,454	7,626,092	45.5769	122.7498	-23.7	20
WR-PG-62	5/25/2005	704,100	7,626,601	45.5760	122.7478	-32.4	27
WR-PG-64	5/25/2005	703,747	7,626,795	45.5750	122.7470	-27.3	30
WR-PG-66	5/25/2005	703,401	7,627,169	45.5741	122.7455	-21.1	30
WR-PG-68	5/25/2005	703,015	7,627,501	45.5731	122.7441	-18.5	30
WR-PG-70	5/25/2005	702,837	7,627,696	45.5726	122.7433	-28.6	30
WR-PG-72	5/25/2005	702,282	7,628,146	45.5711	122.7415	-23.7	28
WR-PG-74	5/25/2005	701,290	7,628,952	45.5685	122.7383	-28.4	30

Please refer to the Notes at the end of this table.

Table 3 - Surface Sediment Sample Locations, Coordinates, and Mudline Elevations

Sample Identification	Sample Date	Northing	Easting	Latitude	Longitude	Approximate Mudline Elevation (CRD)	Sample Depth (cm)
WRM 8 to 10							
East							
WR-PG-33	5/24/2005	696,382	7,636,825	45.5556	122.7070	-28.3	28
WR-PG-35	5/24/2005	696,136	7,637,213	45.5550	122.7055	-34.4	30
WR-PG-37	5/24/2005	695,872	7,637,669	45.5543	122.7037	-31.3	30
WR-PG-39	5/24/2005	695,656	7,638,048	45.5537	122.7022	-30.3	29
WR-PG-41	5/24/2005	695,450	7,638,486	45.5532	122.7004	-22.5	30
WR-PG-43	5/24/2005	695,185	7,638,985	45.5525	122.6985	-23.9	30
WR-PG-45	5/24/2005	695,020	7,639,362	45.5521	122.6970	-23.8	29
West							
WR-PG-76	5/25/2005	699,586	7,630,991	45.5640	122.7301	-32.2	30
WR-PG-78	5/25/2005	699,190	7,631,300	45.5629	122.7289	-29.6	30
WR-PG-80	5/25/2005	698,947	7,631,603	45.5622	122.7277	-30.1	29
WR-PG-82	5/25/2005	698,611	7,631,955	45.5614	122.7263	-30.4	30
WR-PG-84	5/24/2005	698,329	7,632,267	45.5606	122.7250	-26.8	30
WR-PG-86	5/24/2005	697,845	7,632,782	45.5593	122.7230	-29.5	28
WR-PG-88	5/24/2005	697,473	7,632,843	45.5583	122.7227	-26.9	28
WR-PG-90	5/24/2005	696,844	7,634,162	45.5567	122.7175	-27.6	30
WR-PG-92	5/24/2005	696,512	7,634,627	45.5558	122.7156	-22.6	30
WR-PG-94	5/24/2005	696,232	7,634,978	45.5551	122.7142	-19.8	26
WR-PG-96	5/24/2005	696,007	7,635,402	45.5545	122.7125	-13.8	20
WR-PG-98	5/24/2005	695,705	7,635,830	45.5537	122.7108	-12.4	30
WR-PG-100	5/24/2005	695,435	7,636,345	45.5530	122.7088	-18.4	30
WR-PG-102	5/24/2005	695,148	7,636,720	45.5522	122.7073	-17.1	30
WR-PG-104	5/24/2005	694,791	7,637,191	45.5513	122.7054	-16.2	30
WRM 10 to 12							
East							
WR-PG-47	5/24/2005	693,794	7,640,280	45.5488	122.6933	-29.2	30
WR-PG-61	5/23/2005	690,895	7,642,395	45.5410	122.6847	-25.1	30
WR-PG-63	5/23/2005	690,502	7,642,699	45.5399	122.6835	-27.6	24
West							
WR-PG-106	5/24/2005	692,951	7,639,503	45.5464	122.6962	-38.3	30
WR-PG-108	5/23/2005	692,575	7,639,815	45.5454	122.6950	-24.8	28
WR-PG-112	5/23/2005	691,741	7,640,467	45.5432	122.6923	-21.2	30
WR-PG-114	5/23/2005	691,362	7,640,748	45.5421	122.6912	-20.1	30
WR-PG-116	5/23/2005	690,987	7,641,001	45.5411	122.6902	-24.6	30
WR-PG-118	5/23/2005	690,665	7,641,340	45.5403	122.6888	-21.9	30
WR-PG-120	5/23/2005	690,258	7,641,743	45.5392	122.6872	-20.5	19
WR-PG-122	5/23/2005	689,753	7,642,204	45.5378	122.6853	-37.4	30
WR-PG-124	5/23/2005	689,214	7,642,747	45.5364	122.6832	-13.1	29
WR-PG-126	5/23/2005	688,960	7,642,959	45.5357	122.6823	-4.1	30
WR-PG-128	5/23/2005	688,680	7,643,274	45.5350	122.6810	-5.8	30
WR-PG-130	5/23/2005	688,320	7,643,651	45.5340	122.6795	-15.5	21
WR-PG-132	5/23/2005	687,964	7,644,010	45.5331	122.6781	-1.8	30
WR-PG-134	5/23/2005	687,610	7,644,384	45.5321	122.6766	-21.9	30

Notes:
WRM = Willamette River Mile
East = East Side of Willamette River Federal Navigation Channel
West = West Side of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample)
VC = Vibracore (subsurface sample)

Table 4 - Subsurface Sediment Sample Locations, Coordinates, Mudline Elevations, and Core Intervals

	Sample Date	Northing	Easting	Latitude	Longitude	Approximate Mudline Elevation (CRD)	Dredging Elevation (CRD)	Core Elevation (CRD)	Core Sample Length (ft)
WRM 0 to 3									
East									
WR-VC-03	4/28/2005	721,215	7,616,326	45.6221	122.7898	-38	-42	-44	6
West									
WR-VC-04	4/28/2005	720,649	7,615,765	45.6205	122.7919	-40.2	-42	-44	3.8
WRM 3 to 6									
East									
WR-VC-05	4/28/2005	716,716	7,617,676	45.6099	122.7840	-40	-42	-44	4
WR-VC-07	5/2/2005	716,059	7,618,013	45.6081	122.7826	-37.2	-42	-44	6.8
WR-VC-09	5/2/2005	714,387	7,618,846	45.6036	122.7792	-35.1	-42	-44	8.9
WR-VC-11	5/2/2005	713,723	7,619,126	45.6018	122.7780	-32.9	-42	-44	11.1
WR-VC-13	5/4/2005	712,684	7,619,601	45.5990	122.7760	-42.3	-42	-44	1.7
WR-VC-15	5/2/2005	711,266	7,620,310	45.5952	122.7731	-39.6	-42	-44	4.4
WR-VC-17	5/17/2005	710,260	7,620,919	45.5924	122.7706	-38.6	-42	-44	5.4
WR-VC-19	5/2/2005	709,745	7,621,216	45.5911	122.7694	-39.2	-42	-44	4.8
WR-VC-23	5/17/2005	708,998	7,621,686	45.5890	122.7675	-39.3	-42	-44	4.7
West									
WR-VC-06	4/29/2005	716,510	7,616,632	45.6093	122.7881	-39.2	-42	-44	4.8
WR-VC-08	4/29/2005	716,042	7,616,740	45.6080	122.7876	-35.2	-42	-44	8.8
WR-VC-10	4/29/2005	715,486	7,616,969	45.6065	122.7866	-36.2	-42	-44	7.8
WR-VC-12	4/29/2005	714,985	7,617,187	45.6051	122.7857	-38	-42	-44	6
WR-VC-14	4/29/2005	714,655	7,617,348	45.6042	122.7850	-37.4	-42	-44	6.6
WR-VC-16	4/29/2005	714,078	7,617,625	45.6027	122.7839	-34.8	-42	-44	9.2
WR-VC-18	5/2/2005	713,763	7,617,763	45.6018	122.7833	-32.6	-42	-44	11.4
WR-VC-20	5/6/2005	713,324	7,617,956	45.6006	122.7825	-32.1	-42	-44	11.9
WR-VC-22	5/2/2005	712,757	7,618,207	45.5991	122.7815	-32.8	-42	-44	11.2
WR-VC-24	4/29/2005	712,377	7,618,391	45.5981	122.7807	-31.9	-42	-44	12.1
WR-VC-26	5/4/2005	711,950	7,618,673	45.5969	122.7796	-35.6	-42	-44	8.4
WR-VC-28	5/4/2005	711,517	7,618,880	45.5957	122.7787	-37	-42	-44	7
WR-VC-30	5/9/2005	711,027	7,619,149	45.5944	122.7776	-37.7	-42	-44	6.3
WR-VC-32	5/4/2005	710,623	7,619,370	45.5933	122.7767	-37.8	-42	-44	6.2
WR-VC-34	5/4/2005	710,259	7,619,631	45.5923	122.7756	-36.5	-42	-44	7.5
WR-VC-36	4/29/2005	709,841	7,619,949	45.5912	122.7744	-37.8	-42	-44	6.2
WR-VC-42	5/9/2005	708,660	7,620,868	45.5881	122.7706	-36	-42	-44	8
WR-VC-46	5/9/2005	707,819	7,621,538	45.5858	122.7679	-33.7	-42	-44	10.3
WRM 6 to 8									
East									
WR-VC-29	5/6/2005	701,912	7,630,229	45.5703	122.7334	-34.3	-42	-44	9.7
WR-VC-31	5/11/2005	701,735	7,630,762	45.5698	122.7313	-37.3	-42	-44	6.7
West									
WR-VC-50	5/5/2005	705,696	7,624,130	45.5802	122.7576	-39.4	-42	-44	4.6
WR-VC-52	5/5/2005	705,495	7,624,511	45.5797	122.7561	-41.1	-42	-44	2.9
WR-VC-54	5/5/2005	705,243	7,624,882	45.5790	122.7546	-37.4	-42	-44	6.6
WR-VC-56	5/4/2005	704,999	7,625,301	45.5784	122.7529	-35.3	-42	-44	8.7
WR-VC-58	5/17/2005	704,686	7,625,797	45.5775	122.7510	-37.5	-42	-44	6.5
WR-VC-60	5/5/2005	704,556	7,626,174	45.5772	122.7495	-39.3	-42	-44	4.7
WR-VC-62	5/17/2005	703,974	7,626,770	45.5757	122.7471	-38.6	-42	-44	5.4
WR-VC-64	5/4/2005	703,753	7,626,960	45.5751	122.7463	-37.9	-42	-44	6.1
WR-VC-66	5/6/2005	703,448	7,627,241	45.5743	122.7452	-33.1	-42	-44	10.9
WR-VC-68	5/6/2005	703,151	7,627,586	45.5735	122.7438	-36.2	-42	-44	7.8
WR-VC-70	5/6/2005	702,765	7,627,951	45.5724	122.7423	-35	-42	-44	9
WR-VC-72	5/6/2005	702,383	7,628,267	45.5714	122.7411	-35	-42	-44	9

Please refer to the Notes at the end of this table.

Table 4 - Subsurface Sediment Sample Locations, Coordinates, Mudline Elevations, and Core Intervals

	Sample Date	Northing	Easting	Latitude	Longitude	Approximate Mudline Elevation (CRD)	Dredging Elevation (CRD)	Core Elevation (CRD)	Core Sample Length (ft)
WRM 8 to 10									
East									
WR-VC-33	5/17/2005	696,341	7,636,774	45.5555	122.7072	-37.2	-42	-44	6.8
WR-VC-35	5/5/2005	696,048	7,637,211	45.5547	122.7055	-37.8	-42	-44	6.2
WR-VC-37	5/5/2005	695,803	7,637,645	45.5541	122.7038	-39.8	-42	-44	4.2
WR-VC-39	5/11/2005	695,560	7,638,090	45.5534	122.7020	-39.9	-42	-44	4.1
WR-VC-41	5/16/2005	695,335	7,638,586	45.5529	122.7000	-38.9	-42	-44	5.1
WR-VC-43	5/10/2005	695,060	7,638,963	45.5521	122.6985	-35.1	-42	-44	8.9
WR-VC-45	5/16/2005	694,736	7,639,259	45.5513	122.6973	-37.2	-42	-44	6.8
WRM 10 to 12									
East									
WR-VC-47	5/13/2005	693,690	7,639,967	45.5485	122.6945	-39.6	-42	-44	4.4
WR-VC-49	5/13/2005	693,343	7,640,424	45.5475	122.6927	-36	-42	-44	8
WR-VC-51	5/16/2005	692,909	7,640,706	45.5464	122.6915	-40	-42	-44	4
WR-VC-53	5/16/2005	692,431	7,641,011	45.5451	122.6903	-40	-42	-44	4
WR-VC-55	5/13/2005	692,261	7,641,184	45.5446	122.6896	-35.5	-42	-44	8.5
WR-VC-57	5/13/2005	691,675	7,641,695	45.5431	122.6875	-34.6	-42	-44	9.4
WR-VC-59	5/13/2005	691,241	7,641,973	45.5419	122.6864	-39.1	-42	-44	4.9
WR-VC-61	5/13/2005	690,895	7,642,269	45.5410	122.6852	-40	-42	-44	4
West									
WR-VC-106	5/12/2005	692,982	7,639,589	45.5465	122.6959	-36.5	-42	-44	7.5
WR-VC-108	5/12/2005	692,602	7,639,890	45.5455	122.6947	-36.3	-42	-44	7.7
WR-VC-110	5/12/2005	692,213	7,640,163	45.5444	122.6936	-37.6	-42	-44	6.4
WR-VC-114	5/12/2005	691,507	7,640,731	45.5425	122.6913	-38.2	-42	-44	5.8
WR-VC-116	5/12/2005	691,148	7,641,112	45.5416	122.6897	-37	-42	-44	7
WR-VC-118	5/9/2005	690,769	7,641,386	45.5406	122.6886	-31.6	-42	-44	12.4
WR-VC-120	5/9/2005	690,327	7,641,752	45.5394	122.6872	-30.2	-42	-44	13.8
WR-VC-122	5/12/2005	689,846	7,642,316	45.5381	122.6849	-38.6	-42	-44	5.4
WR-VC-124	5/9/2005	689,526	7,642,617	45.5372	122.6837	-32	-42	-44	12
WR-VC-126	5/10/2005	689,186	7,643,007	45.5363	122.6821	-33.7	-42	-44	10.3
WR-VC-128	5/10/2005	688,928	7,643,324	45.5357	122.6809	-35	-42	-44	9
WR-VC-130	5/16/2005	688,491	7,643,710	45.5345	122.6793	-32.2	-42	-44	11.8
WR-VC-132	5/10/2005	688,098	7,644,062	45.5334	122.6779	-31.2	-42	-44	12.8
WR-VC-134	5/10/2005	687,667	7,644,483	45.5323	122.6762	-35.5	-42	-44	8.5

Notes:
WRM = Willamette River Mile
East = East Side of Willamette River Federal Navigation Channel
West = West Side of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample)
VC = Vibracore (subsurface sample)

Table 5 - Sediment Sampling Analytical Results - Physical Characteristics

	% Silt/Clay <62.5 μm	% Sand/Gravel >62.5 μm	% Total Organic Carbon	% Total Volatile Solids
Reference Locations				
WR-PG-01-REF	14.26	84.68	0.72	3.13
WR-PG-02-REF	16.1	82.21	0.44	3.21
WR-PG-03-REF	57.72	40.71	2.05	6.7
WRM 0 to 3				
East				
WR-PG-01	97.4	3.64	2.9	9.19
WR-PG-02	100.3	5.88	2.84	8.94
WR-PG-03	93.5	7.89	2.3	8.03
WR-VC-03	84.3	18.61	1.91	6.7
West				
WR-PG-04	59.39	42.62	1.49	5.96
WR-VC-04	61	40.19	1.47	5.23
WRM 3 to 6				
East				
WR-VC-05	80.4	20.44	1.72	6.05
WR-VC-07	81	16.89	1.87	7.28
WR-PG-09	88.7	10.51	2.04	7.55
WR-VC-09	78.5	17.16	1.97	7.49
WR-PG-11	87.9	11.61	2.39	8.25
WR-VC-11	88.7	16.25	2.2	8.13
WR-PG-13	77.1	21.99	1.93	7.29
WR-VC-13	84.1	14.96	2.22	8.03
WR-PG-15	77.9	21.33	2.02	7.13
WR-VC-15	76.4	23.41	2.11	7.19
WR-PG-17	78.7	21.58	2.04	7.06
WR-VC-17	66.8	32.87	1.56	6.08
WR-PG-19	84	17.3	2.04	7.53
WR-VC-19	67.3	36.67	1.83	5.88
WR-PG-21	48.69	50.3	1.81	6.89
WR-PG-23	43.21	57.34	2.5	7.31
WR-VC-23	28.94	69.03	1.51	4.16
WR-PG-27	4.15	96.88	0.67	2.16
West				
WR-PG-06	84.4	11.29	2.2	7.79
WR-VC-06	92.6	12.37	2.12	7.3
WR-VC-08	89.2	11.94	2.18	7.13
WR-VC-10	94.5	9.74	2.23	7.37
WR-PG-12	84.3	13.68	1.8	7.05
WR-VC-12	84.4	16.4	1.96	6.83
WR-PG-14	95.1	6.15	2.84	8.97
WR-VC-14	79.1	23.86	1.74	6.25
WR-PG-16	64	37.61	2.78	6.8
WR-VC-16	67	33.78	1.58	5.85
WR-PG-18	70.1	28.08	1.82	11.04
WR-VC-18	90.5	12.89	2.24	7.31
WR-VC-20	88.7	11.04	1.69	7.49
WR-PG-22	92.1	7.48	3.13	9.34
WR-VC-22	93	7.57	3.2	9.05
WR-PG-24	76.5	18.61	2.37	7.94
WR-VC-24	92.5	9.74	2.4	7.92
WR-PG-26	1.85	99.03	0.21	0.91
WR-VC-26	82.5	22.08	2.31	7.58
WR-VC-28	92.8	8.27	2.41	8.63
WR-PG-30	60.44	27.34	2.35	8.11
WR-VC-30	88.8	10.15	1.99	8.03
WR-VC-32	84.4	18.6	2.23	7.63
WR-PG-34	95.2	6.83	3.02	9.52
WR-VC-34	90	11.98	2.65	8.08
WR-PG-36	46.03	53.66	1.19	5.14
WR-VC-36	76.3	24.66	2.11	7.09
WR-PG-42	51.1	53.55	2.79	7.7
WR-VC-42	36.4	65.66	0.38	2.39
WR-VC-46	53.4	46.38	1.63	4.9
WR-PG-48	75.6	25.54	1.97	7.19

Please refer to the notes at the end of this table.

Table 5 - Sediment Sampling Analytical Results - Physical Characteristics

	% Silt/Clay <62.5 μm	% Sand/Gravel >62.5 μm	% Total Organic Carbon	% Total Volatile Solids
WRM 6 to 8				
East				
WR-PG-29	85.2	12.93	2.5	8.22
WR-VC-29	87.6	15.48	2.34	7.47
WR-VC-31	92.4	11.56	2.25	8.66
West				
WR-PG-50	87.826	13.726	3.11	9.34
WR-VC-50	83.7	13.39	3.36	8.67
WR-PG-52	61.5	40.09	2.73	7.95
WR-VC-52	71.6	28.92	2.77	7.53
WR-PG-54	86	14.69	2.16	7.86
WR-VC-54	73.6	22.62	1.98	6.83
WR-PG-56	55.95	45.21	1.6	6.4
WR-VC-56	76.9	23.22	2.55	8.54
WR-PG-58	43.35	56.59	2.36	6.24
WR-VC-58	20.97	76.45	0.28	3.21
WR-PG-60	78.6	26.38	2.1	7.46
WR-VC-60	36.37	63.56	1	4.13
WR-PG-62	78.2	21.6	1.91	6.66
WR-VC-62	80.66	19.55	2.09	8.55
WR-PG-64	89.02	12.27	2.07	7.76
WR-VC-64	88.2	11.84	2.13	8.01
WR-PG-66	95.8	6.06	2.38	8.11
WR-VC-66	90.5	11.08	2.09	7.17
WR-PG-68	98.9	9.93	2.26	7.73
WR-VC-68	91.68	9.35	2.19	7.63
WR-PG-70	93.18	11.66	2.23	7.58
WR-VC-70	91	10.86	2.06	7.13
WR-PG-72	95.8	5.68	2.77	9.35
WR-VC-72	93.2	9.12	2.16	7.41
WR-PG-74	88.7	9.22	2.9	9.47
WRM 8 to 10				
East				
WR-PG-33	28.16	72.26	0.88	3.39
WR-VC-33	16.06	82.95	1.97	2.46
WR-PG-35	68.01	32.18	1.67	6.52
WR-VC-35	53.6	45.34	1.67	5.48
WR-PG-37	69.03	32.39	1.59	5.9
WR-VC-37	46.45	54.78	1.15	4.59
WR-PG-39	65.58	34.57	1.58	6.17
WR-VC-39	61.5	37.51	1.4	5.85
WR-PG-41	44.03	55.5	1.32	6.07
WR-VC-41	80.2	22.34	1.86	7.13
WR-PG-43	80.21	19.87	2.2	7.78
WR-VC-43	74.8	28.68	1.89	7.13
WR-PG-45	71.8	29.11	1.3	6.48
WR-VC-45	70.9	28.51	1.92	6.91
West				
WR-PG-76	90.5	12.11	2.54	8.47
WR-PG-78	89.9	10.3	2.71	8.91
WR-PG-80	87	13.89	2.6	8.5
WR-PG-82	72	25.02	1.55	6.49
WR-PG-84	85.93	11.6	2.46	8.23
WR-PG-86	94.8	7.58	2.9	9.26
WR-PG-88	96.01	2.78	3.19	9.92
WR-PG-90	90.89	9.73	3.04	9.71
WR-PG-92	87.22	9.88	3.09	9.61
WR-PG-94	86.2	14.26	3.16	10
WR-PG-96	86.23	14.32	3.03	10.2
WR-PG-98	91.03	10.29	3.25	10.3
WR-PG-100	87.46	14.15	3.49	11
WR-PG-102	79.92	21.21	2.74	9.35
WR-PG-104	85.44	15.43	2.87	9.3

Please refer to the notes at the end of this table.

Table 5 - Sediment Sampling Analytical Results - Physical Characteristics

	% Silt/Clay <62.5 μm	% Sand/Gravel >62.5 μm	% Total Organic Carbon	% Total Volatile Solids
WRM 10 to 12				
East				
WR-PG-47	75.83	25.53	2.23	7.65
WR-VC-47	52.27	49.55	1.36	5.5
WR-VC-49	72	27.75	1.67	6.64
WR-VC-51	59.13	47.5	1.64	5.69
WR-VC-53	49.32	58.95	1.43	4.82
WR-VC-55	37.78	61.15	1.97	5.91
WR-VC-57	73.9	25.74	1.81	7.07
WR-VC-59	49.79	50.01	1.26	5.09
WR-PG-61	52.03	51.82	1.95	6.7
WR-VC-61	58.4	43.41	1.69	5.69
WR-PG-63	29.28	73.17	1.47	5.5
West				
WR-PG-106	77.61	19.51	2.83	9.13
WR-VC-106	74	25.27	2.11	7.93
WR-PG-108	21.07	79.44	1.2	3.85
WR-VC-108	63.5	34.58	1.9	7.15
WR-VC-110	13.62	86.72	1.23	3.22
WR-PG-112	81.9	16.54	3.02	9.07
WR-PG-114	75.3	26.99	2.22	7.44
WR-VC-114	77.8	22.8	2	7.45
WR-PG-116	85	16.31	2.76	8.61
WR-VC-116	81.4	18.11	2.29	8.41
WR-PG-118	83.27	19.36	2.53	8.16
WR-VC-118	73.3	27.57	1.96	6.78
WR-PG-120	96.9	9.54	3.63	10.8
WR-VC-120	78.5	23.87	1.94	7.02
WR-PG-122	79.32	24.3	2.54	8.36
WR-VC-122	37.79	63.17	1.17	5.69
WR-PG-124	66.16	35.86	2.11	6.9
WR-VC-124	63.6	36.05	1.9	6.27
WR-PG-126	34.6	69.48	1.1	4.5
WR-VC-126	48.84	51.76	1.67	5.28
WR-PG-128	63.76	39.09	2.23	7.16
WR-VC-128	22.82	78.88	0.84	3.44
WR-PG-130	45.17	55.83	2.08	8.11
WR-VC-130	14.34	89.25	0.71	3.41
WR-PG-132	69.89	34.32	2.54	7.8
WR-VC-132	56.7	45.24	2.13	7.22
WR-PG-134	36.11	72.46	1.36	5.88
WR-VC-134	14.34	85.5	0.73	2.66

Notes:
WRM = Willamette River Mile
East = East Side of Willamette River Federal Navigation Channel
West = West Side of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample)
VC = Vibracore (subsurface sample)

Table 6 - Sediment Sampling Analytical Results - Conventionals

	Total Solids (%)	Total Volatile Solids (%)	Ammonia as Nitrogen (mg/kg)	Total Sulfide (mg/kg)	Total Organic Carbon (%)
Reference Locations					
WR-PG-01-REF	63.4	3.13	13.2	0.4	0.72
WR-PG-02-REF	64.8	3.21	9.8	0.2 U	0.44
WR-PG-03-REF	47.1	6.7	95.3	49.3	2.05
WRM 0 to 3					
East					
WR-PG-01	38.6	9.19	232	24.3	2.9
WR-PG-02	37.5	8.94	219	13.7	2.84
WR-PG-03	41.2	8.03	151	29	2.3
WR-VC-03	50.1	6.7	205	11.9	1.91
West					
WR-PG-04	50.7	5.96	103	3.5	1.49
WR-VC-04	56.6	5.23	206	2.2	1.47
WRM 3 to 6					
East					
WR-VC-05	48.6	6.05	184	11.3	1.72
WR-VC-07	52.3	7.28	297	7.8	1.87
WR-PG-09	43.8	7.55	154	6.6	2.04
WR-VC-09	52.8	7.49	219	5.5	1.97
WR-PG-11	41.4	8.25	168	16.9	2.39
WR-VC-11	51.9	8.13	328	6.2	2.2
WR-PG-13	46.8	7.29	153	11.1	1.93
WR-VC-13	51.7	8.03	327	4.7	2.22
WR-PG-15	46.9	7.13	149	12.6	2.02
WR-VC-15	52	7.19	274	6.7	2.11
WR-PG-17	45.3	7.06	139	6.2	2.04
WR-VC-17	53.7	6.08	177	4.3	1.56
WR-PG-19	44.9	7.53	140	23.4	2.04
WR-VC-19	50.4	5.88	191	16.6	1.83
WR-PG-21	51.2	6.89	98	3.8	1.81
WR-PG-23	49.2	7.31	95	26.6	2.5
WR-VC-23	66.7	4.16	70.6	3.8	1.51
WR-PG-27	74.4	2.16	24.9	26.6	0.67
West					
WR-PG-06	42.9	7.79	139	3.4	2.2
WR-VC-06	46.5	7.3	323	11.3	2.12
WR-VC-08	49.3	7.13	433	13.8	2.18
WR-VC-10	49.4	7.37	436	16.9	2.23
WR-PG-12	48.3	7.05	270	1	1.8
WR-VC-12	53.4	6.83	417	7.1	1.96
WR-PG-14	40.3	8.97	279	15.5	2.84
WR-VC-14	53.4	6.25	94	6.5	1.74
WR-PG-16	51.7	6.8	143	19	2.78
WR-VC-16	56.9	5.85	317	13.5	1.58
WR-PG-18	49.7	11.04	154	15.4	1.82
WR-VC-18	50.9	7.31	414	11.3	2.24
WR-VC-20	52.6	7.49	574	12.7	1.69
WR-PG-22	39.4	9.34	216	13.2	3.13
WR-VC-22	46.7	9.05	253	17.9	3.2
WR-PG-24	44.2	7.94	197	26.3	2.37
WR-VC-24	46.8	7.92	384	7.5	2.4
WR-PG-26	79.4	0.91	2	0.9	0.21
WR-VC-26	50	7.58	359	21.1	2.31
WR-VC-28	46.8	8.63	455	10.3	2.41
WR-PG-30	42.6	8.11	210	6.1	2.35
WR-VC-30	46.4	8.03	501	16.9	1.99
WR-VC-32	49.7	7.63	403	17.1	2.23
WR-PG-34	36.8	9.52	206	16.4	3.02
WR-VC-34	45.3	8.08	408	22.8	2.65
WR-PG-36	53.5	5.14	121	8.2	1.19
WR-VC-36	45.3	7.09	275	8.8	2.11
WR-PG-42	60.6	7.7	101	5.4	2.79
WR-VC-42	72.7	2.39	58.1	9.4	0.38
WR-VC-46	65.4	4.9	192	30.5	1.63
WR-PG-48	46.3	7.19	102	1	1.97

Please refer to the Notes at the end of this table.

Table 6 - Sediment Sampling Analytical Results - Conventionals

	Total Solids (%)	Total Volatile Solids (%)	Ammonia as Nitrogen (mg/kg)	Total Sulfide (mg/kg)	Total Organic Carbon (%)
WRM 6 to 8					
East					
WR-PG-29	41.8	8.22	114	13.5	2.5
WR-VC-29	50.7	7.47	393	10	2.34
WR-VC-31	50.3	8.66	280	11.5	2.25
West					
WR-PG-50	43.2	9.34	196	6.3	3.11
WR-VC-50	49.1	8.67	283	33.9	3.36
WR-PG-52	49.1	7.95	171	5.4	2.73
WR-VC-52	55.9	7.53	204	7.1	2.77
WR-PG-54	43.4	7.86	201	22.4	2.16
WR-VC-54	51	6.83	320	10	1.98
WR-PG-56	52.2	6.4	143	11.2	1.6
WR-VC-56	56	8.54	650	56	2.55
WR-PG-58	56.8	6.24	136	3.2	2.36
WR-VC-58	70.8	3.21	62.7	3.2	0.28
WR-PG-60	54.3	7.46	237	53.1	2.1
WR-VC-60	67.9	4.13	22.9	17.9	1
WR-PG-62	45.8	6.66	136	19.1	1.91
WR-VC-62	50.1	8.55	203	24.2	2.09
WR-PG-64	42.8	7.76	84.7	14.8	2.07
WR-VC-64	44.2	8.01	219	18.4	2.13
WR-PG-66	39.9	8.11	78.1	0.3 U	2.38
WR-VC-66	49.2	7.17	361	15.4	2.09
WR-PG-68	42.3	7.73	72	155	2.26
WR-VC-68	47.9	7.63	286	8.9	2.19
WR-PG-70	43.7	7.58	146	20.6	2.23
WR-VC-70	49.8	7.13	379	22.4	2.06
WR-PG-72	38	9.35	149	355	2.77
WR-VC-72	50.6	7.41	387	13.9	2.16
WR-PG-74	39.3	9.47	216	14	2.9
WRM 8 to 10					
East					
WR-PG-33	61.6	3.39	51.3	2.4	0.88
WR-VC-33	74.4	2.46	76.9	11.2	1.97
WR-PG-35	48.7	6.52	129	25.4	1.67
WR-VC-35	59.8	5.48	257	32.3	1.67
WR-PG-37	52.1	5.9	122	4.3	1.59
WR-VC-37	61.6	4.59	130	15.5	1.15
WR-PG-39	50.5	6.17	113	1.2	1.58
WR-VC-39	53.5	5.85	396	6.9	1.4
WR-PG-41	53.9	6.07	91.7	0.5	1.32
WR-VC-41	49	7.13	266	10.4	1.86
WR-PG-43	45.4	7.78	175	14.6	2.2
WR-VC-43	55.5	7.13	284	13.2	1.89
WR-PG-45	54.7	6.48	174	8.8	1.3
WR-VC-45	52.8	6.91	313	18.2	1.92
West					
WR-PG-76	40.5	8.47	150	3.1	2.54
WR-PG-78	38.3	8.91	147	7.3	2.71
WR-PG-80	40.9	8.5	154	7.7	2.6
WR-PG-82	50.2	6.49	183	3.3	1.55
WR-PG-84	41.4	8.23	171	10.9	2.46
WR-PG-86	38.2	9.26	231	27.5	2.9
WR-PG-88	35.7	9.92	176	15	3.19
WR-PG-90	36	9.71	217	6.8	3.04
WR-PG-92	35.9	9.61	218	20.2	3.09
WR-PG-94	36.3	10	217	10.3	3.16
WR-PG-96	32.6	10.2	240	8.5	3.03
WR-PG-98	37.6	10.3	366	11.9	3.25
WR-PG-100	33.4	11	242	17.5	3.49
WR-PG-102	39	9.35	206	5.4	2.74
WR-PG-104	36.9	9.3	205	13.4	2.87

Please refer to the Notes at the end of this table.

Table 6 - Sediment Sampling Analytical Results - Conventionals

	Total Solids (%)	Total Volatile Solids (%)	Ammonia as Nitrogen (mg/kg)	Total Sulfide (mg/kg)	Total Organic Carbon (%)
WRM 10 to 12					
East					
WR-PG-47	45.8	7.65	159	9.1	2.23
WR-VC-47	53.7	5.5	222	16.4	1.36
WR-VC-49	54.5	6.64	570	17.7	1.67
WR-VC-51	59.5	5.69	138	30.1	1.64
WR-VC-53	65.3	4.82	150	18.4	1.43
WR-VC-55	65.9	5.91	218	4.3	1.97
WR-VC-57	54.8	7.07	433	27.5	1.81
WR-VC-59	59.5	5.09	44	39	1.26
WR-PG-61	46.2	6.7	158	1.8	1.95
WR-VC-61	57.3	5.69	24	5.5	1.69
WR-PG-63	56	5.5	13.9	0.4	1.47
West					
WR-PG-106	42.3	9.13	137	19.7	2.83
WR-VC-106	54.6	7.93	775	72	2.11
WR-PG-108	70.3	3.85	70.4	1.8	1.2
WR-VC-108	56.4	7.15	580	80	1.9
WR-VC-110	74.5	3.22	53.8	35	1.23
WR-PG-112	39.9	9.07	221	12.2	3.02
WR-PG-114	44	7.44	225	0.8	2.22
WR-VC-114	51.8	7.45	450	15.2	2
WR-PG-116	42.7	8.61	194	8.6	2.76
WR-VC-116	47.9	8.41	467	21.5	2.29
WR-PG-118	41.3	8.16	207	10.3	2.53
WR-VC-118	57.1	6.78	605	22.3	1.96
WR-PG-120	28.2	10.8	249	18.3	3.63
WR-VC-120	54.5	7.02	522	9.4	1.94
WR-PG-122	41.3	8.36	157	9.9	2.54
WR-VC-122	59.2	5.69	134	3.4	1.17
WR-PG-124	44.9	6.9	139	4.7	2.11
WR-VC-124	56	6.27	377	11	1.9
WR-PG-126	51.5	4.5	76.8	3.8	1.1
WR-VC-126	61.1	5.28	269	25.6	1.67
WR-PG-128	44.1	7.16	123	6	2.23
WR-VC-128	68	3.44	154	7.8	0.84
WR-PG-130	46.9	8.11	149	17.2	2.08
WR-VC-130	73.5	3.41	250	6.1	0.71
WR-PG-132	38.5	7.8	150	18.9	2.54
WR-VC-132	57.8	7.22	633	51.4	2.13
WR-PG-134	48.8	5.88	67	1.6	1.36
WR-VC-134	75.2	2.66	201	5.4	0.73

Notes:
WRM = Willamette River Mile
East = East Side of Willamette River Federal Navigation Channel
West = West Side of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample)
VC = Vibracore (subsurface sample)

Table 7 - Sediment Sampling Analytical Results - Metals

	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
DMEF SL	**--**	**150**	**57**	**5.1**	**--**	**390**	**450**	**0.41**	**140**	**--**	**6.1**	**410**
DMEF BT	**--**	**--**	**507.1**	**--**	**--**	**--**	**--**	**1.5**	**370**	**--**	**6.1**	**--**
DMEF ML	**--**	**200**	**700**	**14**	**--**	**1,300**	**1,200**	**2.3**	**370**	**--**	**8.4**	**3,800**
Reference Locations												
WR-PG-01-REF	18,100	0.06 j-N	2.78	0.09	17.5	17.4	5.89	0.024	18.9	0.07 u-B	0.052	52.9
WR-PG-02-REF	17,600	0.06 j-N	3.14	0.11	17.2	19.3	5.97	0.016	20	0.04 u-B	0.045	50.3
WR-PG-03-REF	35,000	0.07 j-N	2.84	0.169	25.8	28.8	8.68	0.039	22.7	0.13	0.095	66
WRM 0 to 3												
East												
WR-PG-01	25,600	0.11 j-N	4.27	0.368	26.1	36.7	16.2	0.104	21.3	0.2 u	0.225	98.5
WR-PG-02	27,400	0.13 j-N	4.54	0.36	29.7	40	16.4	0.072	24.6	0.22	0.233	94.8
WR-PG-03	21,300	0.11 j-N	3.91	0.336	25.1	36.4	14.3	0.08	21.2	0.19 u	0.21	90.8
WR-VC-03	35,000	0.09 j-N	3.62	0.305	24.7	32.1	13.5	0.072	21.2	0.2	0.178	74.6
West												
WR-PG-04	18,700	0.1 j-N	3.96	0.363	24	30.8	13.9	0.069	23.7	0.2 u	1.09	95.7
WR-VC-04	23,400	0.08 j-N	3.83	0.465	20.8	29.3	17.7	0.078	20.4	0.1	0.195	90.6
WRM 3 to 6												
East												
WR-VC-05	35,200	0.12 j-N	3.42	0.337	22.9	32.4	22	0.097	19.6	0.12	0.274	87
WR-VC-07	24,600	0.11 j-N	3.21	0.333	20.2	33.9	20.2	0.091	18.4	0.07	0.272	86
WR-PG-09	26,200	0.1 j-N	4.22	0.297	31.1	41.1	19.5	0.083	25.3	0.23	0.217	93
WR-VC-09	27,400	0.09 j-N	3.26	0.256	20.9	32.1	15.3	0.068	19.5	0.06	0.19	71.9
WR-PG-11	30,700	0.11 j-N	4.31	0.285	28.7	39.4	20	0.077	23.8	0.28	0.197	95.5
WR-VC-11	23,300	0.12 j-N	2.77	0.264	17.8	32.3	18	0.093	16.7	0.09	0.229	69.4
WR-PG-13	26,000	0.08 j-N	4.14	0.312	28.7	37.9	23.5	0.08	24	0.21	0.199	96
WR-VC-13	31,800	0.12 j-N	3.77	0.316	22.4	37.7	18.5	0.073	20	0.11	0.251	84.2
WR-PG-15	24,600	0.14 j-N	3.61	0.242	23.5	37.5	16.1	0.062	20.5	0.19	0.171	82.5
WR-VC-15	29,600	0.1 j-N	3.53	0.279	20.3	34.3	18.2	0.088	18.4	0.1	0.249	79.6
WR-PG-17	25,900	0.1 j-N	3.5	0.236	22.1	37.9	15.4	0.166	19.5	0.19	0.181	87.2
WR-VC-17	18,400	0.12 j-N	3.82	0.283	21	37.6	39.8	0.07	19.8	0.2 u	0.154	87.2
WR-PG-19	27,000	0.13 j-N	3.79	0.256	24	41.3	16.3	0.083	20	0.19	0.578	87.2
WR-VC-19	23,400	0.1 j-N	3.04	0.258	18.9	37	32.3	0.11	17.9	0.05	0.183	75
WR-PG-21	18,400	0.16 j-N	3.45	0.243	17.4	45.4	16.1	0.122	17.5	0.15 u	0.14	91.7
WR-PG-23	16,900	0.76 j-N	5.23	0.5	27.1	127	53.6	0.32	21	0.18	0.231	220
WR-VC-23	14,100	0.53 j-N	4.36	0.286	17.3	46.9	24.3	0.095	17.8	0.17 u	0.131	105
WR-PG-27	7,110	0.23 j-N	2.24	0.364	17.5	53.5	29.7	0.065 j	12.3	0.1 u-B	3.71	148
West												
WR-PG-06	27,800	0.13 j-N	4.3	0.264	30.8	37.9	14.3	0.069	24.7	0.25	0.193	89.2
WR-VC-06	23,300	0.11 j-N	3.65	0.368	23.1	35.2	20.2	0.084	21	0.09	0.307	93.5
WR-VC-08	35,800	0.13 j-N	3.89	0.403	24.1	34.2	24.5	0.09	20.2	0.13	0.327	94.5
WR-VC-10	36,700	0.12 j-N	3.76	0.375	23.8	33.9	23.6	0.112	20.1	0.13	0.333	102
WR-PG-12	24,000	0.09 j-N	3.59	0.217	26.7	33.7	13	0.067	22	0.2	0.193	75.1
WR-VC-12	31,100	0.12 j-N	4.09	0.468	25.8	35.5	34	0.11	21.9	0.09	0.33	126
WR-PG-14	30,900	0.11 j-N	4.01	0.265	24.5	37.6	13.9	0.083	21.3	0.23	0.213	93
WR-VC-14	24,200	0.1 j-N	2.92	0.338	18.8	28.9	24.6	0.083	17.3	0.09	0.319	89
WR-PG-16	18,100	0.18 j-N	3.85	0.413	22.2	33.3	17.7	0.192	21	0.13 u	0.331	114
WR-VC-16	25,200	0.11 j-N	3.39	0.325	19.8	29.7	21.7	0.081	18.6	0.08	0.252	93.4
WR-PG-18	25,300	0.11 j-N	3.21	0.21	20.4	30	13.8	0.103	19.1	0.17	0.136	78.8
WR-VC-18	26,400	0.12 j-N	3.03	0.342	19.4	32.9	23.5	0.091	17.2	0.07	0.348	86.3
WR-VC-20	23,100	0.19 j-N	3.87	0.406	25.8	39.4	28.7	0.078	21.4	0.08 u-B	0.387	111
WR-PG-22	23,100	0.1 j-N	4.2	0.286	26.8	37.6	15.5	0.074	22.3	0.18	0.187	91.5
WR-VC-22	33,900	0.09 j-N	3.63	0.295	21.8	33.7	17.2	0.075	18.8	0.1	0.275	79.4
WR-PG-24	25,200	0.13 j-N	3.76	0.332	21	35.1	25.3	0.094	18.1	0.17	0.267	141
WR-VC-24	31,900	0.08 j-N	3.51	0.274	20.8	31.1	14.7	0.072	18.1	0.12	0.234	74
WR-PG-26	3,280	0.03 uj-N	1.54	0.113	4.07	6.19	2.75	0.008	6.22	0.1 u-B	0.014	33
WR-VC-26	30,700	0.1 j-N	3.42	0.281	20.7	30.8	16.1	0.07	17.6	0.11	0.261	75.7
WR-VC-28	23,500	0.18 j-N	3.69	0.301	23.4	38.8	21.2	0.087	19.3	0.1 u	0.409	100
WR-PG-30	22,600	0.2 j-N	3.69	0.249	20.9	36.2	15.2	0.094	19.9	0.22	0.178	88
WR-VC-30	28,000	0.11 j-N	5.43	0.432	30.3	48.8	26.4	0.088	24	0.13	0.368	131
WR-VC-32	24,900	0.18 j-N	3.43	0.356	23.8	38.2	22.9	0.086	21.1	0.09 u	0.32	96
WR-PG-34	24,400	0.1 j-N	3.94	0.264	23.9	36.5	15.5	0.081	20.5	0.19	0.185	90
WR-VC-34	24,700	0.13 j-N	4.41	0.4	30.2	46.5	24.8	0.085	24	0.09 u-B	0.392	118
WR-PG-36	21,400	0.11 j-N	3.47	0.21	20.2	26.5	14.1	0.141	18.7	0.16	0.127	81.3
WR-VC-36	30,100	0.11 j-N	3.59	0.313	21.1	33.4	19.8	0.076	18.5	0.08	0.305	90.6
WR-PG-42	15,900	1.48 j-N	6.79	0.248	17.3	31.6	20.4	0.146	20.8	0.14 u	0.22	78.4
WR-VC-42	11,900	0.18 j-N	6.95	0.157	12.8	20.5	14.3	0.029	15	0.02 U	0.05	67
WR-VC-46	19,500	0.17 j-N	3.97	0.373	18	29.8	30.3	0.149	18.3	0.05	0.213	110
WR-PG-48	24,800	0.66 j-N	6.19	0.286	27.5	64.6	24.8	0.084	21.5	0.21	0.21	145

Please refer to the Notes at the end of this table.

Table 7 - Sediment Sampling Analytical Results - Metals

	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
DMEF SL	**--**	**150**	**57**	**5.1**	**--**	**390**	**450**	**0.41**	**140**	**--**	**6.1**	**410**
DMEF BT	**--**	**--**	**507.1**	**--**	**--**	**--**	**--**	**1.5**	**370**	**--**	**6.1**	**--**
DMEF ML	**--**	**200**	**700**	**14**	**--**	**1,300**	**1,200**	**2.3**	**370**	**--**	**8.4**	**3,800**
WRM 6 to 8												
East												
WR-PG-29	30,700	0.09 j-N	3.79	0.241	28.3	43	12.9	0.06	22.7	0.18	0.189	84.4
WR-VC-29	26,900	0.19 j-N	3.42	0.263	23.1	53.2	17.1	0.056	20.9	0.09 u-B	0.22	87.6
WR-VC-31	27,600	0.1 j-N	3.88	0.29	27.5	56.1	15.4	0.08 j	24.8	0.09	0.191	93.3
West												
WR-PG-50	23,600	0.1 j-N	3.77	0.271	27.4	40.9	20	0.083	23	0.21 u	0.297	99.4
WR-VC-50	19,400	0.17 j-N	3.2	0.464	24.3	38.8	38.2	0.144	20.9	0.08 u-B	0.406	161
WR-PG-52	25,800	0.12 j-N	4.56	0.338	29.8	38.8	17.8	0.066	23.9	0.22	0.227	111
WR-VC-52	18,800	0.17 j-N	2.86	0.368	21.7	33.6	32.2	0.097	18.5	0.07 u-B	0.324	129
WR-PG-54	22,800	0.11 j-N	4.44	0.253	32	39.7	16.9	0.093	24.8	0.22 u	0.231	93.6
WR-VC-54	25,300	0.24 j-N	3.18	0.437	23.5	37.6	36.7	0.096	20.5	0.1 u-B	0.423	146
WR-PG-56	21,500	0.14 j-N	3.47	0.23	23.6	30.5	19.3	0.111	19.5	0.14	0.155	88.4
WR-VC-56	25,800	0.21 j-N	3.21	0.475	24.3	37.2	27	0.303	23.4	0.07 u-B	0.551	110
WR-PG-58	20,900	0.16 j-N	3.46	0.227	21.1	31.7	21.3	0.089	18.4	0.12	0.234	94.1
WR-VC-58	12,300	0.18 j-N	2.44	0.206 u	13.4	20.5	14.8	0.042	15.2	0.13 u	0.101	70.6
WR-PG-60	26,900	0.2 j-N	3.97	0.458	25.3	46.9	35.4	0.169	21.5	0.16	0.415	172
WR-VC-60	10,800	0.21 j-N	3.45	0.243	18	24.4	14.9	0.064	19.6	0.04 u-B	0.119	87.7
WR-PG-62	28,200	0.13 j-N	3.48	0.2	24.3	30.9	11.9	0.234	20.2	0.17	0.167	77.4
WR-VC-62	22,400	0.09 j-N	2.64	0.225	21.2	28.2	8.8	0.093	20.6	0.22 u	0.098	64.3
WR-PG-64	28,000	0.1 j-N	3.99	0.243	28	35.9	15.1	0.073	22	0.16	0.224	86.8
WR-VC-64	27,200	0.15 j-N	4.01	0.357	26.6	47.3	24.8	0.215	23.1	0.08 u-B	0.41	109
WR-PG-66	29,900	0.14 j-N	4.21	0.228	26.6	35.1	13.6	0.079	22.8	0.2	0.218	79.5
WR-VC-66	25,600	0.18 j-N	3.32	0.361	23.3	41.1	25.5	0.102	20.5	0.08 u-B	0.374	97.2
WR-PG-68	26,500	0.09 j-N	3.6	0.269	25.5	35.7	18.2	0.123	20.7	0.13	0.324	90.5
WR-VC-68	22,200	0.15 j-N	3.66	0.328	24.3	41	24.8	0.09	19.9	0.06 u-B	0.369	98.5
WR-PG-70	26,600	0.14 j-N	4.31	0.265	27.3	36.8	16.1	0.093	21.6	0.19	0.219	89.7
WR-VC-70	28,600	0.19 j-N	3.7	0.363	24.8	40	24.1	0.078	21.2	0.1 u	0.36	101
WR-PG-72	31,000	0.13 j-N	4.9	0.424	32	42.6	18.5	0.07	23.1	0.21	0.201	92
WR-VC-72	20,000	0.15 j-N	3.72	0.354	26	41.6	27.2	0.087	21.1	0.06 u-B	0.36	102
WR-PG-74	29,900	0.1 j-N	3.92	0.287	27.4	36.5	15.3	0.067	21.3	0.16	0.225	87.1
WRM 8 to 10												
East												
WR-PG-33	15,200	0.08 j-N	2.86	0.1 u-B	16.7	19.9	7.23	0.033	18.5	0.07 u-B	0.076 u	62.4
WR-VC-33	11,200	0.07 j-N	2.04	0.126	10.9	16.2	8.33	0.025	13.9	0.02 U	0.064	47
WR-PG-35	25,300	0.1 j-N	3.05	0.194	23.2	28.1	12.8	0.054	20	0.13 u	0.167	72.1
WR-VC-35	18,600	0.18 j-N	3.16	0.318	23	30.4	24.1	0.109	21.5	0.07 u-B	0.271	117
WR-PG-37	20,400	0.13 j-N	3.23	0.241	23	31.3	18.8	0.078	21.1	0.12 u	0.199	85.4
WR-VC-37	8,550	0.15 j-N	3.05	0.251	20.9	29.3	21.3	0.084	21.3	0.05 u-B	0.202	94
WR-PG-39	26,100	0.1 j-N	3.6	0.233	30.5	36.5	12.3	0.062	25.9	0.14 u	0.184	81.3
WR-VC-39	27,900	0.1 j-N	2.89	0.233	22.2	30	17.6	0.071 j	21.4	0.05	0.285	74.7
WR-PG-41	23,100	0.1 j-N	3.41	0.231	28.9	33.2	12.7	0.046	26.3	0.11 u	0.105	81.4
WR-VC-41	23,500	0.09 j-N	3.45	0.25	25	33.6	11.9	0.054	22.2	0.15	0.134	70.1
WR-PG-43	18,500	0.12 j-N	3.35	0.242	24.8	33.7	11.6	0.063	22.4	0.13 u	0.164	74.6
WR-VC-43	30,600	0.1 j-N	3.29	0.239	24.5	35.3	14.6	0.058 j	23.6	0.12	0.147	74.1
WR-PG-45	23,500	0.08 j-N	2.94	0.188	24.1	31.4	10.8	0.056	22.5	0.13 u	0.107	65.9
WR-VC-45	20,500	0.11 j-N	3.49	0.377	25.1	34.2	23.7	0.059	21.8	0.12	0.275	82.8
West												
WR-PG-76	25,000	0.12 j-N	3.67	0.222	26.5	35.5	12.7	0.045	21.4	0.18	0.186	82.8
WR-PG-78	28,500	0.15 j-N	3.99	0.251	27.3	36.6	13.7	0.08	22.3	0.19	0.197	87.8
WR-PG-80	26,400	0.1 j-N	3.61	0.205	26.2	34.5	11.8	0.092	21.6	0.18	0.17	79.8
WR-PG-82	26,500	0.09 j-N	3.29	0.177	25.2	31.3	11.2	0.052	22.4	0.15	0.15	78.8
WR-PG-84	22,600	0.08 j-N	3.95	0.235	29.9	35.9	12.4 j-*N	0.066	24	0.16	0.165	85.9
WR-PG-86	29,400	0.08 j-N	4.18	0.233	29.8	36	13.4 j-*N	0.074	23.4	0.14	0.182	84.8
WR-PG-88	22,800	0.12 j-N	3.92	0.239	26.3	35.6	13.7 j-*N	0.067	21.2	0.15	0.189	87.1
WR-PG-90	25,800	0.09 j-N	4.01	0.213	26.8	36.6	12.2 j-*N	0.065	21.6	0.14	0.175	82
WR-PG-92	29,100	0.09 j-N	4.14	0.229	29.3	35.7	12.6 j-*N	0.06	23.2	0.15	0.169	83.3
WR-PG-94	25,100	0.12 j-N	4.28	0.249	28.6	36.5	13.1 j-*N	0.056	23.2	0.15	0.177	87
WR-PG-96	29,200	0.12 j-N	4.58	0.249	31.1	38.9	13.6 j-*N	0.061	25.2	0.2	0.171	90.1
WR-PG-98	35,500	0.11 j-N	4.36	0.228	30.2	37	12.1 j-*N	0.063	23.5	0.24	0.263	80.9
WR-PG-100	33,800	0.12 j-N	4.43	0.242	31.5	38.5	13.2 j-*N	0.053	25	0.23	0.18	87.9
WR-PG-102	28,100	0.12 j-N	3.43	0.195	22.5	31.8	12.2 j-*N	0.071	20.3	0.17	0.206	71.9
WR-PG-104	25,500	0.2 j-N	4.27	0.247	35.1	36.9	72 j-*N	0.07	21.7	0.18	0.193	97.1

Please refer to the Notes at the end of this table.

Table 7 - Sediment Sampling Analytical Results - Metals

	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
DMEF SL	**--**	**150**	**57**	**5.1**	**--**	**390**	**450**	**0.41**	**140**	**--**	**6.1**	**410**
DMEF BT	**--**	**--**	**507.1**	**--**	**--**	**--**	**--**	**1.5**	**370**	**--**	**6.1**	**--**
DMEF ML	**--**	**200**	**700**	**14**	**--**	**1,300**	**1,200**	**2.3**	**370**	**--**	**8.4**	**3,800**
WRM 10 to 12												
East												
WR-PG-47	21,000	0.16 j-N	2.93	0.238	23.8	34.3	13	0.07	21.8	0.14 u	0.177	70.9
WR-VC-47	17,700	0.2 j-N	3.05	0.256	21.6	30.7	20.3	0.11	21.1	0.11	0.176	79.4
WR-VC-49	29,700	0.07 j-N	3.99	0.436	25.8	36.3	50.6	0.139	22	0.09	0.244	157
WR-VC-51	16,500	0.12 j-N	2.35	0.229	19	26.6	20.2	0.059	18.8	0.04	0.136	71.8
WR-VC-53	14,500	0.12 j-N	2.04	0.283	18	26.7	23.2	0.057	18.9	0.06	0.161	75.3
WR-VC-55	14,600	0.16 j-N	2.4	0.222	16.4	25.8	18.8	0.058	17.8	0.04	0.374	100
WR-VC-57	28,000	0.06 j-BN	4.01	0.412	27.5	37	37.8	0.089	22.9	0.1	0.276	101
WR-VC-59	14,900	0.11 j-N	2.91	0.34	21.8	32.7	31.6	0.105	21.8	0.07	0.268	89.3
WR-PG-61	26,400	0.08 j-N	2.87	0.231	24.4	29.4	15.1	0.054	22	0.1 u	0.13	73.7
WR-VC-61	22,900	0.09 j-N	3.35	0.364	25	33.5	40	0.092	21.6	0.06	0.223	102
WR-PG-63	23,200	0.13 j-N	2.56	0.214	19.6	24.9	13.3	0.056	20.1	0.09 u-B	0.101	73.5
West												
WR-PG-106	20,300	0.95 j-N	4.33	0.322	29.3	49.1	37.1	0.139	24.2	0.13 u	0.275	124
WR-VC-106	30,000	0.62 j-N	4.69	0.5	34.7	81.3	178	0.5	23	0.14	0.463	272
WR-PG-108	18,200	1.27 j-N	4.69	0.175	19.1	52.3	27.9	0.093	19.7	0.05 u-B	0.118	99.4
WR-VC-108	28,800	0.94 j-N	6.83	0.479	42.1	172	122	0.321	25.6	0.12	0.833	254
WR-VC-110	24,000	2.01 j-N	12.6	0.917	54.1	523	348	0.698	29.3	0.14	4.32	342
WR-PG-112	28,800	0.1 j-N	3.42	0.212	24.2	32.1	11.6	0.056	20.2	0.15	0.158	68.5
WR-PG-114	32,800	0.1 j-N	3.3	0.207	23.9	30.2	11.7	0.063	20.9	0.15	0.139	68.3
WR-VC-114	28,800	0.09 j-N	4.27	0.344	29.1	36.9	24.1	0.079	24	0.14	0.353	102
WR-PG-116	28,400	0.09 j-N	3.84	0.241	27.7	35.8	13.3	0.07	23.3	0.14	0.163	79.1
WR-VC-116	32,600	0.06 j-BN	4.66	1.23	26.5	54.4	17.6	0.073	23.3	0.13	0.185	97.2
WR-PG-118	26,800	0.1 j-N	3.49	0.222	24.6	33.4	12.7	0.068	21.7	0.14	0.148	74.2
WR-VC-118	28,800	0.1 j-N	4.17	0.337	28.7	36.5	25.8	0.093	24.4	0.11	0.345	110
WR-PG-120	34,500	0.11 j-N	4.54	0.259	30.3	41.4	14.1	0.099	25	0.22	0.165	86.5
WR-VC-120	31,800	0.1 j-N	3.58	0.286	24	36.2	24.3	0.076	21.3	0.1	0.32	87.4
WR-PG-122	31,400	0.11 j-N	3.97	0.249	26.6	34.4	15.9	0.087	22.8	0.16	0.162	84.2
WR-VC-122	30,100	0.04 j-BN	3.94	0.209	25.1	28	10.9	0.041	23.3	0.07	0.088	76
WR-PG-124	24,500	0.09 j-N	3.42	0.204	24.8	31.2	13.3	0.054	22.5	0.12	0.13	75.1
WR-VC-124	24,400	0.07 j-N	3.32	0.246	23	30.4	14.9	0.068	20	0.1	0.242	79.5
WR-PG-126	26,300	0.1 j-N	3.21	0.179	25.9	27.5	11.2	0.048	24.9	0.07 u-B	0.082	71.5
WR-VC-126	20,400	0.05 j-BN	3.74	0.245	25.2	31	17.1	0.065	22.3	0.02 U	0.233	90.4
WR-PG-128	34,800	0.08 j-N	3.55	0.206	29	31.9	12.1	0.069	24.1	0.15	0.119	75.6
WR-VC-128	16,300	0.06 j-N	3.04	0.227	19.2	27.9	14.9	0.051	19.9	0.02	0.207	84
WR-PG-130	30,000	0.1 j-N	3.5	0.222	27	48.4	16.4	0.056	24	0.12	0.261	89.5
WR-VC-130	12,900	0.16 j-N	2.3	0.214	15.8	21.1	46.1	0.054	16.7	0.03	0.303	98.3
WR-PG-132	29,900	0.09 j-N	3	0.177	22.3	27.9	10.5	0.04	19.5	0.14	0.137	65.6
WR-VC-132	28,000	0.13 j-N	3.54	0.442	25.2	39.4	37.9	0.178 j	23	0.07	0.483	243
WR-PG-134	27,400	0.08 j-N	2.94	0.171	23.9	25.9	12.4	0.038	22.2	0.1	0.098	69
WR-VC-134	13,500	0.05 j-N	3.11	0.289	17.3	22	22.8	0.049	17.2	0.02 U	0.153	154

Notes:

Concentrations reported in mg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

B = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

N = The matrix spike sample recovery was not within control limits; * = The duplicate analysis not within control limits.

Tetra Tech EC Qualifiers:

u = The result should be considered not detected at the indicated detection limit; j = The result should be considered an estimated value.

uj = The detection limit for the non-detect should be considered an estimated detection limit.

See Volume II of this report for more analytical testing details.

Table 8 - Sediment Sampling Analytical Results - Butyltins

	Tertra-n-butyltin		Tri-n-butyltin		Di-n-butyltin		n-Butyltin	
	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg
DMEF SL	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF BT	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF ML	--	--	--	--	--	--	--	--
Reference Locations								
WR-PG-01-REF	0.0015 U	0.12 U	0.0006 U	1.1	0.00055 U	0.45	0.0017 U	0.24
WR-PG-02-REF	0.0018 U	0.11 U	0.00099 U	0.087 U	0.0019 u-JP	0.15	0.0035	0.047 U
WR-PG-03-REF	0.0015 U	0.15 U	0.0012	0.72	0.0013 u-J	0.74	0.0017 U	0.24
WRM 0 to 3								
East								
WR-PG-01	0.0015 U	--	0.0093	--	0.02 u-J	--	0.003 u-J	--
WR-PG-02	0.0015 U	--	0.015	--	0.021 u-J	--	0.0034 u-J	--
WR-PG-03	0.0015 U	--	0.011	--	0.018 u-J	--	0.0017 U	--
WR-VC-03	0.0015 U	--	0.0038	--	0.0034	--	0.0079	--
West								
WR-PG-04	0.0015 U	--	0.045	--	0.021 u-J	--	0.0023 u-J	--
WR-VC-04	0.0015 U	--	0.095	--	0.0074	--	0.0034	--
WRM 3 to 6								
East								
WR-VC-05	0.0015 U	--	*0.64*	--	0.059	--	0.012	--
WR-VC-07	0.0015 U	--	*0.54*	--	0.029	--	0.0057	--
WR-PG-09	0.0015 U	--	0.028	--	0.02 u-J	--	0.002 u-J	--
WR-VC-09	0.0015 U	--	*0.15*	--	0.0096	--	0.0019	--
WR-PG-11	0.0015 U	--	0.035	--	0.026 u-J	--	0.0024 u-J	--
WR-VC-11	0.0015 U	--	*0.24*	--	0.014	--	0.0029	--
WR-PG-13	0.0015 U	--	0.026	--	0.02 u-J	--	0.0023 u-J	--
WR-VC-13	0.0015 U	--	*0.29*	--	0.015	--	0.0033	--
WR-PG-15	0.0015 U	--	0.028	--	0.017 u-J	--	0.0021 u-J	--
WR-VC-15	0.0015 U	--	*0.65*	--	0.032	--	0.0066	--
WR-PG-17	0.0015 U	0.16 U	0.03	32	0.014 u-J	7.5	0.0021 u-J	1.8
WR-VC-17	0.0015 U	--	0.098	--	0.0062	--	0.0033	--
WR-PG-19	0.0015 U	0.16 U	0.064	41	0.017 u-J	13	0.0037 u-J	2
WR-VC-19	0.0015 U	--	0.09	--	0.0085	--	0.0021	--
WR-PG-21	0.0015 U	0.65	0.021	48	0.013 u-J	16	0.0021 u-J	1.8
WR-PG-23	0.0015 U	7.5	0.048	350	0.014 u-J	43	0.0017 U	2.8
WR-VC-23	0.0017 U	--	*0.34*	--	0.024	--	0.0056	--
WR-PG-27	0.0055 U	0.095 U	0.011	6.6	0.049 u-J	3.7	0.0081 u-J	0.92
West								
WR-PG-06	0.0015 U	--	0.014	--	0.02 u-J	--	0.0017 U	--
WR-VC-06	0.0015 U	--	0.06	--	0.005	--	0.0026	--
WR-VC-08	0.0015 U	--	*0.2*	--	0.017	--	0.0058	--
WR-VC-10	0.0015 U	--	0.04	--	0.0036	--	0.0029	--
WR-PG-12	0.0015 U	--	0.017	--	0.02 u-J	--	0.0018 u-J	--
WR-VC-12	0.0015 U	--	0.014	--	0.0019	--	0.0028	--
WR-PG-14	0.0015 U	--	0.0098	--	0.015 u-J	--	0.0017 U	--
WR-VC-14	0.0015 U	--	0.023	--	0.0023	--	0.0017 U	--
WR-PG-16	0.0015 U	--	0.011	--	0.015 u-J	--	0.0044 u-J	--
WR-VC-16	0.0015 U	--	0.017	--	0.0019	--	0.0017 U	--
WR-PG-18	0.0015 U	--	0.0058	--	0.015 u-J	--	0.0038 u-J	--
WR-VC-18	0.0015 U	--	*0.15*	--	0.0093	--	0.0046	--
WR-VC-20	0.0017 U	--	0.13	--	0.0091	--	0.0034	--
WR-PG-22	0.0015 U	--	0.0069	--	0.016 u-J	--	0.0027 u-J	--
WR-VC-22	0.0015 U	--	0.13	--	0.0092	--	0.0022	--
WR-PG-24	0.0015 U	--	0.017	--	0.016 u-J	--	0.0026 u-J	--
WR-VC-24	0.0015 U	--	0.031	--	0.0027	--	0.0017 U	--
WR-VC-26	0.0015 U	--	*0.19*	--	0.012	--	0.0029	--
WR-VC-28	0.0015 U	--	*0.31*	--	0.02	--	0.0032	--
WR-PG-30	0.0015 U	--	0.02	--	0.017 u-J	--	0.0023 u-J	--
WR-VC-30	0.0015 U	--	*0.36*	--	0.027	--	0.0044	--
WR-VC-32	0.0015 U	--	*0.24*	--	0.019	--	0.0028	--
WR-PG-34	0.0015 U	--	0.0064	--	0.016 u-J	--	0.0027 u-J	--
WR-VC-34	0.0015 U	--	*0.39*	--	0.028	--	0.0047	--
WR-PG-36	0.0015 U	--	0.046	--	0.019 u-J	--	0.0029 u-J	--
WR-VC-36	0.0015 U	--	*0.68*	--	0.043	--	0.032	--
WR-PG-42	0.0017 U	0.12 U	0.029	4.7	0.015 u-J	0.98	0.0026 u-J	0.27
WR-VC-42	0.0025 U	--	0.0034	--	0.00089 U	--	0.0028 U	--
WR-VC-46	0.0018 U	--	0.065	--	0.0037	--	0.0087	--
WR-PG-48	0.0015 U	0.16 U	0.036	17	0.015 u-J	6.4	0.002 u-J	0.88

Please refer to the Notes at the end of this table.

Table 8 - Sediment Sampling Analytical Results - Butyltins

	Tertra-n-butyltin		Tri-n-butyltin		Di-n-butyltin		n-Butyltin	
	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg
DMEF SL	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF BT	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF ML	--	--	--	--	--	--	--	--
WRM 6 to 8								
East								
WR-PG-29	0.0015 U	0.17 U	0.037	22	0.023 U	5.7	0.0041 u-J	1
WR-VC-29	0.0015 U	--	*0.58*	--	0.021	--	0.0023	--
WR-VC-31	0.0015 U	--	*0.39*	--	0.015	--	0.0017 U	--
West								
WR-PG-50	0.0015 U	--	*0.19*	--	0.024 u-J	--	0.0027 u-J	--
WR-VC-50	0.0015 U	--	0.054	--	0.0066	--	0.005	--
WR-PG-52	0.0015 U	--	*0.26*	--	0.033 u-J	--	0.0038 u-J	--
WR-VC-52	0.0016 U	--	0.074	--	0.0083	--	0.0025	--
WR-PG-54	0.0015 U	--	0.017	--	0.015 u-J	--	0.0023 u-J	--
WR-VC-54	0.0015 U	--	0.12	--	0.012	--	0.0025	--
WR-PG-56	0.0015 U	--	0.015	--	0.016 u-J	--	0.0023 u-J	--
WR-VC-56	0.0015 U	--	0.0025	--	0.0019	--	0.0017 U	--
WR-PG-58	0.0015 U	--	0.011	--	0.016 u-J	--	0.0017 U	--
WR-VC-58	0.0025 U	--	0.026	--	0.0026	--	0.0028 U	--
WR-PG-60	0.0015 U	--	0.0006 U	--	0.016 u-J	--	0.003 u-J	--
WR-VC-60	0.002 U	--	0.0059	--	0.0011	--	0.0022 U	--
WR-PG-62	0.0019 U	--	0.016	--	0.022 u-J	--	0.0021 U	--
WR-VC-62	0.0073	--	*1.2*	--	0.043	--	0.0055	--
WR-PG-64	0.0015 U	--	0.0082	--	0.019 u-J	--	0.0022 u-J	--
WR-VC-64	0.0015 U	--	*0.7*	--	0.025	--	0.0035	--
WR-PG-66	0.0015 U	--	0.011	--	0.02 u-J	--	0.0031 u-J	--
WR-VC-66	0.0015 U	--	*0.38*	--	0.014	--	0.0017 U	--
WR-PG-68	0.0015 U	--	0.027	--	0.022 u-J	--	0.0029 u-J	--
WR-VC-68	0.0015 U	--	*0.45*	--	0.016	--	0.0021	--
WR-PG-70	0.0015 U	--	0.041	--	0.024 u-J	--	0.0029 u-J	--
WR-VC-70	0.0015 U	--	*0.36*	--	0.013	--	0.0017 U	--
WR-PG-72	0.0015 U	--	0.011	--	0.022 u-J	--	0.0029 u-J	--
WR-VC-72	0.0015 U	--	*0.31*	--	0.011	--	0.0017 U	--
WR-PG-74	0.0015 U	--	0.015	--	0.023 u-J	--	0.004 u-J	--
WRM 8 to 10								
East								
WR-PG-33	0.0015 U	--	0.0037	--	0.014	--	0.0021	--
WR-VC-33	0.0036 U	--	0.018	--	0.0019 U	--	0.0041 U	--
WR-PG-35	0.0015 U	--	0.0091	--	0.016	--	0.0017 U	--
WR-VC-35	0.0015 U	--	0.015	--	0.0023	--	0.0017 U	--
WR-PG-37	0.0015 U	--	0.025	--	0.021	--	0.0042	--
WR-VC-37	0.0016 U	--	0.021	--	0.0035	--	0.0018 U	--
WR-PG-39	0.0015 U	--	0.0047	--	0.019	--	0.0017 U	--
WR-VC-39	0.0015 U	--	0.024	--	0.0034	--	0.0017 U	--
WR-PG-41	0.0015 U	--	0.0023	--	0.019	--	0.0019	--
WR-VC-41	0.0015 U	--	0.0061	--	0.0011	--	0.0017 U	--
WR-PG-43	0.0015 U	--	0.0019	--	0.017	--	0.002	--
WR-VC-43	0.0015 U	--	0.0032	--	0.00091 U	--	0.0017 U	--
WR-PG-45	0.0015 U	--	0.003	--	0.014	--	0.0017 U	--
WR-VC-45	0.0015 U	--	0.031	--	0.0036	--	0.0029	--
West								
WR-PG-76	0.0015 U	--	0.0056	--	0.023 u-J	--	0.0035 u-J	--
WR-PG-78	0.0015 U	--	0.0044	--	0.021 u-J	--	0.0031 u-J	--
WR-PG-80	0.0015 U	--	0.0035	--	0.02 u-J	--	0.0026 u-J	--
WR-PG-82	0.0015 U	--	0.0057	--	0.02 u-J	--	0.0017 U	--
WR-PG-84	0.0015 U	--	0.0042	--	0.002	--	0.0024	--
WR-PG-86	0.0015 U	--	0.0031	--	0.05	--	0.065	--
WR-PG-88	0.0015 U	--	0.0056	--	0.017	--	0.0044	--
WR-PG-90	0.0015 U	--	0.0033	--	0.022	--	0.0032	--
WR-PG-92	0.0015 U	--	0.0023	--	0.017	--	0.0017 U	--
WR-PG-94	0.0015 U	--	0.0021	--	0.017	--	0.0017 U	--
WR-PG-96	0.0015 U	--	0.0019	--	0.018	--	0.0023	--
WR-PG-98	0.0015 U	--	0.0025	--	0.019	--	0.0024	--
WR-PG-100	0.0015 U	--	0.0018	--	0.02	--	0.0019	--
WR-PG-102	0.0015 U	--	0.0028	--	0.017	--	0.0025	--
WR-PG-104	0.0015 U	--	0.0047	--	0.015	--	0.0038	--

Please refer to the Notes at the end of this table.

Table 8 - Sediment Sampling Analytical Results - Butyltins

	Tertra-n-butyltin		Tri-n-butyltin		Di-n-butyltin		n-Butyltin	
	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg
DMEF SL	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF BT	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF ML	--	--	--	--	--	--	--	--
WRM 10 to 12								
East								
WR-PG-47	0.0015 U	--	0.011	--	0.0022 u-J	--	0.0019	--
WR-VC-47	0.0015 U	--	0.013	--	0.0018	--	0.0017 U	--
WR-VC-49	0.0015 U	--	0.019	--	0.0019	--	0.0019	--
WR-VC-51	0.0015 U	--	0.011	--	0.0019	--	0.0017 U	--
WR-VC-53	0.0015 U	--	0.031	--	0.0056	--	0.0035	--
WR-VC-55	0.0032 U	--	0.0048	--	0.0023 U	--	0.0036 U	--
WR-VC-57	0.0015 U	--	0.019	--	0.0034	--	0.0017 U	--
WR-VC-59	0.0017 U	--	0.091	--	0.01	--	0.0053	--
WR-PG-61	0.0015 U	--	0.0047	--	0.0019 u-J	--	0.0017 U	--
WR-VC-61	0.0016 U	--	0.074	--	0.013	--	0.0079	--
WR-PG-63	0.0015 U	--	0.0068	--	0.0029 u-J	--	0.005	--
West								
WR-PG-106	0.0015 U	--	0.011	--	0.0033 u-J	--	0.003	--
WR-VC-106	0.0015 U	--	0.018	--	0.002	--	0.0017 U	--
WR-PG-108	0.0016 U	--	0.021	--	0.0044 u-J	--	0.0027	--
WR-VC-108	0.0015 U	--	0.09	--	0.0075	--	0.0072	--
WR-VC-110	0.0033 U	--	0.016	--	0.0034 U	--	0.0037 U	--
WR-PG-112	0.0015 U	--	0.0031	--	0.0022 u-J	--	0.0023	--
WR-PG-114	0.0015 U	--	0.0023	--	0.0019 u-J	--	0.0028	--
WR-VC-114	0.0015 U	--	0.036	--	0.0035	--	0.0017 U	--
WR-PG-116	0.0015 U	--	0.0034	--	0.0036 u-J	--	0.0019	--
WR-VC-116	0.0015 U	--	0.02	--	0.0028	--	0.0017 U	--
WR-PG-118	0.0015 U	--	0.002	--	0.0014 u-J	--	0.0017 U	--
WR-VC-118	0.0023 U	--	0.008	--	0.0012 U	--	0.0025 U	--
WR-PG-120	0.0015 U	--	0.0013 U	--	0.0015 u-J	--	0.0017 U	--
WR-VC-120	0.0015 U	--	0.0076	--	0.0013	--	0.0017 U	--
WR-PG-122	0.0015 U	--	0.0031	--	0.0028 u-J	--	0.0028	--
WR-VC-122	0.0015 U	--	0.00098 U	--	0.00055 U	--	0.0017 U	--
WR-PG-124	0.0015 U	--	0.0029	--	0.0024 u-J	--	0.0017 U	--
WR-VC-124	0.0015 U	--	0.0042	--	0.0011	--	0.0017 U	--
WR-PG-126	0.0015 U	--	0.00086 U	--	0.00055 U	--	0.0017 U	--
WR-VC-126	0.0015 U	--	0.0058	--	0.001 U	--	0.0017 U	--
WR-PG-128	0.0015 U	--	0.0023	--	0.002 u-J	--	0.0035	--
WR-VC-128	0.002 U	--	0.0042	--	0.0016 U	--	0.0023 U	--
WR-PG-130	0.0015 U	--	0.0013 U	--	0.002 u-J	--	0.0017 U	--
WR-VC-130	0.0036 U	--	0.002 U	--	0.0025	--	0.0041 U	--
WR-PG-132	0.0015 U	--	0.0025	--	0.002 u-J	--	0.0019	--
WR-VC-132	0.0017 U	--	0.013	--	0.0024	--	0.0019 U	--
WR-PG-134	0.0015 U	--	0.0006 U	--	0.0013 u-J	--	0.0023	--
WR-VC-134	0.0075 U	--	0.003 U	--	0.0028 U	--	0.0085 U	--

Notes:

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit; P = The GC or HPLC confirmation criteria was exceeded.

J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

Tetra Tech EC Qualifiers:

u = The result should be considered not detected at the indicated detection limit.

See Volume II of this report for more analytical testing details.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	N-Nitrosodimethylamine	Aniline	Bis(2-chloroethyl) Ether	Phenol	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	Benzyl Alcohol	Bis(2-chloroisopropyl) Ether	2-Methylphenol	Hexachloroethane	N-Nitrosodi-n-propylamine	4-Methylphenol	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Bis(2-chloroethoxy)methane	2,4-Dichlorophenol
DMEF SL	**--**	**--**	**--**	**420**	**--**	**170**	**110**	**35**	**57**	**--**	**63**	**1,400**	**--**	**670**	**--**	**--**	**--**	**29**	**--**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**--**	**--**	**--**	**1,200**	**--**	**--**	**120**	**110**	**870**	**--**	**77**	**14,000**	**--**	**3,600**	**--**	**--**	**--**	**210**	**--**	**--**
Reference Locations																				
WR-PG-01-REF	9.7 U	2.4 U	3.8 U	12	2.7 U	2.6 U	3 U	2.1 U	5.9 U	1.9 U	5.4 U	0.56	5.1 U	4.6 U	3.2 U	2.6 U	4.2 U	8.7 U	2.1 U	2.9 U
WR-PG-02-REF	9.5 U	2.4 U	3.8 U	11	2.7 U	2.5 U	3 U	2.1 U	5.8 U	1.9 U	5.3 U	0.62	5 U	4.5 U	3.1 U	2.5 U	4.1 U	8.5 U	2.1 U	2.8 U
WR-PG-03-REF	13 U	3.2 U	5.1 U	19	3.7 U	3.4 U	4.1 U	2.8 U	7.9 U	2.6 U	7.3 U	1.3	6.8 U	13	4.3 U	3.4 U	5.6 U	12 U	2.8 U	3.9 U
WRM 0 to 3																				
East																				
WR-PG-01	16 U	3.9 U	6.3 U	16 u-J	4.5 U	4.2 U	5 U	3.4 U	9.6 U	3.2 U	8.9 U	5.7 U	8.3 U	7.6 U	5.2 U	4.2 U	6.8 U	15 U	3.4 U	4.7 U
WR-PG-02	17 U	4 U	6.4 U	22 u-J	4.6 U	4.3 U	5.1 U	3.5 U	9.9 U	3.2 U	9.1 U	5.9 U	8.6 U	17	5.4 U	4.3 U	7 U	15 U	3.5 U	4.8 U
WR-PG-03	15 U	3.7 U	5.9 U	16 u-J	4.2 U	3.9 U	4.7 U	3.2 U	9 U	3 U	8.3 U	5.4 U	7.8 U	14	4.9 U	3.9 U	6.4 U	14 U	3.2 U	4.4 U
WR-VC-03	13 U	3 U	4.8 U	17	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	0.46 U	6.4 U	12	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
West																				
WR-PG-04	61 U	15 U	24 U	19 U	17 U	16 U	19 U	13 U	37 U	12 U	34 U	22 U	32 U	29 U	20 U	16 U	26 U	55 U	13 U	18 U
WR-VC-04	11 U	2.7 U	4.3 U	27	3.1 U	2.9 U	3.4 U	2.3 U	6.6 U	2.2 U	6.1 U	0.41 U	5.7 U	24	3.6 U	2.9 U	4.6 U	9.8 U	2.3 U	3.2 U
WRM 3 to 6																				
East																				
WR-VC-05	13 U	3.1 U	5 U	13	3.5 U	3.3 U	4 U	2.7 U	7.7 U	2.5 U	7 U	0.48 U	6.6 U	28	4.2 U	3.3 U	5.4 U	12 U	2.7 U	3.8 U
WR-VC-07	12 U	2.9 U	4.6 U	36	3.3 U	3.1 U	3.7 U	2.5 U	7.1 U	2.3 U	6.6 U	0.44 U	6.2 U	19	3.9 U	3.1 U	5 U	11 U	2.5 U	3.5 U
WR-PG-09	14 U	3.5 U	5.5 U	10 u-J	3.9 U	3.7 U	4.4 U	3 U	8.5 U	2.8 U	7.8 U	0.53 U	7.4 U	6.7 U	4.6 U	3.7 U	6 U	13 U	3 U	4.2 U
WR-VC-09	24 U	5.7 U	9.1 U	34	6.5 U	6.1 U	7.2 U	5 U	15 U	4.6 U	13 U	0.44 U	13 U	18	7.6 U	6.1 U	9.9 U	21 U	5 U	6.9 U
WR-PG-11	15 U	3.7 U	5.8 U	19 u-J	4.2 U	3.9 U	4.6 U	3.2 U	9 U	2.9 U	8.3 U	0.56 U	7.8 U	12	4.9 U	3.9 U	6.3 U	14 U	3.2 U	4.4 U
WR-VC-11	24 U	5.8 U	9.3 U	31	6.6 U	6.2 U	7.4 U	5.1 U	15 U	4.7 U	14 U	0.45 U	13 U	20	7.8 U	6.2 U	11 U	22 U	5.1 U	7 U
WR-PG-13	66 U	17 U	26 U	21 U	19 U	18 U	21 U	14 U	40 U	13 U	37 U	0.5 U	35 U	31 U	22 U	18 U	28 U	59 U	14 U	20 U
WR-VC-13	24 U	5.9 U	9.3 U	9.2	6.6 U	6.2 U	7.4 U	5.1 U	15 U	4.7 U	14 U	0.45 U	13 U	15	7.8 U	6.2 U	11 U	22 U	5.1 U	7 U
WR-PG-15	14 U	3.2 U	5.2 U	12 u-J	3.7 U	3.5 U	4.1 U	2.8 U	7.9 U	2.6 U	7.3 U	0.94 U	6.9 U	11	4.3 U	3.5 U	5.6 U	12 U	2.8 U	3.9 U
WR-VC-15	12 U	2.9 U	4.7 U	16	3.3 U	3.1 U	3.7 U	2.5 U	7.2 U	2.4 U	6.6 U	1 U	6.2 U	14	3.9 U	3.1 U	5 U	11 U	2.5 U	3.5 U
WR-PG-17	14 U	3.4 U	5.3 U	21 u-J	3.8 U	3.6 U	4.2 U	2.9 U	8.2 U	2.7 U	7.6 U	0.51 U	7.1 U	15	4.5 U	3.6 U	5.8 U	13 U	2.9 U	4 U
WR-VC-17	12 U	2.8 U	4.5 U	9.8	3.2 U	3 U	3.6 U	2.5 U	6.9 U	2.3 U	6.4 U	0.43 U	6 U	6.2	3.8 U	3 U	4.9 U	11 U	2.5 U	3.4 U
WR-PG-19	14 U	3.4 U	5.4 U	4.3 U	3.8 U	3.6 U	4.3 U	2.9 U	8.3 U	2.7 U	7.6 U	0.52 U	7.2 U	11	4.5 U	3.6 U	5.8 U	13 U	2.9 U	4.1 U
WR-VC-19	13 U	3 U	4.8 U	3.8 U	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	0.46 U	6.4 U	9.7	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-PG-21	12 U	3 U	4.7 U	3.8 U	3.4 U	3.2 U	3.8 U	2.6 U	7.3 U	2.4 U	6.7 U	1.3	6.3 U	11	4 U	3.2 U	5.1 U	11 U	2.6 U	3.6 U
WR-PG-23	13 U	3.1 U	4.9 U	17 u-J	3.5 U	3.3 U	3.9 U	2.7 U	7.6 U	2.5 U	7 U	0.89	6.6 U	22	4.1 U	3.3 U	5.3 U	12 U	2.7 U	3.7 U
WR-VC-23	46 U	12 U	18 U	15 U	13 U	12 U	15 U	9.8 U	28 U	9 U	26 U	0.62	24 U	22 U	15 U	12 U	20 U	42 U	9.8 U	14 U
WR-PG-27	82 U	21 U	33 U	26 U	23 U	22 U	26 U	18 U	50 U	17 U	46 U	0.31 U	44 U	39 U	27 U	22 U	35 U	74 U	18 U	25 U
West																				
WR-PG-06	15 U	3.5 U	5.6 U	13 u-J	4 U	3.8 U	4.5 U	3.1 U	8.7 U	2.8 U	8 U	0.54 U	7.5 U	11	4.7 U	3.8 U	6.1 U	13 U	3.1 U	4.2 U
WR-VC-06	14 U	3.3 U	5.2 U	16	3.7 U	3.5 U	4.1 U	2.8 U	8 U	2.6 U	7.4 U	0.5 U	6.9 U	27	4.4 U	3.5 U	5.6 U	12 U	2.8 U	3.9 U
WR-VC-08	25 U	6.1 U	9.8 U	30	6.9 U	6.5 U	7.8 U	5.3 U	16 U	4.9 U	14 U	0.47 U	13 U	59	8.2 U	6.5 U	11 U	23 U	5.3 U	7.4 U
WR-VC-10	25 U	6.1 U	9.8 U	12	6.9 U	6.5 U	7.7 U	5.3 U	15 U	4.9 U	14 U	1 U	13 U	64	8.1 U	6.5 U	11 U	23 U	5.3 U	7.3 U
WR-PG-12	13 U	3.2 U	5 U	6 u-J	3.6 U	3.4 U	4 U	2.7 U	7.7 U	2.5 U	7.1 U	0.48 U	6.7 U	6.1 U	4.2 U	3.4 U	5.4 U	12 U	2.7 U	3.8 U
WR-VC-12	23 U	5.7 U	9 U	14	6.4 U	6 U	7.2 U	4.9 U	14 U	4.5 U	13 U	1.9	12 U	70	7.5 U	6 U	9.8 U	21 U	4.9 U	6.8 U
WR-PG-14	16 U	3.8 U	6 U	14 u-J	4.3 U	4 U	4.8 U	3.3 U	9.2 U	3 U	8.5 U	1	8 U	10	5 U	4 U	6.5 U	14 U	3.3 U	4.5 U
WR-VC-14	23 U	5.7 U	9 U	12	6.4 U	6 U	14	4.9 U	14 U	4.5 U	13 U	1.5	12 U	39	7.5 U	6 U	9.8 U	21 U	4.9 U	6.8 U
WR-PG-16	240 U	59 U	93 U	74 U	66 U	62 U	74 U	51 U	150 U	47 U	140 U	0.45 U	130 U	120 U	78 U	62 U	110 U	220 U	51 U	70 U
WR-VC-16	11 U	2.7 U	4.3 U	11	3 U	2.9 U	18	2.3 U	6.6 U	2.2 U	6 U	1.6	5.7 U	21	3.6 U	2.9 U	4.6 U	9.7 U	2.3 U	3.2 U
WR-PG-18	62 U	16 U	25 U	20 U	18 U	17 U	20 U	14 U	38 U	13 U	35 U	0.47 U	33 U	30 U	21 U	17 U	27 U	56 U	14 U	19 U
WR-VC-18	24 U	5.9 U	9.5 U	67	6.7 U	6.3 U	7.5 U	5.2 U	15 U	4.8 U	14 U	0.46 U	13 U	41	7.9 U	6.3 U	11 U	22 U	5.2 U	7.1 U
WR-VC-20	12 U	2.9 U	4.6 U	43	3.3 U	3.1 U	3.7 U	2.5 U	7.1 U	2.3 U	6.5 U	1 U	6.1 U	26	3.9 U	3.1 U	5 U	11 U	2.5 U	3.5 U
WR-PG-22	16 U	3.9 U	6.1 U	16 u-J	4.4 U	4.1 U	4.9 U	3.3 U	9.4 U	3.1 U	8.7 U	1.6	8.2 U	11	5.1 U	4.1 U	6.6 U	14 U	3.3 U	4.6 U
WR-VC-22	14 U	3.3 U	5.2 U	4.1 U	3.7 U	3.5 U	4.1 U	2.8 U	8 U	2.6 U	7.3 U	0.5 U	6.9 U	15	4.3 U	3.5 U	5.6 U	12 U	2.8 U	3.9 U
WR-PG-24	14 U	3.4 U	5.5 U	16 u-J	3.9 U	3.7 U	4.3 U	3 U	8.4 U	2.8 U	7.7 U	3.5	7.3 U	21	4.6 U	3.7 U	5.9 U	13 U	3 U	4.1 U
WR-VC-24	14 U	3.3 U	5.2 U	8.3	3.7 U	3.5 U	34	2.8 U	8 U	2.6 U	7.3 U	0.5 U	6.9 U	6.2 U	4.3 U	3.5 U	5.6 U	12 U	2.8 U	3.9 U
WR-PG-26	7.7 U	1.9 U	3.1 U	7.8 u-J	2.2 U	2.1 U	2.4 U	1.7 U	4.7 U	1.6 U	4.3 U	1.5 U	4.1 U	3.7 U	2.6 U	2.1 U	3.3 U	7 U	1.7 U	2.3 U
WR-VC-26	25 U	6 U	9.6 U	13	6.8 U	6.4 U	7.6 U	5.2 U	15 U	4.8 U	14 U	0.46 U	13 U	13	8 U	6.4 U	11 U	22 U	5.2 U	7.2 U
WR-VC-28	27 U	6.5 U	11 U	45	7.3 U	6.9 U	8.2 U	5.6 U	16 U	5.2 U	15 U	0.5 U	14 U	17	8.6 U	6.9 U	12 U	24 U	5.6 U	7.7 U
WR-PG-30	15 U	3.6 U	5.7 U	11 u-J	4 U	3.8 U	4.5 U	3.1 U	8.7 U	2.9 U	8 U	0.54 U	7.6 U	17	4.7 U	3.8 U	6.2 U	13 U	3.1 U	4.3 U
WR-VC-30	66 U	17 U	26 U	42	19 U	18 U	21 U	15 U	40 U	13 U	37 U	0.66 U	35 U	39	22 U	18 U	29 U	60 U	15 U	20 U
WR-VC-32	13 U	3.1 U	4.9 U	54	3.5 U	3.3 U	3.9 U	2.7 U	7.5 U	2.5 U	6.9 U	0.47 U	6.5 U	25	4.1 U	3.3 U	5.3 U	12 U	2.7 U	3.7 U
WR-PG-34	17 U	4.1 U	6.6 U	15 u-J	4.7 U	4.4 U	5.2 U	3.6 U	11 U	3.3 U	9.3 U	0.63 U	8.7 U	14	5.5 U	4.4 U	7.1 U	15 U	3.6 U	4.9 U
WR-VC-34	14 U	52	5.3 U	21	3.8 U	3.6 U	4.2 U	2.9 U	8.2 U	2.7 U	7.6 U	0.51 U	7.1 U	14	4.5 U	3.6 U	5.8 U	13 U	2.9 U	4 U
WR-PG-36	12 U	2.9 U	4.5 U	9.2 u-J	3.2 U	3 U	3.6 U	2.5 U	7 U	2.3 U	6.4 U	0.43 U	6 U	7.3	3.8 U	3 U	4.9 U	11 U	2.5 U	3.4 U
WR-VC-36	27 U	6.7 U	11 U	8.4 U	7.6 U	7.1 U	8.4 U	5.8 U	17 U	5.3 U	16 U	0.51 U	15 U	18	8.9 U	7.1 U	12 U	25 U	5.8 U	8 U
WR-PG-42	510 U	130 U	200 U	160 U	150 U	140 U	160 U	110 U	310 U	100 U	290 U	0.77	270 U	240 U	170 U	140 U	220 U	460 U	110 U	150 U
WR-VC-42	8.4 U	2.1 U	3.4 U	15	2.4 U	2.3 U	2.7 U	1.8 U	5.1 U	1.7 U	4.7 U	1.6 U	4.5 U	8.5	2.8 U	2.3 U	3.6 U	7.6 U	1.8 U	2.5 U
WR-VC-46	94 U	23 U	37 U	53	26 U	25 U	30 U	20 U	57 U	19 U	52 U	1.1 U	49 U	64	31 U	25 U	40 U	85 U	20 U	28 U
WR-PG-48	140 U	33 U	52 U	42 U	37 U	35 U	42 U	29 U	80 U	26 U	74 U	0.5 U	70 U	63 U	44 U	35 U	57 U	120 U	29 U	39 U

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	N-Nitrosodimethylamine	Aniline	Bis(2-chloroethyl) Ether	Phenol	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	Benzyl Alcohol	Bis(2-chloroisopropyl) Ether	2-Methylphenol	Hexachloroethane	N-Nitrosodi-n-propylamine	4-Methylphenol	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Bis(2-chloroethoxy)methane	2,4-Dichlorophenol
DMEF SL	**--**	**--**	**--**	**420**	**--**	**170**	**110**	**35**	**57**	**--**	**63**	**1,400**	**--**	**670**	**--**	**--**	**--**	**29**	**--**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**--**	**--**	**--**	**1,200**	**--**	**--**	**120**	**110**	**870**	**--**	**77**	**14,000**	**--**	**3,600**	**--**	**--**	**--**	**210**	**--**	**--**
WRM 6 to 8																				
East																				
WR-PG-29	15 U	3.6 U	5.8 U	22 u-J	4.1 U	3.9 U	4.6 U	3.2 U	8.9 U	2.9 U	8.2 U	0.56 U	7.7 U	11	4.8 U	3.9 U	6.3 U	14 U	3.2 U	4.4 U
WR-VC-29	13 U	22	4.8 U	30	3.4 U	3.2 U	3.8 U	2.6 U	7.3 U	2.4 U	6.8 U	0.46 U	6.4 U	8.8	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-VC-31	13 U	3 U	4.8 U	8.5	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	0.46 U	6.4 U	11	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
West																				
WR-PG-50	710 U	180 U	280 U	220 U	200 U	190 U	220 U	160 U	430 U	140 U	400 U	260 U	380 U	340 U	240 U	190 U	310 U	640 U	160 U	210 U
WR-VC-50	250 U	62 U	98 U	140	70 U	66 U	78 U	53 U	160 U	49 U	140 U	4.7 U	140 U	120 U	82 U	66 U	110 U	230 U	53 U	74 U
WR-PG-52	630 U	160 U	250 U	200 U	180 U	170 U	200 U	140 U	380 U	130 U	350 U	230 U	330 U	300 U	210 U	170 U	270 U	570 U	140 U	190 U
WR-VC-52	220 U	54 U	86 U	83	61 U	58 U	68 U	47 U	140 U	43 U	130 U	4.2 U	120 U	110 U	72 U	58 U	94 U	200 U	47 U	65 U
WR-PG-54	150 U	35 U	56 U	44 U	40 U	37 U	44 U	30 U	86 U	28 U	79 U	51 U	74 U	67 U	47 U	37 U	60 U	130 U	30 U	42 U
WR-VC-54	120 U	30 U	48 U	81	34 U	32 U	38 U	26 U	73 U	24 U	67 U	4.6 U	63 U	57 U	40 U	32 U	51 U	110 U	26 U	36 U
WR-PG-56	12 U	2.9 U	4.6 U	3.7 U	3.3 U	3.1 U	3.7 U	2.5 U	7.1 U	2.3 U	6.6 U	1.4	6.2 U	13	3.9 U	3.1 U	5 U	11 U	2.5 U	3.5 U
WR-VC-56	22 U	5.4 U	8.6 U	48	6.1 U	5.8 U	6.8 U	4.7 U	20	4.3 U	13 U	0.42 U	12 U	110	7.2 U	5.8 U	9.3 U	20 U	4.7 U	6.5 U
WR-PG-58	11 U	2.7 U	4.3 U	6.8 u-J	3 U	2.9 U	3.4 U	2.3 U	12	2.2 U	6 U	3.3	5.7 U	18	3.6 U	2.9 U	4.6 U	9.7 U	2.3 U	3.2 U
WR-VC-58	8.7 U	2.2 U	3.4 U	23	2.5 U	12	100	42	5.3 U	1.7 U	4.9 U	0.77 j	4.6 U	4.1 U	2.9 U	2.3 U	3.7 U	7.8 U	1.9 U	2.6 U
WR-PG-60	12 U	2.8 U	4.5 U	19 u-J	3.2 U	3 U	3.5 U	2.4 U	6.9 U	2.3 U	6.3 U	1.1	5.9 U	130	3.7 U	3 U	4.8 U	11 U	2.4 U	3.4 U
WR-VC-60	45 U	12 U	18 U	38	13 U	25	**240**	91	28 U	8.9 U	26 U	0.58 U	24 U	22 U	15 U	12 U	20 U	41 U	9.6 U	14 U
WR-PG-62	14 U	3.3 U	5.3 U	14 u-J	3.8 U	3.5 U	4.2 U	2.9 U	8.1 U	2.7 U	7.5 U	3.1	7 U	6.4 U	4.4 U	3.5 U	5.7 U	13 U	2.9 U	4 U
WR-VC-62	13 U	26	4.8 U	28	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	3.9	6.4 U	22	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-PG-64	15 U	3.6 U	5.7 U	21 u-J	4 U	3.8 U	4.5 U	3.1 U	8.7 U	2.9 U	8 U	5.6	7.5 U	8.6	4.7 U	3.8 U	6.1 U	13 U	3.1 U	4.3 U
WR-VC-64	14 U	320	5.5 U	61	3.9 U	3.7 U	4.3 U	3 U	8.4 U	2.8 U	7.7 U	0.94 U	7.3 U	13	4.6 U	3.7 U	5.9 U	13 U	3 U	4.1 U
WR-PG-66	16 U	3.8 U	6.1 U	18 u-J	4.3 U	4.1 U	4.8 U	3.3 U	9.3 U	3.1 U	8.6 U	1.4	8.1 U	7.3 U	5.1 U	4.1 U	6.6 U	14 U	3.3 U	4.6 U
WR-VC-66	13 U	9.1	4.9 U	58	3.5 U	3.3 U	3.9 U	2.7 U	7.6 U	2.5 U	7 U	2.1 U	6.6 U	21	4.1 U	3.3 U	5.3 U	12 U	2.7 U	3.7 U
WR-PG-68	15 U	3.6 U	5.7 U	28 u-J	4.1 U	3.8 U	4.5 U	3.1 U	8.8 U	2.9 U	8.1 U	3.2	7.6 U	17	4.8 U	3.8 U	6.2 U	14 U	3.1 U	4.3 U
WR-VC-68	13 U	14	5.1 U	54	3.6 U	3.4 U	4 U	2.8 U	7.8 U	2.6 U	7.1 U	1 U	6.7 U	12	4.2 U	3.4 U	5.5 U	12 U	2.8 U	3.8 U
WR-PG-70	14 U	3.5 U	5.5 U	24 u-J	3.9 U	3.7 U	4.4 U	3 U	8.5 U	2.8 U	7.8 U	8.1	7.4 U	12	4.6 U	3.7 U	6 U	13 U	3 U	4.2 U
WR-VC-70	13 U	3.1 U	4.9 U	85	3.5 U	3.3 U	3.9 U	2.7 U	7.5 U	2.5 U	6.9 U	1.4 U	6.5 U	26	4.1 U	3.3 U	5.3 U	12 U	2.7 U	3.7 U
WR-PG-72	17 U	4 U	6.4 U	24 u-J	4.5 U	4.3 U	5 U	3.5 U	9.8 U	3.2 U	9 U	6.1	8.5 U	13	5.3 U	4.3 U	6.9 U	15 U	3.5 U	4.8 U
WR-VC-72	13 U	3 U	4.8 U	61	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	2.4	6.4 U	22	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-PG-74	16 U	3.9 U	6.2 U	22 u-J	4.4 U	4.1 U	4.9 U	3.4 U	9.5 U	3.1 U	8.7 U	1.2 U	8.2 U	17	5.1 U	4.1 U	6.7 U	14 U	3.4 U	4.6 U
WRM 8 to 10																				
East																				
WR-PG-33	10 U	2.5 U	3.9 U	15	2.8 U	2.6 U	3.1 U	2.2 U	6.1 U	2 U	5.6 U	3.6 U	5.2 U	4.8 U	3.3 U	2.6 U	4.3 U	9 U	2.2 U	3 U
WR-VC-33	8.2 U	2.1 U	3.3 U	2.8	2.3 U	2.2 U	2.6 U	1.8 U	5 U	1.7 U	4.6 U	0.31 U	4.4 U	5.3	2.7 U	2.2 U	3.5 U	7.4 U	1.8 U	2.5 U
WR-PG-35	13 U	3.1 U	5 U	16	3.5 U	3.3 U	4 U	2.7 U	7.6 U	2.5 U	7 U	4.6 U	6.6 U	6 U	4.2 U	3.3 U	5.4 U	12 U	2.7 U	3.7 U
WR-VC-35	11 U	2.6 U	4.1 U	41	2.9 U	2.7 U	3.2 U	2.2 U	6.2 U	2.1 U	5.7 U	1.1	5.4 U	29	3.4 U	2.7 U	4.4 U	9.2 U	2.2 U	3.1 U
WR-PG-37	12 U	2.9 U	4.7 U	21	3.3 U	3.1 U	3.7 U	2.5 U	7.2 U	2.4 U	6.6 U	4.3 U	6.2 U	34	3.9 U	3.1 U	5 U	11 U	2.5 U	3.5 U
WR-VC-37	10 U	2.5 U	3.9 U	35	2.8 U	2.6 U	3.1 U	2.2 U	6.1 U	2 U	5.6 U	0.73	5.2 U	19	3.3 U	2.6 U	4.3 U	9 U	2.2 U	3 U
WR-PG-39	13 U	3 U	4.8 U	16	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	4.4 U	6.4 U	5.8 U	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-VC-39	12 U	8.1	4.5 U	9.7	3.2 U	3 U	3.6 U	2.5 U	7 U	2.3 U	6.4 U	1 U	6 U	6.1	3.8 U	3 U	4.9 U	11 U	2.5 U	3.4 U
WR-PG-41	12 U	2.8 U	4.5 U	18	3.2 U	3 U	3.6 U	2.5 U	6.9 U	2.3 U	6.4 U	4.1 U	6 U	16	3.8 U	3 U	4.9 U	11 U	2.5 U	3.4 U
WR-VC-41	13 U	3.1 U	4.9 U	12 u-J	3.5 U	3.3 U	3.9 U	2.7 U	7.6 U	2.5 U	7 U	0.47 U	6.6 U	8.4	4.1 U	3.3 U	5.4 U	12 U	2.7 U	3.7 U
WR-PG-43	14 U	3.4 U	5.3 U	18	3.8 U	3.6 U	4.2 U	2.9 U	8.2 U	2.7 U	7.5 U	4.9 U	7.1 U	8	4.5 U	3.6 U	5.8 U	13 U	2.9 U	4 U
WR-VC-43	11 U	2.8 U	4.4 U	13	3.1 U	2.9 U	8	2.4 U	6.7 U	2.2 U	6.2 U	1 U	5.8 U	21	3.7 U	2.9 U	4.7 U	10 U	2.4 U	3.3 U
WR-PG-45	12 U	2.8 U	4.4 U	12	3.2 U	3 U	3.5 U	2.4 U	6.8 U	2.2 U	6.3 U	4.1 U	5.9 U	11	3.7 U	3 U	4.8 U	11 U	2.4 U	3.3 U
WR-VC-45	12 U	21	4.6 U	82	3.3 U	3.1 U	3.6 U	2.5 U	7.1 U	2.3 U	6.5 U	1 U	6.1 U	24	3.8 U	3.1 U	5 U	11 U	2.5 U	3.5 U
West																				
WR-PG-76	16 U	3.8 U	6 U	23 u-J	4.2 U	4 U	4.7 U	3.3 U	9.2 U	3 U	8.4 U	0.57 U	8 U	19	5 U	4 U	6.5 U	14 U	3.3 U	4.5 U
WR-PG-78	16 U	4 U	6.3 U	37 u-J	4.5 U	4.2 U	5 U	3.4 U	9.7 U	3.2 U	8.9 U	0.61 U	8.4 U	25	5.3 U	4.2 U	6.8 U	15 U	3.4 U	4.7 U
WR-PG-80	15 U	3.7 U	5.9 U	29 u-J	4.2 U	4 U	4.7 U	3.2 U	9.1 U	3 U	8.4 U	0.57 U	7.9 U	15	4.9 U	4 U	6.4 U	14 U	3.2 U	4.5 U
WR-PG-82	13 U	3 U	4.8 U	32 u	3.4 U	3.2 U	3.8 U	2.6 U	7.4 U	2.4 U	6.8 U	0.46 U	6.4 U	15	4 U	3.2 U	5.2 U	11 U	2.6 U	3.6 U
WR-PG-84	15 U	3.7 U	5.8 U	38 u	4.2 U	3.9 U	4.6 U	3.2 U	9 U	2.9 U	8.3 U	5.4 U	7.8 U	24	4.9 U	3.9 U	6.3 U	14 U	3.2 U	4.4 U
WR-PG-86	16 U	4 U	6.3 U	26 u-J	4.5 U	4.2 U	5 U	3.5 U	9.7 U	3.2 U	9 U	5.8 U	8.4 U	19	5.3 U	4.2 U	6.9 U	15 U	3.5 U	4.8 U
WR-PG-88	18 U	4.3 U	6.8 U	22	4.8 U	4.5 U	5.4 U	3.7 U	11 U	3.4 U	9.6 U	6.2 U	9 U	17	5.7 U	4.5 U	7.3 U	16 U	3.7 U	5.1 U
WR-PG-90	34 U	8.4 U	14 U	31	9.5 U	8.9 U	11 U	7.3 U	21 U	6.7 U	19 U	13 U	18 U	30	12 U	8.9 U	15 U	31 U	7.3 U	10 U
WR-PG-92	17 U	4.2 U	6.7 U	25	4.8 U	4.5 U	5.3 U	3.7 U	11 U	3.4 U	9.5 U	6.2 U	9 U	20	5.6 U	4.5 U	7.3 U	16 U	3.7 U	5.1 U
WR-PG-94	17 U	4.2 U	6.7 U	26	4.7 U	4.5 U	5.3 U	3.6 U	11 U	3.4 U	9.4 U	6.1 U	8.9 U	56	5.6 U	4.5 U	7.2 U	16 U	3.6 U	5 U
WR-PG-96	19 U	4.7 U	7.4 U	26	5.3 U	5 U	5.9 U	4 U	12 U	3.7 U	11 U	6.8 U	9.9 U	22	6.2 U	5 U	8 U	17 U	4 U	5.6 U
WR-PG-98	17 U	4 U	6.4 U	23	4.6 U	4.3 U	5.1 U	3.5 U	9.9 U	3.2 U	9.1 U	5.9 U	8.6 U	42	5.4 U	4.3 U	7 U	15 U	3.5 U	4.8 U
WR-PG-100	19 U	4.5 U	7.2 U	25	5.1 U	4.8 U	5.7 U	3.9 U	15	3.6 U	11 U	6.6 U	9.6 U	41	6 U	4.8 U	7.8 U	17 U	3.9 U	5.4 U
WR-PG-102	17 U	4.1 U	6.6 U	32	4.7 U	4.4 U	5.2 U	3.6 U	11 U	3.3 U	9.3 U	6 U	8.7 U	33	5.5 U	4.4 U	7.1 U	15 U	3.6 U	4.9 U
WR-PG-104	10 U	2.5 U	3.9 U	12	2.8 U	2.6 U	3.1 U	2.2 U	6.1 U	2 U	5.6 U	3.6 U	5.2 U	10	3.3 U	2.6 U	4.3 U	9 U	2.2 U	3 U

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	N-Nitrosodimethylamine	Aniline	Bis(2-chloroethyl) Ether	Phenol	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	Benzyl Alcohol	Bis(2-chloroisopropyl) Ether	2-Methylphenol	Hexachloroethane	N-Nitrosodi-n-propylamine	4-Methylphenol	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Bis(2-chloroethoxy)methane	2,4-Dichlorophenol
DMEF SL	**--**	**--**	**--**	**420**	**--**	**170**	**110**	**35**	**57**	**--**	**63**	**1,400**	**--**	**670**	**--**	**--**	**--**	**29**	**--**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**--**	**--**	**--**	**1,200**	**--**	**--**	**120**	**110**	**870**	**--**	**77**	**14,000**	**--**	**3,600**	**--**	**--**	**--**	**210**	**--**	**--**
WRM 10 to 12																				
East																				
WR-PG-47	14 U	3.3 U	5.3 U	14	3.8 U	3.5 U	4.2 U	2.9 U	8.1 U	2.7 U	7.5 U	4.9 U	7 U	6.5	4.4 U	3.5 U	5.7 U	13 U	2.9 U	4 U
WR-VC-47	12 U	2.8 U	4.5 U	7.5 u-J	3.2 U	3 U	4.5	2.5 U	6.9 U	2.3 U	6.4 U	1 U	6 U	19	3.8 U	3 U	4.9 U	11 U	2.5 U	3.4 U
WR-VC-49	12 U	2.8 U	4.5 U	7.4 u-J	3.2 U	3 U	3.5 U	2.4 U	6.8 U	2.3 U	6.3 U	4.1 U	5.9 U	41	3.7 U	3 U	4.8 U	11 U	2.4 U	3.4 U
WR-VC-51	11 U	2.6 U	4.1 U	8.8 u-J	2.9 U	2.7 U	3.2 U	2.2 U	6.3 U	2.1 U	5.8 U	1.2	5.4 U	16	3.4 U	2.7 U	4.4 U	9.3 U	2.2 U	3.1 U
WR-VC-53	9.4 U	2.3 U	3.7 U	23 u-J	2.7 U	2.5 U	4.4	2 U	5.7 U	1.9 U	5.3 U	0.54	5 U	20	3.1 U	2.5 U	4 U	8.5 U	2 U	2.8 U
WR-VC-55	9.3 U	2.3 U	3.7 U	48	2.6 U	2.5 U	2.9 U	2 U	5.7 U	1.9 U	5.2 U	0.68	4.9 U	60	3.1 U	2.5 U	4 U	8.4 U	2 U	2.8 U
WR-VC-57	12 U	2.8 U	4.4 U	50	3.2 U	3 U	3.5 U	2.4 U	6.8 U	2.2 U	6.3 U	4.1 U	5.9 U	82	3.7 U	3 U	4.8 U	11 U	2.4 U	3.3 U
WR-VC-59	11 U	14	4.1 U	15 u-J	2.9 U	2.7 U	8.6	2.2 U	6.3 U	2.1 U	5.8 U	1.1	5.4 U	57	3.4 U	2.7 U	4.4 U	9.3 U	2.2 U	3.1 U
WR-PG-61	14 U	3.3 U	5.2 U	12 u-J	3.7 U	3.5 U	4.2 U	2.9 U	8.1 U	2.6 U	7.4 U	4.8 U	7 U	21	4.4 U	3.5 U	5.7 U	12 U	2.9 U	3.9 U
WR-VC-61	11 U	2.7 U	4.2 U	30	3 U	2.8 U	4.7	2.3 U	6.5 U	2.1 U	6 U	3.9 U	5.6 U	60	3.5 U	2.8 U	4.6 U	9.6 U	2.3 U	3.2 U
WR-PG-63	55 U	14 U	22 U	17 U	16 U	15 U	17 U	12 U	34 U	11 U	31 U	20 U	29 U	26 U	18 U	15 U	24 U	50 U	12 U	17 U
West																				
WR-PG-106	15 U	3.6 U	5.7 U	19	4.1 U	3.8 U	4.5 U	3.1 U	9.3	2.9 U	8.1 U	5.3 U	7.6 U	58	4.8 U	3.8 U	6.2 U	14 U	3.1 U	4.3 U
WR-VC-106	12 U	2.8 U	4.4 U	12 u-J	3.2 U	3 U	3.5 U	2.4 U	6.8 U	2.2 U	6.3 U	4.1 U	5.9 U	28	3.7 U	3 U	4.8 U	11 U	2.4 U	3.3 U
WR-PG-108	8.7 U	2.2 U	3.5 U	2.8 U	2.5 U	2.3 U	2.8 U	1.9 U	5.3 U	1.8 U	4.9 U	3.2 U	4.6 U	34	2.9 U	2.3 U	3.7 U	7.9 U	1.9 U	2.6 U
WR-VC-108	11 U	2.7 U	4.3 U	45	3.1 U	2.9 U	3.4 U	2.4 U	6.6 U	2.2 U	6.1 U	4 U	5.7 U	34	3.6 U	2.9 U	4.7 U	9.8 U	2.4 U	3.2 U
WR-VC-110	41 U	11 U	17 U	50 u-JD	12 U	11 U	13 U	8.8 U	25 U	8.1 U	23 U	15 U	22 U	56	14 U	11 U	18 U	37 U	8.8 U	13 U
WR-PG-112	16 U	3.8 U	6.1 U	26 u-J	4.3 U	4.1 U	4.8 U	3.3 U	11	3.1 U	8.6 U	5.6 U	8.1 U	31	5.1 U	4.1 U	6.6 U	14 U	3.3 U	4.6 U
WR-PG-114	14 U	3.5 U	5.5 U	20 u-J	3.9 U	3.7 U	4.4 U	3 U	8.5 U	2.8 U	7.8 U	5 U	7.3 U	20	4.6 U	3.7 U	6 U	13 U	3 U	4.1 U
WR-VC-114	12 U	36	4.7 U	25 u-J	3.3 U	3.1 U	3.7 U	2.6 U	7.2 U	2.4 U	6.6 U	4.3 U	6.2 U	30	3.9 U	3.1 U	5.1 U	11 U	2.6 U	3.5 U
WR-PG-116	15 U	3.6 U	5.7 U	22 u-J	4 U	3.8 U	4.5 U	3.1 U	8.7 U	2.9 U	8 U	5.2 U	7.5 U	19	4.7 U	3.8 U	6.1 U	13 U	3.1 U	4.3 U
WR-VC-116	13 U	25	5.1 U	49	3.6 U	3.4 U	4 U	2.8 U	7.8 U	2.6 U	7.1 U	4.6 U	6.7 U	23	4.2 U	3.4 U	5.5 U	12 U	2.8 U	3.8 U
WR-PG-118	15 U	3.7 U	5.9 U	23 u-J	4.2 U	3.9 U	4.7 U	3.2 U	9 U	3 U	8.3 U	5.4 U	7.8 U	24	4.9 U	3.9 U	6.3 U	14 U	3.2 U	4.4 U
WR-VC-118	11 U	2.7 U	4.3 U	31	3 U	2.9 U	3.4 U	2.3 U	6.5 U	2.2 U	6 U	1 U	5.7 U	150	3.6 U	2.9 U	4.6 U	9.7 U	2.3 U	3.2 U
WR-PG-120	22 U	5.4 U	8.6 U	37 u-J	6.1 U	5.7 U	6.8 U	4.7 U	17	4.3 U	13 U	7.9 U	12 U	370	7.1 U	5.7 U	9.3 U	20 U	4.7 U	6.4 U
WR-VC-120	12 U	2.8 U	4.5 U	39	3.2 U	3 U	3.5 U	2.4 U	6.8 U	2.3 U	6.3 U	1 U	5.9 U	48	3.7 U	3 U	4.8 U	11 U	2.4 U	3.4 U
WR-PG-122	15 U	3.7 U	5.9 U	26 u-J	4.2 U	3.9 U	4.7 U	3.2 U	9.3	3 U	8.3 U	5.4 U	7.8 U	44	4.9 U	3.9 U	6.3 U	14 U	3.2 U	4.4 U
WR-VC-122	11 U	2.6 U	4.1 U	25 u-J	2.9 U	2.8 U	3.3 U	2.2 U	6.3 U	2.1 U	5.8 U	3.8 U	5.5 U	24	3.4 U	2.8 U	4.4 U	9.3 U	2.2 U	3.1 U
WR-PG-124	14 U	3.4 U	5.4 U	20 u-J	3.8 U	3.6 U	4.3 U	2.9 U	8.3 U	2.7 U	7.6 U	4.9 U	7.2 U	15	4.5 U	3.6 U	5.8 U	13 U	2.9 U	4.1 U
WR-VC-124	11 U	2.7 U	4.3 U	21	3.1 U	2.9 U	3.4 U	2.4 U	6.7 U	2.2 U	6.1 U	1 U	5.8 U	17	3.6 U	2.9 U	4.7 U	9.9 U	2.4 U	3.3 U
WR-PG-126	12 U	3 U	4.7 U	11 u-J	3.4 U	3.2 U	3.7 U	2.6 U	7.2 U	2.4 U	6.7 U	4.3 U	6.3 U	6.9	3.9 U	3.2 U	5.1 U	11 U	2.6 U	3.5 U
WR-VC-126	10 U	2.5 U	4 U	22	2.8 U	2.7 U	3.2 U	2.2 U	6.1 U	2 U	5.6 U	1 U	5.3 U	23	3.3 U	2.7 U	4.3 U	9.1 U	2.2 U	3 U
WR-PG-128	14 U	3.5 U	5.5 U	12 u-J	3.9 U	3.7 U	4.4 U	3 U	8.4 U	2.8 U	7.8 U	5 U	7.3 U	24	4.6 U	3.7 U	5.9 U	13 U	3 U	4.1 U
WR-VC-128	9 U	2.3 U	3.6 U	26	2.5 U	2.4 U	5.8	2 U	5.5 U	1.8 U	5 U	1 U	4.8 U	27	3 U	2.4 U	3.9 U	8.1 U	2 U	2.7 U
WR-PG-130	14 U	3.2 U	5.2 U	17 u-J	3.7 U	3.5 U	11	2.8 U	13	2.6 U	7.3 U	4.7 U	6.9 U	110	4.3 U	3.5 U	5.6 U	12 U	2.8 U	3.9 U
WR-VC-130	8.3 U	2.1 U	3.3 U	50	2.4 U	2.2 U	2.6 U	1.8 U	5.1 U	1.7 U	4.7 U	0.34	4.4 U	13	2.8 U	2.2 U	3.6 U	7.5 U	1.8 U	2.5 U
WR-PG-132	16 U	3.9 U	6.3 U	21 u-J	4.5 U	4.2 U	5 U	3.4 U	9.7 U	3.2 U	8.9 U	5.8 U	8.4 U	32	5.2 U	4.2 U	6.8 U	15 U	3.4 U	4.7 U
WR-VC-132	11 U	2.6 U	4.2 U	26	3 U	2.8 U	9	2.3 U	6.5 U	2.1 U	5.9 U	1.7	5.6 U	38	3.5 U	2.8 U	4.5 U	9.6 U	2.3 U	3.2 U
WR-PG-134	13 U	3.1 U	5 U	22 u-J	3.5 U	3.3 U	3.9 U	2.7 U	7.6 U	2.5 U	7 U	4.6 U	6.6 U	27	4.1 U	3.3 U	5.4 U	12 U	2.7 U	3.7 U
WR-VC-134	8.2 U	2 U	3.2 U	15	2.3 U	2.2 U	2.6 U	1.8 U	5 U	1.6 U	4.6 U	0.78	4.3 U	9.3	2.7 U	2.2 U	3.5 U	7.4 U	1.8 U	2.4 U

Please refer to Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Benzoic Acid	1,2,4-Trichlorobenzene	4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-methylphenol	Hexachlorocyclopentadiene	2-Chloronaphthalene	2-Nitroaniline	Dimethyl Phthalate	2,6-Dinitrotoluene	3-Nitroaniline	2,4-Dinitrophenol	4-Nitrophenol	Azobenzene	2,4-Dinitrotoluene	4-Chlorophenyl Phenyl Ether	Diethyl Phthalate	4-Nitroaniline	N-Nitrosodiphenylamine	4-Bromophenyl Phenyl Ether
DMEF SL	**650**	**31**	**--**	**29**	**--**	**--**	**--**	**--**	**1,400**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1,200**	**--**	**28**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**760**	**64**	**--**	**270**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**270**	**--**
Reference Locations																				
WR-PG-01-REF	160 U	2.4 U	3.4 U	0.43 U	3.4 U	24 U	5.7 U	4.3 U	2.9 U	4.5 U	4.2 U	57 U	48 U	3.8 U	4.5 U	3.2 U	5.6 U	5.4 U	3.5 U	2.3 U
WR-PG-02-REF	150 U	2.4 U	3.3 U	0.42 U	3.3 U	24 U	5.6 U	4.2 U	2.8 U	4.4 U	4.1 U	56 U	47 U	3.8 U	4.4 U	3.1 U	5.5 U	5.3 U	3.4 U	2.2 U
WR-PG-03-REF	210 U	3.2 U	4.5 U	0.58 U	4.5 U	32 U	7.7 U	5.8 U	3.9 U	6 U	5.6 U	77 U	64 U	5.1 U	6 U	4.3 U	7.5 U	7.3 U	4.7 U	3 U
WRM 0 to 3																				
East																				
WR-PG-01	250 U	3.9 U	5.5 U	3.7 U	5.5 U	39 U	9.4 U	7 U	4.7 U	7.3 U	6.8 U	94 U	78 U	6.3 U	7.3 U	5.2 U	9.1 U	8.9 U	5.7 U	3.7 U
WR-PG-02	260 U	4 U	5.6 U	3.8 U	5.6 U	40 U	9.6 U	7.2 U	4.8 U	7.5 U	7 U	96 U	80 U	6.4 U	7.5 U	5.4 U	9.4 U	9.1 U	5.9 U	3.8 U
WR-PG-03	240 U	3.7 U	5.1 U	3.4 U	5.1 U	37 U	8.8 U	6.6 U	4.4 U	6.8 U	6.4 U	88 U	73 U	5.9 U	6.8 U	4.9 U	8.5 U	8.3 U	5.4 U	3.4 U
WR-VC-03	200 U	3 U	4.2 U	0.54 U	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
West																				
WR-PG-04	950 U	15 U	21 U	14 U	21 U	150 U	36 U	27 U	18 U	28 U	26 U	360 U	300 U	24 U	28 U	20 U	35 U	34 U	22 U	14 U
WR-VC-04	170 j-J	2.7 U	3.8 U	1 U	3.8 U	27 U	6.4 U	4.8 U	3.2 U	5 U	4.6 U	64 U	54 U	4.3 U	5 U	3.6 U	6.2 U	6.1 U	3.9 U	2.5 U
WRM 3 to 6																				
East																				
WR-VC-05	200 U	3.1 U	4.4 U	0.56 U	4.4 U	31 U	7.5 U	5.6 U	3.8 U	5.8 U	5.4 U	75 U	62 U	5 U	5.8 U	4.2 U	7.3 U	7 U	4.6 U	2.9 U
WR-VC-07	190 U	2.9 U	4.1 U	0.52 U	4.1 U	29 U	6.9 U	5.2 U	3.5 U	5.4 U	5 U	69 U	58 U	4.6 U	5.4 U	3.9 U	6.7 U	6.6 U	4.3 U	2.7 U
WR-PG-09	220 U	3.5 U	4.8 U	0.62 U	4.8 U	35 U	8.3 U	6.2 U	4.2 U	6.4 U	6 U	83 U	69 U	5.5 U	6.4 U	4.6 U	8 U	7.8 U	5.1 U	3.2 U
WR-VC-09	460 j-D	5.7 U	8 U	0.52 U	8 U	57 U	14 U	11 U	6.9 U	11 U	9.9 U	140 U	120 U	9.1 U	11 U	7.6 U	14 U	13 U	8.4 U	5.4 U
WR-PG-11	240 U	3.7 U	5.1 U	0.66 U	5.1 U	37 U	8.7 U	6.6 U	4.4 U	6.8 U	6.3 U	87 U	73 U	5.8 U	6.8 U	4.9 U	8.5 U	8.3 U	5.4 U	3.4 U
WR-VC-11	480 j-D	5.8 U	8.1 U	0.53 U	8.1 U	58 U	14 U	11 U	7 U	11 U	11 U	140 U	120 U	9.3 U	11 U	7.8 U	14 U	14 U	8.5 U	5.4 U
WR-PG-13	1,100 U	17 U	23 U	0.58 U	23 U	170 U	39 U	29 U	20 U	30 U	28 U	390 U	330 U	26 U	30 U	22 U	38 U	37 U	24 U	15 U
WR-VC-13	380 U	5.9 U	8.2 U	0.53 U	8.2 U	59 U	14 U	11 U	7 U	11 U	11 U	140 U	120 U	9.3 U	11 U	7.8 U	14 U	14 U	8.6 U	5.5 U
WR-PG-15	210 U	3.2 U	4.5 U	0.58 U	4.5 U	32 U	7.7 U	5.8 U	3.9 U	6 U	5.6 U	77 U	64 U	5.2 U	6 U	4.3 U	7.5 U	7.3 U	4.7 U	3 U
WR-VC-15	400 j	2.9 U	4.1 U	0.9 U	4.1 U	29 U	7 U	5.2 U	3.5 U	5.4 U	5 U	70 U	58 U	4.7 U	5.4 U	3.9 U	6.8 U	6.6 U	4.3 U	2.7 U
WR-PG-17	220 U	3.4 U	4.7 U	0.6 U	4.7 U	34 U	8 U	6 U	4 U	6.2 U	5.8 U	80 U	67 U	5.3 U	6.2 U	4.5 U	7.8 U	7.6 U	4.9 U	3.1 U
WR-VC-17	180 U	2.8 U	4 U	0.51 U	4 U	28 U	6.8 U	5.1 U	3.4 U	5.3 U	4.9 U	68 U	56 U	4.5 U	5.3 U	3.8 U	6.6 U	6.4 U	4.1 U	2.7 U
WR-PG-19	220 U	3.4 U	4.7 U	0.61 U	4.7 U	34 U	8.1 U	6.1 U	4.1 U	6.3 U	5.8 U	81 U	67 U	5.4 U	6.3 U	4.5 U	7.8 U	7.6 U	4.9 U	3.2 U
WR-VC-19	200 U	3 U	4.2 U	0.54 U	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-PG-21	190 U	3 U	4.2 U	0.53 U	4.2 U	30 U	7.1 U	5.3 U	3.6 U	5.5 U	5.1 U	71 U	59 U	4.7 U	5.5 U	4 U	6.9 U	6.7 U	4.3 U	2.8 U
WR-PG-23	200 U	3.1 U	4.3 U	0.55 U	4.3 U	31 U	7.4 U	5.5 U	3.7 U	5.7 U	5.3 U	74 U	61 U	4.9 U	5.7 U	4.1 U	7.2 U	7 U	4.5 U	2.9 U
WR-VC-23	720 U	12 U	16 U	0.76	16 U	120 U	27 U	21 U	14 U	21 U	20 U	270 U	230 U	18 U	21 U	15 U	27 U	26 U	17 U	11 U
WR-PG-27	1,300 U	21 U	29 U	0.37 U	29 U	210 U	49 U	37 U	25 U	38 U	35 U	490 U	410 U	33 U	38 U	27 U	48 U	46 U	30 U	19 U
West																				
WR-PG-06	230 U	3.5 U	4.9 U	0.63 U	4.9 U	35 U	8.4 U	6.3 U	4.2 U	6.6 U	6.1 U	84 U	70 U	5.6 U	6.6 U	4.7 U	8.2 U	8 U	5.2 U	3.3 U
WR-VC-06	210 U	3.3 U	4.6 U	0.59 U	4.6 U	33 U	7.8 U	5.9 U	3.9 U	6.1 U	5.6 U	78 U	65 U	5.2 U	6.1 U	4.4 U	7.6 U	7.4 U	4.8 U	3.1 U
WR-VC-08	390 U	6.1 U	8.6 U	0.8 U	8.6 U	61 U	15 U	11 U	7.4 U	12 U	11 U	150 U	130 U	9.8 U	12 U	8.2 U	15 U	14 U	9 U	5.7 U
WR-VC-10	390 U	6.1 U	8.6 U	0.55 U	8.6 U	61 U	15 U	11 U	7.3 U	12 U	11 U	150 U	130 U	9.8 U	12 U	8.1 U	15 U	14 U	9 U	5.7 U
WR-PG-12	200 U	3.2 U	4.4 U	0.56 U	4.4 U	32 U	7.5 U	5.6 U	3.8 U	5.8 U	5.4 U	75 U	63 U	5 U	5.8 U	4.2 U	7.3 U	7.1 U	4.6 U	2.9 U
WR-VC-12	360 U	5.7 U	7.9 U	0.51 U	7.9 U	57 U	14 U	11 U	6.8 U	11 U	9.8 U	140 U	120 U	9 U	11 U	7.5 U	14 U	13 U	8.3 U	5.3 U
WR-PG-14	240 U	3.8 U	5.3 U	0.67 U	5.3 U	38 U	9 U	6.7 U	4.5 U	7 U	6.5 U	90 U	75 U	6 U	7 U	5 U	8.7 U	8.5 U	5.5 U	3.5 U
WR-VC-14	360 U	5.7 U	7.9 U	0.51 U	7.9 U	57 U	14 U	11 U	6.8 U	11 U	9.8 U	140 U	120 U	9 U	11 U	7.5 U	14 U	13 U	8.3 U	5.3 U
WR-PG-16	3,800 U	59 U	82 U	0.87 U	82 U	590 U	140 U	110 U	70 U	110 U	110 U	1,400 U	1,200 U	93 U	110 U	78 U	140 U	140 U	86 U	55 U
WR-VC-16	170 U	2.7 U	3.7 U	0.48 U	3.7 U	27 U	6.4 U	4.8 U	16	5 U	4.6 U	64 U	53 U	4.3 U	5 U	3.6 U	6.2 U	6 U	3.9 U	2.5 U
WR-PG-18	970 U	16 U	22 U	0.55 U	22 U	160 U	37 U	28 U	19 U	29 U	27 U	370 U	310 U	25 U	29 U	21 U	36 U	35 U	23 U	15 U
WR-VC-18	**870 j-D**	5.9 U	8.3 U	0.54 U	8.3 U	59 U	15 U	11 U	7.1 U	12 U	11 U	150 U	120 U	9.5 U	12 U	7.9 U	14 U	14 U	8.7 U	5.6 U
WR-VC-20	190 U	2.9 U	4 U	0.64 U	4 U	29 U	6.9 U	5.2 U	3.5 U	5.4 U	5 U	69 U	58 U	4.6 U	5.4 U	3.9 U	6.7 U	6.5 U	4.2 U	2.7 U
WR-PG-22	250 U	3.9 U	5.4 U	0.69 U	5.4 U	39 U	9.2 U	6.9 U	4.6 U	7.2 U	6.6 U	92 U	77 U	6.1 U	7.2 U	5.1 U	8.9 U	8.7 U	5.6 U	3.6 U
WR-VC-22	660 j	3.3 U	4.5 U	1.3 U	4.5 U	33 U	7.8 U	5.8 U	3.9 U	6 U	5.6 U	78 U	65 U	5.2 U	6 U	4.3 U	7.5 U	7.3 U	4.8 U	3 U
WR-PG-24	220 U	3.4 U	4.8 U	0.97 U	4.8 U	34 U	8.2 U	6.2 U	4.1 U	6.4 U	5.9 U	82 U	68 U	5.5 U	6.4 U	4.6 U	8 U	7.7 U	5 U	3.2 U
WR-VC-24	210 U	3.3 U	4.5 U	0.58 U	4.5 U	33 U	7.7 U	5.8 U	3.9 U	6 U	5.6 U	77 U	65 U	5.2 U	6 U	4.3 U	7.5 U	7.3 U	4.8 U	3 U
WR-PG-26	130 U	1.9 U	2.7 U	0.35 U	2.7 U	19 U	4.6 U	3.5 U	2.3 U	3.6 U	3.3 U	46 U	38 U	3.1 U	3.6 U	2.6 U	4.5 U	4.3 U	2.8 U	1.8 U
WR-VC-26	390 U	6 U	8.4 U	0.54 U	8.4 U	60 U	15 U	11 U	7.2 U	12 U	11 U	150 U	120 U	9.6 U	12 U	8 U	14 U	14 U	8.8 U	5.6 U
WR-VC-28	420 U	6.5 U	9 U	0.58 U	9 U	65 U	16 U	12 U	7.7 U	12 U	12 U	160 U	130 U	11 U	12 U	8.6 U	15 U	15 U	9.5 U	6 U
WR-PG-30	230 U	3.6 U	5 U	0.64 U	5 U	36 U	8.5 U	6.4 U	4.3 U	6.6 U	6.2 U	85 U	71 U	5.7 U	6.6 U	4.7 U	8.3 U	8 U	5.2 U	3.3 U
WR-VC-30	1,100 U	17 U	23 U	1.3 U	23 U	170 U	39 U	30 U	20 U	31 U	29 U	390 U	330 U	26 U	31 U	22 U	38 U	37 U	24 U	16 U
WR-VC-32	**810**	3.1 U	4.3 U	0.55 U	4.3 U	31 U	7.3 U	5.5 U	3.7 U	5.7 U	5.3 U	73 U	61 U	4.9 U	5.7 U	4.1 U	7.1 U	6.9 U	4.5 U	2.9 U
WR-PG-34	270 U	4.1 U	5.8 U	0.74 U	5.8 U	41 U	9.8 U	7.4 U	4.9 U	7.7 U	7.1 U	98 U	82 U	6.6 U	7.7 U	5.5 U	9.6 U	9.3 U	6 U	3.9 U
WR-VC-34	230	3.4 U	4.7 U	0.6 U	4.7 U	34 U	8 U	6 U	4 U	6.2 U	5.8 U	80 U	67 U	5.3 U	6.2 U	4.5 U	7.8 U	7.6 U	4.9 U	3.1 U
WR-PG-36	180 U	2.9 U	4 U	0.51 U	4 U	29 U	6.8 U	5.1 U	3.4 U	5.3 U	4.9 U	68 U	57 U	4.5 U	5.3 U	3.8 U	6.6 U	6.4 U	4.2 U	2.7 U
WR-VC-36	430 U	6.7 U	9.3 U	0.88 U	9.3 U	67 U	16 U	12 U	8 U	13 U	12 U	160 U	140 U	11 U	13 U	8.9 U	16 U	16 U	9.8 U	6.2 U
WR-PG-42	8,000 U	130 U	180 U	1.8 U	180 U	1,300 U	300 U	230 U	150 U	240 U	220 U	3,000 U	2,500 U	200 U	240 U	170 U	290 U	290 U	190 U	120 U
WR-VC-42	180	2.1 U	2.9 U	1.4 U	2.9 U	21 U	5 U	3.8 U	2.5 U	3.9 U	3.6 U	50 U	42 U	3.4 U	3.9 U	2.8 U	4.9 U	4.7 U	3.1 U	2 U
WR-VC-46	1,500 U	23 U	33 U	0.42 U	33 U	230 U	56 U	42 U	28 U	43 U	40 U	560 U	460 U	37 U	43 U	31 U	54 U	52 U	34 U	22 U
WR-PG-48	2,100 U	33 U	46 U	0.59 U	46 U	330 U	78 U	59 U	39 U	61 U	57 U	780 U	650 U	52 U	61 U	44 U	76 U	74 U	48 U	31 U

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Benzoic Acid	1,2,4-Trichlorobenzene	4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-methylphenol	Hexachlorocyclopentadiene	2-Chloronaphthalene	2-Nitroaniline	Dimethyl Phthalate	2,6-Dinitrotoluene	3-Nitroaniline	2,4-Dinitrophenol	4-Nitrophenol	Azobenzene	2,4-Dinitrotoluene	4-Chlorophenyl Phenyl Ether	Diethyl Phthalate	4-Nitroaniline	N-Nitrosodiphenylamine	4-Bromophenyl Phenyl Ether
DMEF SL	**650**	**31**	**--**	**29**	**--**	**--**	**--**	**--**	**1,400**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1,200**	**--**	**28**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**760**	**64**	**--**	**270**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**270**	**--**
WRM 6 to 8																				
East																				
WR-PG-29	230 U	3.6 U	5.1 U	0.65 U	5.1 U	36 U	8.7 U	6.5 U	4.4 U	6.7 U	6.3 U	87 U	72 U	5.8 U	6.7 U	4.8 U	8.4 U	8.2 U	5.3 U	3.4 U
WR-VC-29	190 U	3 U	4.2 U	0.54 U	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-VC-31	200 U	3 U	4.2 U	0.54 U	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
West																				
WR-PG-50	12,000 U	180 U	250 U	170 U	250 U	1,800 U	420 U	320 U	210 U	330 U	310 U	4,200 U	3500 U	280 U	330 U	240 U	410 U	400 U	260 U	170 U
WR-VC-50	4,000 U	62 U	86 U	5.5 U	86 U	620 U	150 U	110 U	74 U	120 U	110 U	1,500 U	1300 U	98 U	120 U	82 U	150 U	140 U	90 U	58 U
WR-PG-52	9,800 U	160 U	220 U	150 U	220 U	1,600 U	370 U	280 U	190 U	290 U	270 U	3,700 U	3100 U	250 U	290 U	210 U	360 U	350 U	230 U	150 U
WR-VC-52	3,500 U	54 U	76 U	4.9 U	76 U	540 U	130 U	97 U	65 U	110 U	94 U	1,300 U	1100 U	86 U	110 U	72 U	130 U	130 U	79 U	51 U
WR-PG-54	2,300 U	35 U	49 U	33 U	49 U	350 U	83 U	63 U	42 U	65 U	60 U	830 U	700 U	56 U	65 U	47 U	81 U	79 U	51 U	33 U
WR-VC-54	1,900 U	30 U	42 U	5.3 U	42 U	300 U	71 U	53 U	36 U	55 U	51 U	710 U	590 U	48 U	55 U	40 U	69 U	67 U	44 U	28 U
WR-PG-56	190 U	2.9 U	4.1 U	0.52 U	4.1 U	29 U	6.9 U	5.2 U	3.5 U	5.4 U	5 U	69 U	58 U	4.6 U	5.4 U	3.9 U	6.8 U	6.6 U	4.3 U	2.7 U
WR-VC-56	350 U	5.4 U	7.5 U	0.49 U	7.5 U	54 U	13 U	9.7 U	6.5 U	10 U	9.3 U	130 U	110 U	8.6 U	10 U	7.2 U	13 U	13 U	7.9 U	5 U
WR-PG-58	170 U	2.7 U	3.7 U	5.4	3.7 U	27 U	6.4 U	4.8 U	3.2 U	5 U	4.6 U	64 U	53 U	4.3 U	5 U	3.6 U	6.2 U	6 U	3.9 U	2.5 U
WR-VC-58	140 U	2.2 U	3 U	0.49 j-JP	3 U	22 U	5.1 U	3.9 U	2.6 U	4 U	3.7 U	51 U	43 U	3.4 U	4 U	2.9 U	5 U	4.9 U	3.2 U	2 U
WR-PG-60	180 U	2.8 U	3.9 U	0.5 U	3.9 U	28 U	6.7 U	5 U	3.4 U	5.2 U	4.8 U	67 U	56 U	4.5 U	5.2 U	3.7 U	6.5 U	6.3 U	4.1 U	2.6 U
WR-VC-60	710 U	12 U	16 U	0.4 U	16 U	120 U	27 U	20 U	14 U	21 U	20 U	270 U	230 U	18 U	21 U	15 U	26 U	26 U	17 U	11 U
WR-PG-62	210 U	3.3 U	4.6 U	0.59 U	4.6 U	33 U	7.9 U	5.9 U	4 U	6.2 U	5.7 U	79 U	66 U	5.3 U	6.2 U	4.4 U	7.7 U	7.5 U	4.9 U	3.1 U
WR-VC-62	200 U	3 U	4.2 U	1.4	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-PG-64	230 U	3.6 U	5 U	0.64 U	5 U	36 U	8.5 U	6.4 U	4.3 U	6.6 U	6.1 U	85 U	71 U	5.7 U	6.6 U	4.7 U	8.2 U	8 U	5.2 U	3.3 U
WR-VC-64	740	3.4 U	4.8 U	0.62 U	4.8 U	34 U	8.2 U	6.2 U	4.1 U	6.4 U	5.9 U	82 U	68 U	5.5 U	6.4 U	4.6 U	8 U	7.7 U	5 U	3.2 U
WR-PG-66	250 U	3.8 U	5.3 U	1	5.3 U	38 U	9.1 U	6.8 U	4.6 U	7.1 U	6.6 U	91 U	76 U	6.1 U	7.1 U	5.1 U	8.8 U	8.6 U	5.6 U	3.6 U
WR-VC-66	330	3.1 U	4.3 U	0.55 U	4.3 U	31 U	7.4 U	5.5 U	3.7 U	5.7 U	5.3 U	74 U	61 U	4.9 U	5.7 U	4.1 U	7.2 U	7 U	4.5 U	2.9 U
WR-PG-68	230 U	3.6 U	5 U	1.3	5 U	36 U	8.6 U	6.4 U	4.3 U	6.7 U	6.2 U	86 U	71 U	5.7 U	6.7 U	4.8 U	8.3 U	8.1 U	5.3 U	3.4 U
WR-VC-68	210 U	3.2 U	4.4 U	0.57 U	4.4 U	32 U	7.6 U	5.7 U	3.8 U	5.9 U	5.5 U	76 U	63 U	5.1 U	5.9 U	4.2 U	7.4 U	7.1 U	4.6 U	3 U
WR-PG-70	220 U	3.5 U	4.9 U	1.5	5.5	35 U	8.3 U	6.2 U	4.2 U	6.5 U	6 U	83 U	69 U	5.5 U	6.5 U	4.6 U	8.1 U	7.8 U	5.1 U	3.3 U
WR-VC-70	**980**	3.1 U	4.3 U	1.5	4.3 U	31 U	7.3 U	5.5 U	3.7 U	5.7 U	5.3 U	73 U	61 U	4.9 U	5.7 U	4.1 U	7.1 U	6.9 U	4.5 U	2.9 U
WR-PG-72	260 U	4 U	5.6 U	1.6	5.6	40 U	9.5 U	7.2 U	4.8 U	7.4 U	6.9 U	95 U	79 U	6.4 U	7.4 U	5.3 U	9.3 U	9 U	5.8 U	3.7 U
WR-VC-72	210	3 U	4.2 U	1.9	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-PG-74	250 U	3.9 U	5.4 U	0.69 U	5.4 U	39 U	9.2 U	6.9 U	4.6 U	7.2 U	6.7 U	92 U	77 U	6.2 U	7.2 U	5.1 U	9 U	8.7 U	5.6 U	3.6 U
WRM 8 to 10																				
East																				
WR-PG-33	160 U	2.5 U	3.5 U	2.3 U	3.5 U	25 U	5.9 U	4.4 U	3 U	4.6 U	4.3 U	59 U	49 U	3.9 U	4.6 U	3.3 U	5.7 U	5.6 U	3.6 U	2.3 U
WR-VC-33	130 U	2.1 U	2.9 U	0.67 U	2.9 U	21 U	4.9 U	3.7 U	2.5 U	3.8 U	3.5 U	49 U	41 U	3.3 U	3.8 U	2.7 U	4.8 U	4.6 U	3.7 u-J	1.9 U
WR-PG-35	200 U	3.1 U	4.4 U	2.9 U	4.4 U	31 U	7.4 U	5.6 U	3.7 U	5.8 U	5.4 U	74 U	62 U	5 U	5.8 U	4.2 U	7.2 U	7 U	4.6 U	2.9 U
WR-VC-35	170 U	2.6 U	3.6 U	0.9 U	3.6 U	26 U	6.1 U	4.6 U	3.1 U	4.7 U	4.4 U	61 U	51 U	4.1 U	4.7 U	3.4 U	5.9 U	5.7 U	3.7 U	2.4 U
WR-PG-37	190 U	2.9 U	4.1 U	2.7 U	4.1 U	29 U	7 U	5.2 U	3.5 U	5.4 U	5 U	70 U	58 U	4.7 U	5.4 U	3.9 U	6.8 U	6.6 U	4.3 U	2.7 U
WR-VC-37	400	2.5 U	3.5 U	1.2 U	3.5 U	25 U	5.9 U	4.4 U	3 U	4.6 U	4.3 U	59 U	49 U	3.9 U	4.6 U	3.3 U	5.7 U	5.6 U	3.6 U	2.3 U
WR-PG-39	200 U	3 U	4.2 U	2.8 U	4.2 U	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-VC-39	180 U	2.9 U	4 U	0.51 U	4 U	29 U	6.8 U	5.1 U	3.4 U	5.3 U	4.9 U	68 U	57 U	4.5 U	5.3 U	3.8 U	6.6 U	6.4 U	4.2 U	2.7 U
WR-PG-41	180 U	2.8 U	3.9 U	2.6 U	3.9 U	28 U	6.7 U	5.1 U	3.4 U	5.2 U	4.9 U	67 U	56 U	4.5 U	5.2 U	3.8 U	6.5 U	6.4 U	4.1 U	2.6 U
WR-VC-41	200 U	3.1 U	4.3 U	0.56 U	4.3 U	31 U	7.4 U	5.6 U	3.7 U	5.8 U	5.4 U	74 U	62 U	4.9 U	5.8 U	4.1 U	7.2 U	7 U	4.5 U	2.9 U
WR-PG-43	220 U	3.4 U	4.7 U	3.1 U	4.7 U	34 U	8 U	6 U	4 U	6.2 U	5.8 U	80 U	67 U	5.3 U	6.2 U	4.5 U	7.8 U	7.5 U	4.9 U	3.1 U
WR-VC-43	210	2.8 U	3.8 U	0.49 U	3.8 U	28 U	6.5 U	4.9 U	3.3 U	5.1 U	4.7 U	65 U	55 U	4.4 U	5.1 U	3.7 U	6.4 U	6.2 U	4 U	2.6 U
WR-PG-45	180 U	2.8 U	3.9 U	2.6 U	3.9 U	28 U	6.6 U	5 U	3.3 U	5.2 U	4.8 U	66 U	55 U	4.4 U	5.2 U	3.7 U	6.4 U	6.3 U	4.1 U	2.6 U
WR-VC-45	1900 U	2.9 U	4 U	0.52 U	4 U	29 U	6.9 U	5.2 U	3.5 U	5.4 U	5 U	69 U	57 U	4.6 U	5.4 U	3.8 U	6.7 U	6.5 U	4.2 U	2.7 U
West																				
WR-PG-76	240 U	3.8 U	5.2 U	0.67 U	5.2 U	38 U	8.9 U	6.7 U	4.5 U	7 U	6.5 U	89 U	75 U	6 U	7 U	5 U	8.7 U	8.4 U	5.5 U	3.5 U
WR-PG-78	260 U	4 U	5.5 U	0.71 U	5.5 U	40 U	9.4 U	7.1 U	4.7 U	7.4 U	6.8 U	94 U	79 U	6.3 U	7.4 U	5.3 U	9.2 U	8.9 U	5.8 U	3.7 U
WR-PG-80	240 U	3.7 U	5.2 U	0.67 U	5.2 U	37 U	8.9 U	6.7 U	4.5 U	6.9 U	6.4 U	89 U	74 U	5.9 U	6.9 U	4.9 U	8.6 U	8.4 U	5.4 U	3.5 U
WR-PG-82	200 U	3 U	4.2 U	0.54 U	4.3	30 U	7.2 U	5.4 U	3.6 U	5.6 U	5.2 U	72 U	60 U	4.8 U	5.6 U	4 U	7 U	6.8 U	4.4 U	2.8 U
WR-PG-84	240 U	3.7 U	5.1 U	3.4 U	5.1 U	37 U	8.7 U	6.6 U	4.4 U	6.8 U	6.3 U	87 U	73 U	5.8 U	6.8 U	4.9 U	8.5 U	8.3 U	5.4 U	3.4 U
WR-PG-86	260 U	4 U	5.5 U	3.7 U	5.8	40 U	9.5 U	7.1 U	4.8 U	7.4 U	6.9 U	95 U	79 U	6.3 U	7.4 U	5.3 U	9.2 U	9 U	5.8 U	3.7 U
WR-PG-88	270 U	4.3 U	5.9 U	4 U	5.9 U	43 U	11 U	7.6 U	5.1 U	7.9 U	7.3 U	110 U	85 U	6.8 U	7.9 U	5.7 U	9.9 U	9.6 U	6.2 U	4 U
WR-PG-90	540 U	8.4 U	12 U	7.8 U	12 U	84 U	20 U	15 U	10 U	16 U	15 U	200 U	170 U	14 U	16 U	12 U	20 U	19 U	13 U	7.8 U
WR-PG-92	270 U	4.2 U	5.9 U	3.9 U	5.9 U	42 U	11 U	7.6 U	5.1 U	7.8 U	7.3 U	110 U	84 U	6.7 U	7.8 U	5.6 U	9.8 U	9.5 U	6.2 U	3.9 U
WR-PG-94	270 U	4.2 U	5.8 U	3.9 U	5.8 U	42 U	10 U	7.5 U	5 U	7.8 U	7.2 U	100 U	83 U	6.7 U	7.8 U	5.6 U	9.7 U	9.4 U	6.1 U	3.9 U
WR-PG-96	300 U	4.7 U	6.5 U	4.3 U	6.5 U	47 U	12 U	8.3 U	5.6 U	8.6 U	8 U	120 U	93 U	7.4 U	8.6 U	6.2 U	11 U	11 U	6.8 U	4.3 U
WR-PG-98	260 U	4 U	5.6 U	3.8 U	5.6 U	40 U	9.6 U	7.2 U	4.8 U	7.5 U	7 U	96 U	80 U	6.4 U	7.5 U	5.4 U	9.4 U	9.1 U	5.9 U	3.8 U
WR-PG-100	290 U	4.5 U	6.3 U	4.2 U	8.2	45 U	11 U	8.1 U	5.4 U	8.4 U	7.8 U	110 U	90 U	7.2 U	8.4 U	6 U	11 U	11 U	6.6 U	4.2 U
WR-PG-102	270 U	4.1 U	5.7 U	3.8 U	5.7 U	41 U	9.8 U	7.4 U	4.9 U	7.6 U	7.1 U	98 U	82 U	6.6 U	7.6 U	5.5 U	9.5 U	9.3 U	6 U	3.8 U
WR-PG-104	160 U	2.5 U	3.5 U	2.3 U	3.5 U	25 U	5.9 U	4.4 U	3 U	4.6 U	4.3 U	59 U	49 U	3.9 U	4.6 U	3.3 U	5.7 U	5.6 U	3.6 U	2.3 U

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Benzoic Acid	1,2,4-Trichlorobenzene	4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-methylphenol	Hexachlorocyclopentadiene	2-Chloronaphthalene	2-Nitroaniline	Dimethyl Phthalate	2,6-Dinitrotoluene	3-Nitroaniline	2,4-Dinitrophenol	4-Nitrophenol	Azobenzene	2,4-Dinitrotoluene	4-Chlorophenyl Phenyl Ether	Diethyl Phthalate	4-Nitroaniline	N-Nitrosodiphenylamine	4-Bromophenyl Phenyl Ether
DMEF SL	**650**	**31**	**--**	**29**	**--**	**--**	**--**	**--**	**1,400**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**1,200**	**--**	**28**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**760**	**64**	**--**	**270**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**270**	**--**
WRM 10 to 12																				
East																				
WR-PG-47	210 U	3.3 U	4.6 U	3.1 U	4.6 U	33 U	7.9 U	5.9 U	4 U	6.2 U	5.7 U	79 U	66 U	5.3 U	6.2 U	4.4 U	7.7 U	7.5 U	4.9 U	3.1 U
WR-VC-47	180 U	2.8 U	4 U	0.51 U	4 U	28 U	6.8 U	5.1 U	3.4 U	5.3 U	4.9 U	68 U	56 U	4.5 U	5.3 U	3.8 U	6.6 U	6.4 U	4.1 U	2.7 U
WR-VC-49	180 U	2.8 U	3.9 U	2.6 U	3.9 U	28 U	6.7 U	5 U	3.4 U	5.2 U	4.8 U	67 U	56 U	4.5 U	5.2 U	3.7 U	6.5 U	6.3 U	4.1 U	2.6 U
WR-VC-51	220	2.6 U	3.6 U	0.46 U	3.6 U	26 U	6.1 U	4.6 U	3.1 U	4.8 U	4.4 U	61 U	51 U	4.1 U	4.8 U	3.4 U	5.9 U	5.8 U	3.7 U	2.4 U
WR-VC-53	150 U	2.3 U	3.3 U	0.42 U	3.3 U	23 U	5.6 U	4.2 U	2.8 U	4.3 U	4 U	56 U	46 U	3.7 U	4.3 U	3.1 U	5.4 U	5.3 U	3.4 U	2.2 U
WR-VC-55	490	2.3 U	3.2 U	0.41 U	3.2 U	23 U	5.5 U	4.1 U	2.8 U	4.3 U	4 U	55 U	46 U	3.7 U	4.3 U	3.1 U	5.4 U	5.2 U	3.4 U	2.2 U
WR-VC-57	430	2.8 U	3.9 U	2.6 U	3.9 U	28 U	6.6 U	5 U	3.3 U	5.2 U	4.8 U	66 U	55 U	4.4 U	5.2 U	3.7 U	6.4 U	6.3 U	4.1 U	2.6 U
WR-VC-59	170 U	2.6 U	3.6 U	1.4 U	3.6 U	26 U	6.1 U	4.6 U	3.1 U	4.8 U	4.4 U	61 U	51 U	4.1 U	4.8 U	3.4 U	5.9 U	5.8 U	3.7 U	2.4 U
WR-PG-61	210 U	3.3 U	4.6 U	3.1 U	4.6 U	33 U	7.8 U	5.9 U	3.9 U	6.1 U	5.7 U	78 U	65 U	5.2 U	6.1 U	4.4 U	7.6 U	7.4 U	4.8 U	3.1 U
WR-VC-61	290	2.7 U	3.7 U	2.5 U	3.7 U	27 U	6.3 U	4.8 U	3.2 U	4.9 U	4.6 U	63 U	53 U	4.2 U	4.9 U	3.5 U	6.2 U	6 U	3.9 U	2.5 U
WR-PG-63	860 U	14 U	19 U	13 U	19 U	140 U	33 U	25 U	17 U	25 U	24 U	330 U	270 U	22 U	25 U	18 U	32 U	31 U	20 U	13 U
West																				
WR-PG-106	230 U	3.6 U	5 U	3.4 U	5 U	36 U	8.6 U	6.4 U	4.3 U	6.7 U	6.2 U	86 U	71 U	5.7 U	6.7 U	4.8 U	8.3 U	8.1 U	5.3 U	3.4 U
WR-VC-106	180 U	2.8 U	3.9 U	2.6 U	3.9 U	28 U	6.6 U	5 U	3.3 U	5.2 U	4.8 U	66 U	55 U	4.4 U	5.2 U	3.7 U	6.5 U	6.3 U	4.1 U	2.6 U
WR-PG-108	140 U	2.2 U	3 U	2 U	3 U	22 U	5.2 U	3.9 U	2.6 U	4 U	3.7 U	52 U	43 U	3.5 U	4 U	2.9 U	5 U	4.9 U	3.2 U	2 U
WR-VC-108	570	2.7 U	3.8 U	2.5 U	3.8 U	27 U	6.4 U	4.8 U	3.2 U	5 U	4.7 U	64 U	54 U	4.3 U	5 U	3.6 U	6.3 U	6.1 U	4 U	2.5 U
WR-VC-110	650 U	11 U	15 U	9.4 U	15 U	110 U	25 U	19 U	13 U	19 U	18 U	250 U	210 U	17 U	19 U	14 U	24 U	23 U	62	9.4 U
WR-PG-112	250 U	3.8 U	5.3 U	3.6 U	5.3 U	38 U	9.1 U	6.8 U	4.6 U	7.1 U	6.6 U	91 U	76 U	6.1 U	7.1 U	5.1 U	8.8 U	8.6 U	5.6 U	3.6 U
WR-PG-114	220 U	3.5 U	4.8 U	3.2 U	4.8 U	35 U	8.2 U	6.2 U	4.1 U	6.4 U	6 U	82 U	69 U	5.5 U	6.4 U	4.6 U	8 U	7.8 U	5 U	3.2 U
WR-VC-114	290	2.9 U	4.1 U	2.8 U	4.1 U	29 U	7 U	5.3 U	3.5 U	5.5 U	5.1 U	70 U	58 U	4.7 U	5.5 U	3.9 U	6.8 U	6.6 U	5.9	2.8 U
WR-PG-116	230 U	3.6 U	5 U	3.3 U	5 U	36 U	8.5 U	6.4 U	4.3 U	6.6 U	6.1 U	85 U	71 U	5.7 U	6.6 U	4.7 U	8.2 U	8 U	5.2 U	3.3 U
WR-VC-116	210 U	3.2 U	4.4 U	3 U	4.4 U	32 U	7.6 U	5.7 U	3.8 U	5.9 U	5.5 U	76 U	63 U	5.1 U	5.9 U	4.2 U	7.4 U	7.1 U	4.6 U	3 U
WR-PG-118	240 U	3.7 U	5.1 U	3.4 U	5.1 U	37 U	8.8 U	6.6 U	4.4 U	6.8 U	6.3 U	88 U	73 U	5.9 U	6.8 U	4.9 U	8.5 U	8.3 U	5.4 U	3.4 U
WR-VC-118	170 U	2.7 U	3.7 U	0.48 U	3.7 U	27 U	6.4 U	4.8 U	3.2 U	5 U	4.6 U	64 U	53 U	4.3 U	5 U	3.6 U	6.2 U	6 U	3.9 U	2.5 U
WR-PG-120	350 U	5.4 U	7.5 U	5 U	7.5 U	54 U	13 U	9.6 U	6.4 U	10 U	9.3 U	130 U	110 U	8.6 U	10 U	7.1 U	13 U	13 U	7.9 U	5 U
WR-VC-120	180 U	2.8 U	3.9 U	0.5 U	3.9 U	28 U	6.7 U	5 U	3.4 U	5.2 U	4.8 U	67 U	56 U	4.5 U	5.2 U	3.7 U	6.5 U	6.3 U	4.1 U	2.6 U
WR-PG-122	240 U	3.7 U	5.1 U	3.4 U	5.1 U	37 U	8.8 U	6.6 U	4.4 U	6.8 U	6.3 U	88 U	73 U	5.9 U	6.8 U	4.9 U	8.5 U	8.3 U	5.4 U	3.4 U
WR-VC-122	170 U	2.6 U	3.6 U	2.4 U	3.6 U	26 U	6.1 U	4.6 U	3.1 U	4.8 U	4.4 U	61 U	51 U	4.1 U	4.8 U	3.4 U	6 U	5.8 U	3.8 U	2.4 U
WR-PG-124	220 U	3.4 U	4.7 U	3.2 U	4.7 U	34 U	8.1 U	6.1 U	4.1 U	6.3 U	5.8 U	81 U	67 U	5.4 U	6.3 U	4.5 U	7.8 U	7.6 U	4.9 U	3.2 U
WR-VC-124	180 U	2.7 U	3.8 U	0.49 U	3.8 U	27 U	6.5 U	4.9 U	3.3 U	5 U	4.7 U	65 U	54 U	4.3 U	5 U	3.6 U	6.3 U	6.1 U	4 U	2.5 U
WR-PG-126	190 U	3 U	4.1 U	2.8 U	4.1 U	30 U	7 U	5.3 U	3.5 U	5.5 U	5.1 U	70 U	59 U	4.7 U	5.5 U	3.9 U	6.8 U	6.7 U	4.3 U	2.8 U
WR-VC-126	160 U	2.5 U	3.5 U	0.45 U	3.5 U	25 U	5.9 U	4.5 U	3 U	4.6 U	4.3 U	59 U	50 U	4 U	4.6 U	3.3 U	5.8 U	5.6 U	3.7 U	2.3 U
WR-PG-128	220 U	3.5 U	4.8 U	3.2 U	4.8 U	35 U	8.2 U	6.2 U	4.1 U	6.4 U	5.9 U	82 U	69 U	5.5 U	6.4 U	4.6 U	8 U	7.8 U	5 U	3.2 U
WR-VC-128	210	2.3 U	3.1 U	1.1 U	3.1 U	23 U	5.3 U	4 U	2.7 U	4.2 U	3.9 U	53 U	45 U	3.6 U	4.2 U	3 U	5.2 U	5 U	3.3 U	2.1 U
WR-PG-130	210 U	3.2 U	4.5 U	3 U	4.5 U	32 U	7.7 U	5.8 U	3.9 U	6 U	5.6 U	77 U	64 U	5.2 U	6 U	4.3 U	7.5 U	7.3 U	4.7 U	3 U
WR-VC-130	660 U	2.1 U	2.9 U	0.99	2.9 U	21 U	4.9 U	3.7 U	2.5 U	3.9 U	3.6 U	49 U	41 U	3.3 U	3.9 U	2.8 U	4.8 U	4.7 U	3 U	2 U
WR-PG-132	250 U	3.9 U	5.5 U	3.7 U	5.5 U	39 U	9.4 U	7.1 U	4.7 U	7.3 U	6.8 U	94 U	78 U	6.3 U	7.3 U	5.2 U	9.1 U	8.9 U	5.8 U	3.7 U
WR-VC-132	170 U	2.6 U	3.7 U	1.2 U	3.7 U	26 U	6.3 U	4.7 U	3.2 U	4.9 U	4.5 U	63 U	52 U	4.2 U	4.9 U	3.5 U	6.1 U	5.9 U	3.9 U	2.5 U
WR-PG-134	200 U	3.1 U	4.4 U	2.9 U	4.4 U	31 U	7.4 U	5.6 U	3.7 U	5.8 U	5.4 U	74 U	62 U	5 U	5.8 U	4.1 U	7.2 U	7 U	4.6 U	2.9 U
WR-VC-134	130 U	2 U	2.8 U	0.36 U	2.8 U	20 U	4.8 U	3.6 U	2.4 U	3.8 U	3.5 U	48 U	40 U	3.2 U	3.8 U	2.7 U	4.7 U	4.6 U	3 U	1.9 U

Please refer to Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Hexachlorobenzene	Carbazole	Di-n-butyl Phthalate	Butyl Benzyl Pthalate	3,3'-Dichlorobenzidine	Bis(2ethylhexyl) Phthalate	Di-n-octyl Phthalate
DMEF SL	**22**	**--**	**5,100**	**970**	**--**	**8,300**	**6,200**
DMEF BT	**168**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**230**	**--**	**--**	**--**	**--**	**--**	**--**
Reference Locations							
WR-PG-01-REF	0.32 U	3.3	7.4	2.4 U	5.9 U	11	1.9 U
WR-PG-02-REF	0.31 U	2.1 U	7.5	2.4 U	5.8 U	12	1.9 U
WR-PG-03-REF	0.43 U	2.8 U	8.2	3.2 U	7.9 U	19	2.6 U
WRM 0 to 3							
East							
WR-PG-01	5.5 U	3.4 U	13 u	4.7	9.6 U	71	3.2 U
WR-PG-02	5.6 U	3.8	14 u	4 U	9.9 U	120	3.2 U
WR-PG-03	5.1 U	3.2 U	12 u-J	7.7	9 U	84	3 U
WR-VC-03	0.4 U	4.5	7	4.6	7.4 r-U	46 u	2.4 U
West							
WR-PG-04	21 U	13 U	26 U	15 U	37 U	54 u-JD	12 U
WR-VC-04	0.36 U	5.6	5.6	2.7 U	6.6 r-U	58 u	2.2 U
WRM 3 to 6							
East							
WR-VC-05	0.42 U	14	6.6	20	7.7 r-U	120	2.5 U
WR-VC-07	0.39 U	12	6.3	31	7.1 r-U	160	2.3 U
WR-PG-09	0.46 U	6	12 u	7.5	8.5 U	76	2.8 U
WR-VC-09	0.38 U	12	9.9 U	5.7 U	15 r-U	62 u-D	4.6 U
WR-PG-11	0.78 U	11	15 u	14	9 U	96	2.9 U
WR-VC-11	0.39 U	23	11 U	5.8 U	15 r-U	79 u-D	4.7 U
WR-PG-13	0.43 U	110	28 U	17 U	40 U	38 u-JD	13 U
WR-VC-13	0.39 U	63	11 U	5.9 U	15 r-U	64 u-D	4.7 U
WR-PG-15	0.43 U	6.5	6.8	4.4	7.9 U	61	2.6 U
WR-VC-15	0.39 U	12	5 U	14	7.2 r-U	130	2.4 U
WR-PG-17	0.45 U	5.4	5.8 U	5.7	8.2 U	66	4
WR-VC-17	0.38 U	15	6.6 u-J	11	6.9 U	71 u-B	2.3 U
WR-PG-19	0.45 U	9.3	16	12	8.3 U	92	2.7 U
WR-VC-19	0.4 U	20	7.8	3 U	7.4 r-U	110	2.4 U
WR-PG-21	0.4 U	11	5.1 U	3 U	7.3 U	93	2.4 U
WR-PG-23	0.41 U	23	11	3.1 U	7.6 U	110	2.5 U
WR-VC-23	0.3 U	32	20 U	650	28 U	100 u-BD	9 U
WR-PG-27	0.27 U	18 U	35 U	33	50 U	330 u-D	17 U
West							
WR-PG-06	0.59 U	3.1 U	9.8 u-J	3.5 U	8.7 U	75	2.8 U
WR-VC-06	0.44 U	11	8.9	14	8 r-U	94	2.6 U
WR-VC-08	0.41 U	16	11 U	14	16 r-U	95 u-D	4.9 U
WR-VC-10	0.41 U	12	11 U	6.1 U	15 r-U	82 u-D	4.9 U
WR-PG-12	0.57 U	2.7 U	5.9 u-J	21	7.7 U	33 u	2.5 U
WR-VC-12	0.71	16	9.8 U	7.5	14 r-U	74 u-D	4.5 U
WR-PG-14	0.5 U	3.3 U	7.9	3.8 U	9.2 U	68	3 U
WR-VC-14	0.38 U	9.9	9.8 U	5.7 U	14 r-U	49 u-D	4.5 U
WR-PG-16	0.39 U	51 U	110 U	59 U	150 U	66 u	47 U
WR-VC-16	0.36 U	13	5.7	5.3	6.6 r-U	46 u	2.2 U
WR-PG-18	0.56 U	14 U	27 U	16 U	38 U	69 u-JD	13 U
WR-VC-18	0.4 U	11	11 U	12	15 r-U	130	4.8 U
WR-VC-20	0.39 U	9.1	18 u-J	5.1	7.1 U	54	2.3 U
WR-PG-22	1.4	3.6	6.6 U	3.9 U	9.4 U	37 u	3.1 U
WR-VC-22	0.43 U	7.5	7.5	15	8 r-U	95	2.6 U
WR-PG-24	2	100	9.3	3.4 U	8.4 U	59	2.8 U
WR-VC-24	0.43 U	5.6	6.6	7.1	8 r-U	60 u	2.6 U
WR-PG-26	0.26 U	1.7 U	8.7	1.9 U	4.7 U	15 u-J	1.6 U
WR-VC-26	0.4 U	7.7	11 U	6 U	15 r-U	110 u-D	4.8 U
WR-VC-28	0.43 U	12	12 u-JD	11	16 U	82	5.2 U
WR-PG-30	0.47 U	8.3	13	3.6 U	8.7 U	39 u	2.9 U
WR-VC-30	0.44 U	16	29 U	17 U	40 U	150 u-BD	13 U
WR-VC-32	0.41 U	11	8.8 u-J	4.5	7.5 U	42	2.5 U
WR-PG-34	0.55 U	7.3	12	6.9	11 U	60 u	3.3 U
WR-VC-34	0.45 U	13	12 u-J	7.7	8.2 U	75	2.7 U
WR-PG-36	0.38 U	11	18	2.9 U	7 U	44 u	2.3 U
WR-VC-36	0.45 U	15	12 U	6.7 U	17 r-U	110 u-D	5.3 U
WR-PG-42	0.34 U	110 U	220 U	130 U	310 U	150 U	100 U
WR-VC-42	0.51	6.9	3.6 U	2.1 U	5.1 U	29 u-B	1.7 U
WR-VC-46	0.57	52	40 U	23 U	57 U	140 u-BJD	19 U
WR-PG-48	1	440	57 U	33 U	80 U	57 u-JD	26 U

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Hexachlorobenzene	Carbazole	Di-n-butyl Phthalate	Butyl Benzyl Pthalate	3,3'-Dichlorobenzidine	Bis(2ethylhexyl) Phthalate	Di-n-octyl Phthalate
DMEF SL	**22**	**--**	**5,100**	**970**	**--**	**8,300**	**6,200**
DMEF BT	**168**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**230**	**--**	**--**	**--**	**--**	**--**	**--**
WRM 6 to 8							
East							
WR-PG-29	0.48 U	3.2 U	6.3 U	8.7	8.9 U	210	2.9 U
WR-VC-29	0.4 U	2.6 U	7.3 u-J	10	7.3 U	76	2.4 U
WR-VC-31	0.4 U	2.6 U	5.2 U	6.2	7.4 U	38 u-B	2.4 U
West							
WR-PG-50	250 U	220	310 U	180 U	430 U	200 U	140 U
WR-VC-50	4.1 U	9,500	110 U	62 U	160 U	180	49 U
WR-PG-52	220 U	250	270 U	160 U	380 U	3,200	130 U
WR-VC-52	7.2 U	7,000	94 U	54 U	140 U	110	43 U
WR-PG-54	49 U	30 U	60 U	35 U	86 U	78 u-JD	28 U
WR-VC-54	5.7 U	1,500	51 U	30 U	73 U	69	24 U
WR-PG-56	0.89	50	6.6	2.9 U	7.1 U	35 u	2.3 U
WR-VC-56	0.36 U	30	14 u-JD	5.4 U	14 U	14	4.3 U
WR-PG-58	2.2	130	4.6 U	2.7 U	6.6 U	33 u	2.2 U
WR-VC-58	1.1 j	13	4.5 u-J	2.2 U	5.3 U	30 u-B	1.7 U
WR-PG-60	0.37 U	2.4 U	4.8 U	2.8 U	6.9 U	34 u	2.3 U
WR-VC-60	0.3 U	18	20 U	12 U	28 U	62	8.9 U
WR-PG-62	1 U	9.8	5.7 U	3.3 U	8.1 U	27 u	2.7 U
WR-VC-62	0.98 U	4.5	11 u	12	7.4 U	120 u-B	2.4 U
WR-PG-64	1.3	5.2	7.4	4.5	8.7 U	56 u	2.9 U
WR-VC-64	0.46 U	3 U	8.4 u-J	7.7	8.4 U	71	2.8 U
WR-PG-66	1.9	3.3 U	6.6 U	3.8 U	9.3 U	30	3.1 U
WR-VC-66	0.41 U	2.9	6.2 u-J	5.2	7.6 U	79	2.5 U
WR-PG-68	1.4	8.1	6.8	3.6 U	8.8 U	110	2.9 U
WR-VC-68	0.42 U	2.8	9.9 u-J	7.9	7.8 U	69	2.6 U
WR-PG-70	2	5.9	6 U	27	8.5 U	550	2.8 U
WR-VC-70	1 U	3.1	8.1 u-J	11	7.5 U	180	2.5 U
WR-PG-72	1.5	5	28	5.4	9.8 U	79 u	3.2 U
WR-VC-72	0.74	2.6 U	11 u-J	8.7	7.4 U	65	2.4 U
WR-PG-74	0.51 U	5.5	6.7 U	3.9 U	9.5 U	35 u	3.1 U
WRM 8 to 10							
East							
WR-PG-33	3.5 U	2.2 U	14 u-B	5.8	6.1 r-U	66 j	2 U
WR-VC-33	0.27 U	3.8	3.5 U	2.1 U	5 U	63 u-B	1.7 U
WR-PG-35	4.4 U	2.7 U	25 u-B	6	7.6 r-U	67 j	2.5 U
WR-VC-35	0.34 U	2.2 U	6.7 u-J	5.1	6.2 U	25	2.1 U
WR-PG-37	4.1 U	12	18 u-B	11	7.2 r-U	55 j	2.4 U
WR-VC-37	0.33 U	8	8.6 u-J	5.5	6.1 U	49	2 U
WR-PG-39	4.2 U	2.6 U	10 u-B	28	7.4 r-U	74 j	3.7 j-J
WR-VC-39	0.38 U	2.5 U	7.2 u-J	5.8	7 U	66 u-B	3.3
WR-PG-41	3.9 U	3.5	15 u-B	4.6	6.9 r-U	110 j	2.3 U
WR-VC-41	1 U	2.7 U	5.4 U	3.9	7.6 U	70 u	3.1
WR-PG-43	4.7 U	2.9 U	6.7 u-BJ	3.4 U	8.2 r-U	86 j	2.7 U
WR-VC-43	0.37 U	2.4 U	4.7 U	2.8 U	6.7 U	68 u-B	2.2 U
WR-PG-45	3.9 U	2.4 U	4.8 U	2.8 U	6.8 r-U	67 j	2.2 U
WR-VC-45	0.38 U	9.8	5.5	6.1	7.1 U	100	2.3 U
West							
WR-PG-76	1 U	3.3 U	6.5 U	3.8 U	9.2 U	73 u	3 U
WR-PG-78	0.71	3.4 U	12	5.9	9.7 U	120	3.2 U
WR-PG-80	0.49 U	3.2 U	6.4 U	3.7 U	9.1 U	84 u	3 U
WR-PG-82	0.4 U	2.9	14	5.1	7.4 U	140	4
WR-PG-84	5.1 U	3.2 U	11	6.8	9 U	140	2.9 U
WR-PG-86	5.5 U	3.5 U	9.6	4 U	9.7 U	85 u	3.2 U
WR-PG-88	5.9 U	3.7 U	17 u-B	4.3 U	11 r-U	160 j	6.4 j-J
WR-PG-90	12 U	7.3 U	22 u-BJD	8.4 U	21 r-U	190 j-D	6.7 U
WR-PG-92	5.9 U	3.7 U	15 u-B	11	11 r-U	210 j	3.4 U
WR-PG-94	5.8 U	3.6 U	12 u-BJ	4.2 U	11 r-U	76 j	3.4 U
WR-PG-96	6.5 U	4 U	23 u-B	4.7 U	12 r-U	96 j	3.7 U
WR-PG-98	5.6 U	3.5 U	29 u-B	4 U	9.9 r-U	66 j	3.2 U
WR-PG-100	6.3 U	3.9 U	26 u-B	6.6	12 r-U	82 j	3.6 U
WR-PG-102	5.7 U	5.2	17 u-B	4.1 U	11 r-U	110 j	3.3 U
WR-PG-104	3.5 U	2.2 U	11 u-B	2.5 U	6.1 r-U	62 j	3.5 j-J

Please refer to the Notes at the end of this table.

Table 9 - Sediment Sampling Analytical Results - Semivolatile Organic Compounds

Sample ID	Hexachlorobenzene	Carbazole	Di-n-butyl Phthalate	Butyl Benzyl Pthalate	3,3'-Dichlorobenzidine	Bis(2ethylhexyl) Phthalate	Di-n-octyl Phthalate
DMEF SL	**22**	**--**	**5,100**	**970**	**--**	**8,300**	**6,200**
DMEF BT	**168**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**230**	**--**	**--**	**--**	**--**	**--**	**--**
WRM 10 to 12							
East							
WR-PG-47	4.6 U	18	13 u-B	9.3		76 j	11 j
WR-VC-47	0.38 U	2.5 U	6.7	7	6.9 U	130	2.3 U
WR-VC-49	3.9 U	8.5	9.5	7.8	6.8 U	99	2.3 U
WR-VC-51	0.34 U	4.4	7.3	6.5	6.3 U	220	18
WR-VC-53	0.38 U	2.7	17	30	5.7 U	100	1.9 U
WR-VC-55	0.31 U	2 U	4.3	4.3	5.7 U	47 u	1.9 U
WR-VC-57	3.9 U	2.4 U	6.1	9	6.8 U	74	2.2 U
WR-VC-59	0.34 U	44	6.5	9.1	6.3 U	170	2.1 U
WR-PG-61	4.6 U	2.9 U	10 u-J	38	6.5 r-U	110	2.6 U
WR-VC-61	3.7 U	4.8	22	11	6.5 U	160	8.9
WR-PG-63	19 U	15	24 U	24	34 r-U	120 u-D	26
West							
WR-PG-106	5 U	16	19 u-B	3.6 U	8.8 r-U	230 j	2.9 U
WR-VC-106	3.9 U	8.5	5.2	2.8 U	6.8 U	64	2.2 U
WR-PG-108	5.2	13	9.7 u-J	5.7	5.3 r-U	120	4.8
WR-VC-108	3.8 U	5.4	8.3	2.7 U	6.6 U	140	2.2 U
WR-VC-110	15 U	130	21	41	25 U	18,000	480
WR-PG-112	5.3 U	3.3 U	18 u	4.9	9.3 r-U	110	5.6
WR-PG-114	4.8 U	3 U	8.5 u-J	3.5 U	8.5 r-U	100	2.8 U
WR-VC-114	4.1 U	2.6 U	6.9	7.3	7.2 U	63	2.4 U
WR-PG-116	5 U	3.1 U	10 u-J	3.6 U	8.7 r-U	140	6.5
WR-VC-116	4.4 U	2.8 U	16	3.2 U	7.8 U	54	2.6 U
WR-PG-118	5.1 U	3.2 U	11 u-J	5.8	9 r-U	90	3 U
WR-VC-118	0.36 U	2.7	4.6 U	4.4	6.5 U	49 u-B	2.2 U
WR-PG-120	7.5 U	4.7 U	22 u	5.4 U	14 r-U	120	4.3 U
WR-VC-120	0.37 U	2.4 U	4.8 U	9	6.8 U	47 u-B	2.3 U
WR-PG-122	5.1 U	5	21 u	3.7 U	9 r-U	200	3 U
WR-VC-122	3.6 U	2.2 U	6.8	2.6 U	6.3 U	73	2.1 U
WR-PG-124	4.7 U	2.9 U	17 u	4.8	8.3 r-U	130	2.7 U
WR-VC-124	1 U	2.4 U	4.9 u-J	5.6	6.7 U	64 u-B	2.2 U
WR-PG-126	4.1 U	2.6 U	11 u	5.8	7.2 r-U	58	3.4
WR-VC-126	0.33 U	2.2 U	5.1 u-J	6.6	6.1 U	120 u-B	2 U
WR-PG-128	4.8 U	3 U	9.1 u-J	4.5	8.4 r-U	82	2.8 U
WR-VC-128	1 U	2 U	7.8 u-J	5.1	5.5 U	140 u-B	1.8 U
WR-PG-130	4.5 U	9	15 u	24	7.9 r-U	950	2.6 U
WR-VC-130	0.28 U	5.1	5.9	3.6	5.1 U	41 u	1.7 U
WR-PG-132	5.5 U	3.4 U	14 u-J	3.9 U	9.7 r-U	93	3.2 U
WR-VC-132	0.35 U	3.8	4.5 U	5	6.5 U	37 u-B	2.1 U
WR-PG-134	4.4 U	2.7 U	9.9 u-J	3.1 U	7.6 r-U	120	2.5 U
WR-VC-134	0.27 U	1.8	7.5 u-J	3.5	5 U	46 u-B	1.6 U

Notes:

Concentrations reported in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit; D = The reported result is from a dilution.

J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

B = The compound was found in the asociated method blank at a level that is significant to the sample result.

Tetra Tech EC Qualifiers:

u = The result should be considered not detected at the indicated detection limit; r = The result is rejected due to MS/MSD recovery was 0%

See Volume II of this report for more analytical testing details.

Table 10 - Sediment Sampling Analytical Results - Polycyclic Aromatic Hydrocarbons

	Napthalene	2-Methylnapthalene	Acenaphthylene	Acenapthene	Fluorene	Dibenzofuran	Phenanthrene	Athracene	Fluoranthene	Pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(b+k)fluoranthene	Benz(a)anthracene	Chrysene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total LPAHs	Total HPAHs	Total PAHs
DMEF SL	**2,100**	**670**	**560**	**500**	**540**	**540**	**1,500**	**960**	**1,700**	**2,600**	**--**	**--**	**3,200**	**1,300**	**1,400**	**1,600**	**600**	**230**	**670**	**5,200**	**12,000**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**4,600**	**11,980**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**2,400**	**1,900**	**1,300**	**2,000**	**3,600**	**1,700**	**21,000**	**13,000**	**30,000**	**16,000**	**--**	**--**	**9,900**	**5,100**	**21,000**	**3,600**	**4,400**	**1,900**	**3,200**	**29,000**	**69,000**	**--**
Reference Locations																						
WR-PG-01-REF	3.6 u-B	0.54 U	0.35 U	0.26 U	0.79	0.27 U	8.1	13	8.2	6.5	7.1	15	22.1	28	65	13	5.3	2	4.5	22	155	176
WR-PG-02-REF	2.9 u-B	0.53 U	0.34 U	0.25 U	0.3 U	0.27 U	1.5	0.43	5.3	4.7	2.2	1.6	3.8	2.7	2.4	2.2	1.3	0.41 U	1.3	2	24	26
WR-PG-03-REF	4.4 u-B	0.73 U	0.47 U	0.34 U	0.41 U	0.37 U	1	0.47 U	2.7	2.7	1.6	1.6	3.2	1.6	2.1	1.6	1.3	0.56 U	1.8	1	17	18
WRM 0 to 3																						
East																						
WR-PG-01	9.2 u	1.8	3.2	2.8	2.1	1.1	14	4.2	30	35	19	16	35	14	21	23	23	4.6	27	28	213	241
WR-PG-02	21	4.9	7.4	5.7	5.3	3.3	35	9.8	76	83	40	35	75	33	45	51	52	6.9	58	89	480	569
WR-PG-03	13 u	4.4	4.3	4	3.9	2.4	23	6.8	52	53	29	24	53	21	32	33	34	4.9	38	46	321	367
WR-VC-03	12	4.1	6.3	12	7.6	2.9	47	11	87	90	52	42	94	45	59	67	60	11	63	100	576	676
West																						
WR-PG-04	35	9.8	110	35	15	3.2	100	61	610	710	600	430	1,030	550	690	970	900	130	890	366	6,480	6,846
WR-VC-04	39	15	35	40	29	9.9	140	36	250	290	200	180	380	170	210	330	290	46	310	334	2,276	2,610
WRM 3 to 6																						
East																						
WR-VC-05	33	12	9.5	23	15	7.7	110	27	250	240	160	120	280	130	160	180	160	32	160	230	1,592	1,822
WR-VC-07	30	13	11	23	19	8.5	120	28	250	230	140	110	250	120	140	170	160	29	140	244	1,489	1,733
WR-PG-09	8.6 u	2.2	2.8	4.7	4.1	2.1	29	8.1	71	69	51	39	90	37	50	57	58	8.6	57	51	498	549
WR-VC-09	17	5.9	6.3	28	16	7.2	90	23	200	190	130	100	230	110	130	150	150	27	120	186	1,307	1,493
WR-PG-11	22	6.8	7.2	15	12	6	85	23	190	190	120	100	220	100	130	150	140	27	130	171	1,277	1,448
WR-VC-11	27	10	8.1	44	24	11	170	41	440	370	280	220	500	240	270	330	310	61	250	324	2,771	3,095
WR-PG-13	34	22	12	69	50	24	590	89	1,200	930	920	510	1,430	600	790	820	820	190	680	866	7,460	8,326
WR-VC-13	26	15	6	65	43	19	340	62	780	580	480	360	840	380	450	500	490	100	390	557	4,510	5,067
WR-PG-15	12 u	3.6	6.8	10	9.9	5.1	51	18	120	110	90	69	159	76	110	93	83	17	82	99	850	949
WR-VC-15	28	12	8.3	26	17	9	110	23	230	210	120	91	211	100	130	140	130	24	110	224	1,285	1,509
WR-PG-17	22	7.6	9.3	9.7	12	6.9	94	39	290	280	95	100	195	140	180	140	99	23	91	194	1,438	1,632
WR-VC-17	59	15	13	70	56	26	190	35	300	290	210	150	360	180	210	260	210	38	200	438	2,048	2,486
WR-PG-19	21	8.9	8.6	12	13	8.9	79	21	180	170	110	76	186	81	110	120	110	20	110	164	1,087	1,251
WR-VC-19	44	11	12	25	18	8	140	37	360	340	230	210	440	200	240	270	260	49	220	287	2,379	2,666
WR-PG-21	70	18	16	35	31	17	180	30	300	310	140	110	250	130	170	190	170	29	180	380	1,729	2,109
WR-PG-23	100	42	48	120	93	41	450	74	720	660	370	280	650	350	460	500	450	75	450	927	4,315	5,242
WR-VC-23	65	30	31	110	74	31	630	140	840	710	370	300	670	390	440	500	420	72	380	1,080	4,422	5,502
WR-PG-27	17	4.9	6.2	19	14	4.2	47	16	140	140	85	60	145	62	97	83	88	13	90	124	858	982
West																						
WR-PG-06	13	3.2	5.6	4.3	3.8	1.7	24	7.3	55	63	37	35	72	30	47	56	62	7.1	65	61	457	518
WR-VC-06	57	17	38	33	26	8.2	200	46	390	430	220	200	420	200	240	330	320	47	310	417	2,687	3,104
WR-VC-08	120	41	32	55	51	19	340	70	520	550	190	170	360	180	240	280	290	42	280	709	2,742	3,451
WR-VC-10	52	20	27	56	40	13	500	75	1,000	1,300	260	240	500	330	360	380	320	49	300	770	4,539	5,309
WR-PG-12	16	4.9	5.6	12	8.9	3.4	42	12	98	94	43	36	79	38	50	52	58	6.4	56	101	531	633
WR-VC-12	89	38	48	130	87	30	580	90	810	890	310	290	600	330	420	500	490	69	470	1,062	4,579	5,641
WR-PG-14	18	6.6	4.5	20	21	6.3	110	16	85	82	30	25	55	26	43	41	43	5.4	47	196	427	624
WR-VC-14	58	35	37	320	240	95	840	150	820	810	250	260	510	280	370	400	380	53	360	1,680	3,983	5,663
WR-PG-16	240	76	150	490	450	41	4,800	260	*5,700*	7,400	1,400	1,200	2,600	1,600	2,000	2,500	2,300	250	2,500	6,466	26,850	33,316
WR-VC-16	28	12	29	79	45	10	300	42	440	470	210	180	390	190	240	310	300	42	280	535	2,662	3,197
WR-PG-18	27	10	32	22	18	4	130	34	270	290	180	150	330	160	210	290	280	43	290	273	2,163	2,436
WR-VC-18	62	20	23	34	28	12	170	38	330	350	170	140	310	150	180	240	250	36	240	375	2,086	2,461
WR-VC-20	35	12	19	38	27	13	150	31	270	290	150	120	270	130	160	220	190	29	200	312	1,759	2,071
WR-PG-22	9.4 u	2.1	3.7	4	4	2	30	10	86	81	40	31	71	33	70	43	42	5.9	44	54	476	530
WR-VC-22	28	8.9	15	17	14	6	88	22	220	230	120	110	230	110	140	170	170	24	160	193	1,454	1,647
WR-PG-24	63	150	22	1,400	850	450	2,000	210	1,000	940	160	120	280	200	280	190	170	22	170	4,695	3,252	7,947
WR-VC-24	18	6.1	8.1	13	10	4	67	17	160	160	88	72	160	73	93	120	120	19	120	139	1,025	1,164
WR-PG-26	3.7 u	0.49	0.37	0	0	0.22 U	2	1	4	5	2.5	2	4.5	1.9	2.9	2.8	2.5	0.54	3.6	4	28	32
WR-VC-26	40	12	19	21	18	7	120	31	250	270	140	110	250	120	150	190	200	29	190	261	1,649	1,910
WR-VC-28	73	26	23	49	39	15	230	45	380	400	180	150	330	160	210	280	270	31	300	485	2,361	2,846
WR-PG-30	51	19	18	29	28	9	220	43	340	360	140	100	240	120	170	190	190	22	200	408	1,832	2,240
WR-VC-30	47	20	25	49	38	16	280	55	470	450	200	170	370	180	240	290	270	38	270	514	2,578	3,092
WR-VC-32	44	17	22	39	28	8	180	35	340	370	190	140	330	170	260	280	250	31	260	365	2,291	2,656
WR-PG-34	24	5.6	11	11	8	3	72	25	170	170	100	83	183	83	130	130	130	21	140	157	1,157	1,314
WR-VC-34	55	19	27	36	30	10	200	57	390	410	210	170	380	190	240	310	280	42	300	424	2,542	2,966
WR-PG-36	18	5.2	15	18	10	2	86	26	200	220	140	100	240	110	150	210	210	31	220	178	1,591	1,769
WR-VC-36	81	27	33	48	41	12	270	63	540	600	270	250	520	240	300	390	390	56	380	563	3,416	3,979
WR-PG-42	520 u-D	110	200	1,700	1,400	95	20,000	2,100	*20,000*	***25,000***	4,200	3,600	7,800	4,300	5,800	**7,000**	**6,600**	660	**7,100**	25,510	**84,260**	109,770
WR-VC-42	110	24	19	98	36	10	410	35	400	470	120	120	240	150	190	200	190	19	180	732	2,039	2,771
WR-VC-46	590	110	230	930	600	58	9,000	570	*13,000*	*15,000*	3,800	3,000	6,800	3,800	5,000	**6,700**	**6,200**	520	**6,500**	12,030	63,520	75,550
WR-PG-48	53	24	28	280	190	91	2,100	780	*4,700*	4,200	1,700	1,400	3,100	1,600	1,800	2,200	2,000	310	1,700	3,455	21,610	25,065

Please refer to the Notes at the end of this table.

Table 10 - Sediment Sampling Analytical Results - Polycyclic Aromatic Hydrocarbons

	Napthalene	2-Methylnapthalene	Acenaphthylene	Acenapthene	Fluorene	Dibenzofuran	Phenanthrene	Athracene	Fluoranthene	Pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(b+k)fluoranthene	Benz(a)anthracene	Chrysene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total LPAHs	Total HPAHs	Total PAHs
DMEF SL	**2,100**	**670**	**560**	**500**	**540**	**540**	**1,500**	**960**	**1,700**	**2,600**	**--**	**--**	**3,200**	**1,300**	**1,400**	**1,600**	**600**	**230**	**670**	**5,200**	**12,000**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**4,600**	**11,980**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**2,400**	**1,900**	**1,300**	**2,000**	**3,600**	**1,700**	**21,000**	**13,000**	**30,000**	**16,000**	**--**	**--**	**9,900**	**5,100**	**21,000**	**3,600**	**4,400**	**1,900**	**3,200**	**29,000**	**69,000**	**--**
WRM 6 to 8																						
East																						
WR-PG-29	3.8 u	0.88	1.6	1	1	0.65	14	2.9	39	33	17	14	31	13	21	14	12	2	14	21	179	200
WR-VC-29	9.8 u-B	2.2	1.8	4.2	3.8	1.9	23	4.3	45	41	22	21	43	21	26	25	20	4.6	23	39	249	288
WR-VC-31	5.1 u	1.4	2.7	4.4	2.4	0.87	23	15	49	47	20	21	41	26	32	28	20	4.1	19	49	266	315
West																						
WR-PG-50	2,100	**2,000**	990	**7,600**	3,300	240	19,000	3,900	*16,000*	***19,000***	4,900	4,400	9,300	**5,300**	6,700	**8,400**	**7,700**	820	**8,100**	**38,892**	**81,320**	120,212
WR-VC-50	**160,000**	**78,000**	**3,600**	**52,000**	**38,000**	**12,000**	**210,000**	**34,000**	***100,000***	***130000***	18,000	15,000	**33,000**	**27,000**	**32,000**	**32,000**	**24,000**	**2,600**	**24,000**	**575,600**	**404,600**	980,200
WR-PG-52	4.3	910	1,200	**3,400**	1,500	220	7,400	1,600	*9,900*	*12,000*	6,000	4,800	**10,800**	**5,200**	6,700	**9,700**	**9,100**	980	**9,600**	19,014	**73,980**	92,994
WR-VC-52	**170,000**	**41,000**	**3,300**	**55,000**	**28,000**	**6,300**	**150,000**	**26,000**	***79,000***	***96,000***	15,000	13,000	**28,000**	**20,000**	**24,000**	**26,000**	**19,000**	**2,000**	**20,000**	**473,300**	**314,000**	787,300
WR-PG-54	62 u-D	24	220	110	110	14	2,200	610	3,100	3,700	1,100	950	2,050	1,500	1,900	1,800	1,500	190	1,500	3,275	17,240	20,515
WR-VC-54	200	1,300	220	**7,000**	**5,800**	**3,300**	20,000	6,100	*9,600*	9,400	1,200	1,100	2,300	2,300	2,600	1,900	1,400	170	1,400	**40,620**	31,070	71,690
WR-PG-56	79	27	110	93	81	25	440	220	940	950	710	590	1,300	630	810	1,000	890	150	910	1,050	7,580	8,630
WR-VC-56	200	130	87	780	700	79	5,900	1,100	*4,800*	5,800	1,100	910	2,010	1,300	1,600	1,900	1,500	160	1,700	8,897	20,770	29,667
WR-PG-58	110	39	120	200	110	37	790	200	1,800	1,700	1,400	1,100	2,500	1,000	1,400	1,800	1,700	300	1,600	1,569	13,800	15,369
WR-VC-58	56	21	84	66	78	32	330	130	650	780	410	300	710	270	440	620	580	77	560	765	4,687	5,452
WR-PG-60	19	15	8	34	15	6	63	14	92	92	46	40	86	40	55	56	50	9.5	52	168	533	700
WR-VC-60	190	150	29	**4,400**	2,100	700	4,400	480	2,300	2,200	190	170	360	410	430	230	130	25	130	11,749	6,215	17,964
WR-PG-62	5.4 u	1.4	3	3	2.3	0.95	38	6.4	160	130	39	31	70	32	63	35	30	4.6	33	54	558	612
WR-VC-62	35	15	11	56	33	13	68	23	170	160	63	53	116	65	86	85	74	13	78	241	847	1,088
WR-PG-64	18	5.2	44	9.7	7.8	2.2	84	42	440	480	210	170	380	200	260	320	270	36	300	211	2,686	2,897
WR-VC-64	14 u-B	3.2	5	4.7	4.6	1.6	29	9.3	62	67	45	31	76	38	55	55	51	7	54	56	465	521
WR-PG-66	4.9 u	1.2	2.8	2	1.4	0.59	14	4.8	38	42	26	22	48	20	29	32	30	4.5	33	26	277	303
WR-VC-66	15 u-B	3	3.8	4.5	3.9	1.5	26	6.3	61	64	41	32	73	32	41	47	43	5.7	46	48	413	460
WR-PG-68	18	6.5	14	71	10	3.9	66	30	380	350	170	130	300	160	250	170	150	24	150	216	1,934	2,150
WR-VC-68	20	4.3	4.3	5.4	5.6	2.5	31	8.3	64	64	39	32	71	31	45	45	39	5.5	42	79	407	485
WR-PG-70	8 u	2.4	6.8	7.6	7.7	3	67	19	180	150	95	85	180	93	150	91	72	12	69	111	997	1,108
WR-VC-70	14 u-B	3.9	4	4.4	4.6	2.2	28	6.2	59	60	36	27	63	28	39	39	34	6.5	38	51	367	418
WR-PG-72	4.6 u	1.3	3.6	3.9	7.5	2.7	35	18	130	96	180	84	264	130	160	81	53	15	48	69	977	1,046
WR-VC-72	16	3.7	2.8	4.6	4.2	1.9	28	6.8	49	50	26	21	47	22	35	28	24	4.3	30	66	289	355
WR-PG-74	5.2 u	1.3	3.1	2.2	2.6	1.5	18	6	93	62	50	24	74	17	73	15	17	3.4	17	33	371	405
WRM 8 to 10																						
East																						
WR-PG-33	2.5 u	0.56 U	0.69	0.31	0.32	0.28 U	2.6	0.82	8.3	9.3	4.3	4.1	8.4	3.9	5.6	4.2	3.5	1.3	4.8	5	49	54
WR-VC-33	2.8 u-B	0.77	1.2	1.2	1.4	1.5	60	2.2	120	83	37	29	66	12	48	24	23	3.2	20	67	399	466
WR-PG-35	2.8 u	0.7 U	0.94	0.96	0.81	0.46	8.5	1.6	23	24	15	13	28	13	18	15	13	3.4	14	13	151	164
WR-VC-35	18	4.9	4.3	5.3	4.4	1.9	28	6.1	53	55	24	22	46	25	30	30	22	4.4	25	71	290	361
WR-PG-37	12	4.4	5.1	17	10	4.4	77	13	170	150	110	79	189	84	110	110	100	22	100	139	1,035	1,174
WR-VC-37	20	6.2	3.4	12	9.8	4.8	60	9.9	120	99	74	57	131	80	79	75	62	14	57	121	717	838
WR-PG-39	3.1 u	0.78	1.4	2	1.4	0.78	14	2.6	32	33	17	15	32	14	20	17	15	2.5	17	22	183	205
WR-VC-39	3.2 u	1.1	1.1	3.1	2	1	15	2.8	31	28	24	16	40	18	25	24	22	4.4	20	25	212	238
WR-PG-41	3.6 u	0.86	1.2	4.1	1.7	0.81	17	7.3	42	37	31	26	57	23	37	31	28	6.9	30	32	292	324
WR-VC-41	2.6 u -BJ	0.76	1	0.66	0.85	0.46	8.6	1.5	20	19	10	8	18	8.7	12	11	9.9	1.5	10	13	110	123
WR-PG-43	3 u	0.75 U	0.81	0.45	0.56	0.38 U	4.6	1.4	10	10	7.7	5.5	13.2	6.5	9.3	7.1	5.9	1.2	6.6	8	70	78
WR-VC-43	3.2 u	0.81	0.82	0.96	1	0.5	12	3.2	25	23	11	9.2	20.2	12	14	13	10	2.1	11	19	130	149
WR-PG-45	2.6 u	0.63 U	0.98	1.3	0.89	0.63	9.7	1.7	23	22	12	9.5	21.5	8.8	14	12	11	1.9	13	15	127	142
WR-VC-45	11 u-B	3.4	1.7	12	6.6	3.7	54	8.9	110	87	79	54	133	56	74	78	74	17	64	87	693	780
West																						
WR-PG-76	4.7 u	1.1	1.3	0.87	1.1	0.67	9.5	2	21	20	9.8	7.9	17.7	8.3	12	9.3	8.8	1.8	9.9	16	109	125
WR-PG-78	8.5 u	1.9	2.5	1.6	1.9	1.5	12	2.8	25	24	12	11	23	9.2	15	11	11	2.1	13	23	133	156
WR-PG-80	5.5 u	1.2	1.8	0.77	1.1	0.76	7.7	2	19	19	9.8	8	17.8	8.4	13	10	9.5	2	11	15	110	124
WR-PG-82	6.6 u	1.6	2.9	1.5	2.2	1.7	17	3.9	31	28	17	14	31	13	19	17	17	3.2	19	29	178	207
WR-PG-84	8.3 u	1.8	2.6	1.8	2.1	1.5	13	3.4	30	29	16	14	30	14	24	16	13	2.7	15	25	174	198
WR-PG-86	5.5 u	1.1	1.2	0.73	1	0.76	6.2	1.5	15	14	6.5	5.3	11.8	5.3	8.1	5.8	5.4	1.2	7.1	12	74	85
WR-PG-88	4.4 u	0.96 U	1.2	1.1	1.2	0.69	12	2	27	25	8.6	7.9	16.5	7.7	14	7.3	6.2	1.2	7.6	18	113	130
WR-PG-90	10	2.1	2.6	2	2.3	1.8	19	4	38	35	15	15	30	13	21	14	13	2.5	16	42	183	225
WR-PG-92	7.8 u	1.5	2.6	1.4	2.1	1.2	14	4.8	26	25	12	9.3	21.3	9.6	15	11	9.4	1.7	13	26	132	158
WR-PG-94	4.4 u	0.94 U	0.94	0.61	0.95	0.54	7.1	1.6	17	17	6.4	6.4	12.8	6.1	9.6	6.6	5.5	1	7	11	83	94
WR-PG-96	5.9 u	1.4	1.3	1.2	1.8	1.2	13	2.7	30	26	10	10	20	7.7	15	8.2	7.4	1.5	9.5	21	125	147
WR-PG-98	5.7 u	0.96	1.1	0.92	1	0.82	6.3	1.4	13	13	6	5.7	11.7	5	8.2	5.5	4.8	1.1	6.2	12	69	80
WR-PG-100	13	3.9	3.8	8.9	6.3	3.4	28	7.4	50	51	22	21	43	19	29	28	28	2.5	33	71	284	355
WR-PG-102	24	7.2	3.6	11	11	8.4	43	10	51	46	17	16	33	16	24	17	14	2.3	18	110	221	331
WR-PG-104	12	5	2.3	2.9	4.3	2.8	25	4.5	52	46	20	20	40	17	28	19	17	3	19	56	241	297

Please refer to the Notes at the end of this table.

Table 10 - Sediment Sampling Analytical Results - Polycyclic Aromatic Hydrocarbons

	Napthalene	2-Methylnapthalene	Acenaphthylene	Acenapthene	Fluorene	Dibenzofuran	Phenanthrene	Athracene	Fluoranthene	Pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(b+k)fluoranthene	Benz(a)anthracene	Chrysene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Total LPAHs	Total HPAHs	Total PAHs
DMEF SL	**2,100**	**670**	**560**	**500**	**540**	**540**	**1,500**	**960**	**1,700**	**2,600**	**--**	**--**	**3,200**	**1,300**	**1,400**	**1,600**	**600**	**230**	**670**	**5,200**	**12,000**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**4,600**	**11,980**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
DMEF ML	**2,400**	**1,900**	**1,300**	**2,000**	**3,600**	**1,700**	**21,000**	**13,000**	**30,000**	**16,000**	**--**	**--**	**9,900**	**5,100**	**21,000**	**3,600**	**4,400**	**1,900**	**3,200**	**29,000**	**69,000**	**--**
WRM 10 to 12																						
East																						
WR-PG-47	5.3 u	2.1	6.1	17	9	4	74	19	340	250	140	110	250	120	170	120	98	22	90	127	1,460	1,587
WR-VC-47	4 u-B	1.2	1.5	0.94	1.1	0.63	12	2.3	30	28	17	13	30	14	19	17	15	2.5	15	19	171	190
WR-VC-49	14	9	2.9	10	9.2	5.1	51	9.5	98	81	58	45	103	48	65	60	53	12	48	106	568	674
WR-VC-51	4.1 u-B	1.7	1.7	3	5.3	2.1	48	7.8	72	59	27	25	52	28	36	30	25	5.7	24	68	332	399
WR-VC-53	5.3 u-B	2.1	2	2.2	2	1	20	4.1	46	41	26	20	46	22	32	27	27	5.3	27	32	273	306
WR-VC-55	8.2 u-B	2.9	0.83	1.8	1.5	1.8	15	2.9	21	18	9.3	7	16.3	9.4	12	10	8.5	1.7	8.3	25	105	130
WR-VC-57	5.2 u-B	1.5	1.4	1.3	1.4	0.84	13	2.5	27	27	17	14	31	14	20	18	15	3.2	16	21	171	192
WR-VC-59	11 u-B	11	2.2	40	38	14	700	160	1,200	960	480	350	830	540	560	550	420	97	340	951	5,497	6,448
WR-PG-61	8.1 u-B	7.8	2.3	1.2	3.2	1.3	22	7	43	39	34	24	58	34	57	25	19	4	19	44	298	342
WR-VC-61	8.1 u-B	3.4	7.3	3.7	3.5	3	33	8.1	120	100	53	49	102	33	63	54	50	7.5	52	59	582	641
WR-PG-63	14 u-B	5.4	9.1	7.5	12	9.4	79	26	210	180	140	86	226	130	190	89	72	14	70	139	1,181	1,320
West																						
WR-PG-106	50	22	14	25	29	20	150	31	280	210	67	55	122	64	110	61	54	11	57	321	969	1,290
WR-VC-106	12 u-B	8.9	2.8	8.9	8.9	3.3	69	16	130	120	56	47	103	64	79	61	41	7.3	38	115	643	758
WR-PG-108	9.7 u-B	4.2	10	7.4	13	6.6	99	56	350	250	97	82	179	110	180	78	61	14	52	190	1,274	1,464
WR-VC-108	15	15	13	14	13	5.1	78	18	140	130	61	55	116	54	77	74	74	9.3	83	166	757	923
WR-VC-110	130	65	53	200	210	82	1,500	200	1,400	1,100	390	350	740	460	620	500	370	90	350	2,358	5,630	7,988
WR-PG-112	7.7 u-B	1.6	2.3	1.5	1.7	1.1	11	3.5	21	20	15	12	27	12	16	14	12	2.1	14	22	138	160
WR-PG-114	5.4 u-B	1.1	2.8	1.5	1.8	1	9.2	3.9	19	17	9.4	7.6	17	7.5	11	8.3	11	1.7	13	20	106	126
WR-VC-114	6.2 u-B	1.6	3.5	5	5.4	2.4	29	6.4	49	40	31	22	53	22	43	25	21	4.2	20	51	277	328
WR-PG-116	6.1 u-B	0.93	1.9	0.85	0.9	0.62	6.1	1.8	14	14	7.1	5.8	12.9	6.7	9.4	7.2	6.2	1.2	7.6	12	79	92
WR-VC-116	7.1 u-B	1.5	1.7	1.3	1.5	0.81	11	2.1	22	21	10	8.7	18.7	9.7	13	12	9.7	2	11	19	119	138
WR-PG-118	5.7 u-B	1.1	0.82	0.73	0.93	0.62	5.4	1.3	11	10	5.5	4.3	9.8	4.7	8.6	5.1	4.6	0.98	5.1	10	60	70
WR-VC-118	17	7.4	4.8	3.9	4.4	2.8	31	5.8	57	53	24	20	44	23	31	27	22	3.9	22	74	283	357
WR-PG-120	7.4 u-B	1.4	0.97	0.83	1.6	1.8	8.2	2.6	15	13	6.3	4.7	11	5.8	8.4	6.1	5.9	1.1	6.6	16	73	89
WR-VC-120	5.4 u	1.6	2.1	1.6	1.8	0.99	13	3.1	24	24	12	10	22	11	17	14	12	2.1	13	23	139	162
WR-PG-122	12 u-B	5.5	4.2	7	8.6	4.5	59	18	76	69	30	27	57	36	57	33	25	5.4	26	102	384	487
WR-VC-122	3.1 u-B	0.78	0.75	0.87	0.78	0.38	5.7	1.4	27	23	16	12	28	8.2	18	11	9.9	1.9	9.9	10	137	147
WR-PG-124	5.4 u-B	1.1	1.6	1.6	1.5	0.8	14	3.6	22	22	8.7	7.5	16.2	9.3	12	9.4	7.7	1.4	8.6	23	109	132
WR-VC-124	3.2 u	1	1.7	1.3	1.3	0.56	12	2.4	25	25	12	11	23	11	16	14	12	2.1	13	20	141	161
WR-PG-126	4 u-B	1	1.2	1.1	1	0.95	16	1.6	26	21	8.1	7	15.1	7.9	12	8	6.5	1.3	7	22	105	127
WR-VC-126	10	2.7	5.8	3.7	3.3	1.4	29	5.6	48	54	23	19	42	19	28	30	31	4	33	60	289	349
WR-PG-128	6.4 u-B	2.5	2.6	2.2	2	0.93	20	4.9	38	40	18	16	34	19	24	22	17	2.9	17	34	214	248
WR-VC-128	10	2.6	5	4.7	3.4	1.9	27	5.2	44	46	16	13	29	15	21	20	19	2.4	21	58	217	275
WR-PG-130	320	440	71	160	230	25	1,500	270	620	950	140	170	310	300	350	330	180	41	180	2,991	3,261	6,252
WR-VC-130	15	10	8.3	23	16	6.9	90	15	110	100	33	33	66	38	47	46	37	6.5	34	177	485	662
WR-PG-132	6.8 u-B	1.5	2.2	0.93	1.5	1	16	3.2	33	32	13	11	24	14	19	15	10	2.2	12	25	161	187
WR-VC-132	33	16	11	15	14	4.6	84	28	150	130	83	65	148	89	97	99	65	13	56	201	847	1,048
WR-PG-134	5 u-B	1	3.5	1.9	1.4	0.66	10	3.8	31	32	17	14	31	16	22	18	14	2.9	16	22	183	205
WR-VC-134	9.1	4.5	4.4	15	8.6	3.6	43	9	56	64	25	23	48	27	35	34	30	4	30	94	328	422

Notes:
Concentrations reported in µg/kg
DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)
Shading indicates an exceedance of DMEF-SL; Italics indicates an exceedence of DMEF-BT; Bold indicates an exceedence of DMEF-ML.

Columbia Analytical Services (CAS) Qualifiers:
U = The compound was analyzed for, but was not detected at or above the indicated detection limit; D = The reported result is from a dilution.
B = The compound was found in the asociated method blank at a level that is significant to the sample result.

Tetra Tech EC Qualifiers:
u = The result should be considered not detected at the indicated detection limit.

See Volume II of this report for more analytical testing details.

Table 11 - Summary of DMEF-SL Exceedances for PAHs

PAHs	Surface Samples			Subsurface Samples		
	Total Number Samples Analyzed	Total Number Samples Exceeding SL	% of Samples Exceeding SL	Total Number Samples Analyzed	Total Number Samples Exceeding SL	% of Samples Exceeding SL
Acenapthene	82	4	5%	72	6	8%
Acenaphthylene	82	2	2%	72	2	3%
Anthracene	82	3	4%	72	4	6%
Fluorene	82	4	5%	72	6	8%
Naphthalene	82	2	2%	72	2	3%
Phenanthrene	82	8	10%	72	7	10%
2-Methylnapthalene	82	2	2%	72	3	4%
Total LPAHs	82	4	5%	72	6	8%
Benz(a)anthracene	82	6	7%	72	5	7%
Benzo(a)pyrene	82	7	9%	72	5	7%
Benzo(b+k)fluoranthene	82	3	4%	72	3	4%
Benzo(g,h,i)perylene	82	10	12%	72	5	7%
Chrysene	82	7	9%	72	5	7%
Dibenz(a,h)anthracene	82	6	7%	72	3	4%
Fluoranthene	82	7	9%	72	6	8%
Indeno(1,2,3-cd)pyrene	82	10	12%	72	5	7%
Pyrene	82	6	7%	72	5	7%
Total HPAH	82	7	9%	72	5	7%

Notes:
DMEF SL = Dredge Material Evaluation Framework Screening Level

Table 12 - Sediment Sampling Analytical Results - Pesticides

	4,4'-DDE	4,4'-DDD	4,4'-DDT	Total DDT	alpha-BHC	beta-BHC	gamma-BHC (Lindane)	delta-BHC	Heptachlor	Aldrin
DMEF SL	--	--	--	**6.9**	--	--	**10**	--	**10**	**10**
DMEF BT	--	--	--	**50**	**10**	--	--	--	--	--
DMEF ML	--	--	--	**69**	--	--	--	--	--	--
Reference Locations										
WR-PG-01-REF	0.32	0.16 U	0.41	0.7	0.24 U	0.76 U	0.35 U	0.26 U	0.27 U	0.16 U
WR-PG-02-REF	0.53	0.2 U	0.27 U	0.5	0.24 U	0.75 U	0.34 U	0.25 U	0.27 U	0.15 U
WR-PG-03-REF	0.86	0.16 U	0.57	1.4	0.32 U	1.1 U	0.47 U	0.34 U	0.37 U	0.21 U
WRM 0 to 3										
East										
WR-PG-01	2.4	0.86	1.7	5	0.39 U	1.3 U	1.7 U	0.42 U	0.6 U	0.27 U
WR-PG-02	2.1	0.74	1.9	4.7	0.4 U	1.3 U	1.6 U	0.43 U	0.46 U	0.34 U
WR-PG-03	2.1	1.4	1.7	5.2	0.37 U	1.2 U	1.2 U	0.39 U	0.42 U	0.24 U
WR-VC-03	3.8	3.3	1.2 U	7.1	0.3 U	0.96 U	0.44 U	0.32 U	0.34 U	0.2 U
West										
WR-PG-04	2.2	1.8	3.8	7.8	0.3 U	0.95 U	0.44 U	0.32 U	0.34 U	0.26 U
WR-VC-04	3.3	3.1	1.7 U	6.4	0.27 U	2.3 U	0.39 U	0.29 U	0.31 U	0.17 U
WRM 3 to 6										
East										
WR-VC-05	4.2	3.2	2.2 U	7.4	0.31 U	1.4 U	0.46 U	0.33 U	0.35 U	0.2 U
WR-VC-07	4.6	3.7	4.7	13	0.29 U	0.92 U	0.43 U	0.31 U	0.33 U	0.19 U
WR-PG-09	2	0.9	1.9	4.8	0.35 U	1.1 U	0.51 U	0.37 U	0.49 U	0.22 U
WR-VC-09	3.8	3.4	1.1	8.3	0.29 U	0.91 U	0.42 U	0.31 U	0.33 U	0.41 U
WR-PG-11	2.4	1.3	3.1	6.8	0.37 U	1.2 U	1.7 U	0.39 U	0.55 U	0.24 U
WR-VC-11	4	3.5	2	9.5	0.29 U	0.93 U	0.43 U	0.31 U	0.33 U	0.19 U
WR-PG-13	1.7	2	5	8.7	0.33 U	1.1 U	1.1 U	0.35 U	0.52 U	0.21 U
WR-VC-13	4.4	3.9	1.7	10	0.3 U	0.93 U	0.43 U	0.31 U	0.33 U	0.19 U
WR-PG-15	3.3	1.6	2	6.9	0.32 U	1.1 U	0.47 U	0.35 U	0.37 U	0.21 U
WR-VC-15	3.9	3.6	1.9	9.4	0.29 U	0.93 U	0.43 U	0.31 U	0.78 U	0.41 U
WR-PG-17	2.5	2.3	1.2	6	0.34 U	1.1 U	0.49 U	0.36 U	1 U	0.28 U
WR-VC-17	3.2	3.7	1.6 U	6.9	0.28 U	0.9 U	0.48 U	0.3 U	0.32 U	0.44
WR-PG-19	3	2	1.6	6.6	0.34 U	1.1 U	0.49 U	0.36 U	0.38 U	0.22 U
WR-VC-19	2.9	1.9	3.3	8.1	0.3 U	1.3 U	0.44 U	0.32 U	0.34 U	0.4 U
WR-PG-21	2.7	7.1	1.5 U	9.8	0.3 U	0.94 U	0.58 U	0.32 U	0.34 U	0.55 U
WR-PG-23	6.9	8.5	4.2	19.6	0.31 U	1.3 U	0.47 U	0.36 U	1.1 U	1.1
WR-VC-23	2.6	3.2	3.5	9.3	0.23 U	0.72 U	0.33 U	0.24 U	0.26 U	0.71 U
WR-PG-27	2	1.7 U	19	21	0.21 U	0.65 U	0.3 U	0.22 U	0.23 U	0.14 U
West										
WR-PG-06	2.2	1.4	1.5	5.1	0.35 U	1.2 U	1.7 U	0.38 U	0.4 U	0.23 U
WR-VC-06	5.2	7.7	3.2 U	12.9	0.33 U	1.1 U	0.48 U	0.35 U	0.37 U	0.21 U
WR-VC-08	6.4	9.8	2.7 U	16.2	0.31 U	0.98 U	0.45 U	0.33 U	0.35 U	0.2 U
WR-VC-10	7.8	11	14	32.8	0.31 U	0.98 U	1 U	0.33 U	0.35 U	0.2 U
WR-PG-12	2.5	2.7	4.3	9.5	0.32 U	1 U	0.46 U	0.34 U	1 U	0.2 U
WR-VC-12	9	12	5.1	26.1	0.29 U	2.4 U	1 U	0.3 U	0.32 U	0.18 U
WR-PG-14	2.8	2.8	1.6	7.2	0.38 U	1.2 U	0.55 U	0.4 U	0.64 U	0.24 U
WR-VC-14	6.8	8.1	6.4	21.3	0.29 U	4.5 U	1 U	0.3 U	0.32 U	0.3 U
WR-PG-16	4.4	4.4	1.3	10.1	0.3 U	0.93 U	1.3 U	0.31 U	1 U	0.74 U
WR-VC-16	5.5	7.3	1 U	12.8	0.27 U	1.5 U	1 U	0.29 U	0.3 U	0.29 U
WR-PG-18	4.3	4.8	9.5	18.6	0.31 U	1.9 U	0.5 U	0.33 U	0.35 U	0.58 U
WR-VC-18	5.6	5.2	4.3	15.1	0.3 U	1.3 U	0.44 U	0.32 U	0.34 U	0.19 U
WR-VC-20	6.6	9.8	6.9	23.3	0.29 U	0.92 U	0.42 U	0.31 U	0.33 U	0.19 U
WR-PG-22	4.7	3.6	20	28.3	0.39 U	1.5 U	0.56 U	0.41 U	0.44 U	0.25 U
WR-VC-22	6.2	6.6	6.5	19.3	0.33 U	1.1 U	0.48 U	0.35 U	0.37 U	0.22 U
WR-PG-24	8.8	10	4.4	23.2	0.34 U	2.3 U	0.5 U	0.37 U	0.39 U	0.84 U
WR-VC-24	4.2	4.3	1.9	10.4	0.33 U	1.1 U	0.48 U	0.35 U	0.37 U	0.21 U
WR-PG-26	0.17 U	0.52	0.12 U	0.52	0.19 U	0.61 U	0.28 U	0.21 U	0.22 U	0.13 U
WR-VC-26	4.5	7.5	3.8	15.8	0.3 U	0.96 U	0.44 U	0.32 U	0.34 U	0.2 U
WR-VC-28	12	14	1,200	***1,226***	0.33 U	1.1 U	0.48 U	0.35 U	0.37 U	0.21 U
WR-PG-30	3.5	4.5 U	5.3	8.8	0.36 U	1.2 U	0.63 U	0.38 U	0.78 U	0.27 U
WR-VC-30	7.7	12	3.6	23.3	0.33 U	1.1 U	0.48 U	0.35 U	0.37 U	0.21 U
WR-VC-32	6.8	9.2	7.5	23.5	0.31 U	0.97 U	0.45 U	0.33 U	0.35 U	0.2 U
WR-PG-34	4.1	3.4	16	23.5	0.41 U	1.4 U	0.6 U	0.44 U	0.98 U	0.27 U
WR-VC-34	7	11	5.8	23.8	0.34 U	1.1 U	0.49 U	0.36 U	0.38 U	0.22 U
WR-PG-36	2.8	4	2.3	9.1	0.29 U	0.9 U	0.42 U	0.3 U	0.32 U	0.18 U
WR-VC-36	5.9	11	0.82 U	16.9	0.34 U	1.2 U	0.49 U	0.36 U	0.38 U	0.22 U
WR-PG-42	2.7 U	1.9	0.28 U	1.9	0.39 U	0.8 U	0.37 U	0.38 U	0.33	1 U
WR-VC-42	0.81	5.7	2.3	8.8	0.21 U	0.67 U	0.39 U	0.23 U	0.27 U	0.63 U
WR-VC-46	1.1 U	15	3 U	15	0.24 U	4.5 U	1.3 U	1 U	0.55 U	1.7 U
WR-PG-48	5.1	11	3.7	19.8	0.33 U	1.1 U	0.52 U	0.35 U	1 U	0.29 U
WRM 6 to 8										
East										
WR-PG-29	2.2	0.9 U	1.6 U	2.2	0.36 U	1.2 U	0.53 U	0.39 U	0.78 U	0.23 U
WR-VC-29	2.9	1.7	1.4	6	0.3 U	0.95 U	0.44 U	0.32 U	0.34 U	0.33 U
WR-VC-31	4.4	3.2	1.8 U	7.6	0.3 U	0.96 U	0.44 U	0.32 U	0.34 U	1 U
West										
WR-PG-50	12	26	34	***72***	0.35 U	1.2 U	1 U	1 U	1 U	1.4
WR-VC-50	10 U	46	27	***73***	3.3 U	9.8 U	10 U	5.5 U	3.5 U	10 U
WR-PG-52	7.3	24	8.9	40.2	0.31 U	0.98 U	2.7 U	1 U	0.35 U	0.83 U
WR-VC-52	10 U	30	1.6 U	30	2.7 U	8.6 U	12 U	10 U	3.1 U	26 U
WR-PG-54	5.4	13	79	***97.4***	0.36 U	1.8 U	0.56 U	0.46 U	0.4 U	0.86 U
WR-VC-54	25 U	32	1.8 U	32	3 U	9.5 U	11 U	3.2 U	3.4 U	10 U
WR-PG-56	9.6	46	78	***133.6***	0.29 U	0.92 U	0.85 U	0.31 U	1 U	0.19 U
WR-VC-56	160 U	680	490	***1170***	0.27 U	0.86 U	0.85 U	1 U	0.6	1 U
WR-PG-58	19	94	56	***169***	1 U	3.6	1.4 U	0.29 U	1 U	0.17 U
WR-VC-58	4.4 j	22	48 j-D	***74.4***	0.22 U	0.68 U	0.42 U	0.38 U	0.93 U	0.14 U
WR-PG-60	16	7.1 U	9.3	25.3	0.28 U	0.89 U	0.41 U	0.3 U	0.32 U	1.1 U
WR-VC-60	3.3	4.8	2.2	10.3	0.27 U	1.4	1.6 U	0.24 U	0.36 U	1 U
WR-PG-62	4.3	6.3	9.2	19.8	0.33 U	1.1 U	0.53 U	0.35 U	1.2 U	0.21 U
WR-VC-62	11	31	8.3	*50.3*	0.3 U	0.96 U	0.44 U	0.32 U	0.34 U	0.72 U
WR-PG-64	12	25	260	***297***	0.36 U	1.2 U	0.78 U	0.38 U	0.63 U	0.23 U
WR-VC-64	8.2	11	38	*57.2*	0.34 U	1.1 U	0.5 U	0.37 U	0.39 U	0.22 U
WR-PG-66	6	9.9	54	***69.9***	0.38 U	1.3 U	0.56 U	0.41 U	0.79 U	0.25 U
WR-VC-66	13	21	35	***69***	0.31 U	0.98 U	0.45 U	0.33 U	0.35 U	0.2 U
WR-PG-68	69 U	620	430	***1,050***	0.36 U	1.2 U	1.1 U	1.2 U	0.59 U	0.23 U
WR-VC-68	7.5	16	67	***90.5***	0.32 U	1.1 U	0.5 U	0.34 U	0.36 U	0.21 U
WR-PG-70	30	190	320	***540***	0.35 U	1.1 U	0.51 U	0.37 U	1 U	0.66
WR-VC-70	57	25	120	***202***	0.31 U	0.97 U	0.45 U	0.33 U	0.35 U	0.2 U
WR-PG-72	26	63	800	***889***	0.4 U	1.3 U	0.58 U	0.99 U	0.87 U	0.47 U
WR-VC-72	8.8	18	13	39.8	0.3 U	0.95 U	0.44 U	0.32 U	0.34 U	0.19 U
WR-PG-74	3.9	3	8	14.9	0.39 U	1.3 U	0.56 U	0.41 U	0.73 U	0.25 U

	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Chlordane	Dieldrin	Endrin	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin Aldehyde	Endrin Ketone
DMEF SL	--	--	--	**10**	**10**	--	--	--	--	--	--
DMEF BT	--	--	--	**37**	--	--	--	--	--	--	--
DMEF ML	--	--	--	--	--	--	--	--	--	--	--
Reference Locations											
WR-PG-01-REF	0.45 U	0.095 U	0.18 U	7.1 U	0.32 U	0.09 U	0.19 U	0.15 U	0.64 U	0.13 U	0.098 U
WR-PG-02-REF	0.44 U	0.13 U	0.17 U	1.9 U	0.28 U	0.088 U	0.11 U	0.14 U	0.62 U	0.13 U	0.096 U
WR-PG-03-REF	0.85 U	0.19	0.24 U	4.2 U	0.43 U	0.13 U	0.15 U	0.2 U	0.85 U	0.18 U	0.14 U
WRM 0 to 3											
East											
WR-PG-01	0.96 U	1.1 U	0.29 U	11 U	1.1 U	0.32 U	0.18 U	0.27	1.1 U	0.22 U	0.18 U
WR-PG-02	1.4 U	1.1 U	0.3 U	13 U	1.1 U	0.16 U	0.19 U	0.41	1.1 U	0.22 U	0.17 U
WR-PG-03	0.91 U	0.66	0.27 U	8.6 U	1 U	0.14 U	0.17 U	0.23	1 U	0.2	0.16 U
WR-VC-03	0.56 U	0.69	0.22 U	14 U	0.16 U	0.12 U	0.16 U	0.18 U	1 U	0.2 U	0.13 U
West											
WR-PG-04	0.56 U	0.12 U	0.88 U	17 U	1 U	0.12 U	0.14 U	0.77 U	1 U	0.17 U	0.13 U
WR-VC-04	0.5 U	0.56 U	0.2 U	5.8 U	1 U	0.11 U	0.17	0.16 U	1 U	0.29 U	0.48 U
WRM 3 to 6											
East											
WR-VC-05	0.58 U	0.88 U	0.23 U	9.2 U	0.095 U	0.12 U	0.3 U	0.22 U	1 U	0.17 U	1 U
WR-VC-07	0.54 U	1.1	0.22 U	14 U	0.088 U	1.5 U	0.26	0.26	1 U	0.43 U	1 U
WR-PG-09	0.64 U	0.39	0.26 U	8.4 U	1 U	0.14 U	0.16 U	0.21 U	1 U	0.19 U	0.97 U
WR-VC-09	0.54 U	0.53 U	0.37	9.3 U	0.17 U	0.56 U	0.28 U	0.18 U	1 U	1 U	0.61 U
WR-PG-11	0.68 U	1 U	0.27 U	7 U	1 U	0.14 U	1 U	0.97 U	1 U	0.67	0.15 U
WR-VC-11	0.54 U	0.65	0.38	14 U	0.82 U	0.63 U	0.33 U	0.18 U	1 U	0.29 U	0.65 U
WR-PG-13	0.6 U	0.63	0.24 U	14 U	1 U	0.85 U	0.15 U	0.2 U	1 U	0.69 U	1 U
WR-VC-13	0.55 U	0.75	0.35	14 U	1 U	0.12 U	0.14 U	0.18 U	1 U	0.16 U	0.19 U
WR-PG-15	0.6 U	0.44	0.24 U	3.7 U	1 U	0.13 U	1 U	0.25 U	1 U	0.32	0.14 U
WR-VC-15	0.54 U	0.59 U	0.29	11 U	0.13 U	0.88 U	0.33 U	0.18 U	1 U	0.32 U	1.2 U
WR-PG-17	0.62 U	0.42	0.25 U	2.9 U	0.11 U	0.36 U	1 U	1 U	1.8 U	1 U	0.44 U
WR-VC-17	1	0.76	0.21 U	13 U	0.93 U	0.88 U	0.13 U	0.87 U	0.12 U	0.16 U	0.77
WR-PG-19	0.63 U	0.14 U	0.25 U	3.9 U	1 U	0.13 U	0.16 U	0.24 U	1 U	0.24	0.14 U
WR-VC-19	0.56 U	0.21	0.22 U	7.6 U	0.092 U	0.12 U	0.14 U	0.18 U	1 U	1 U	1.2 U
WR-PG-21	0.55 U	0.66	0.22 U	4.7 U	1 U	1.9 U	0.42	1 U	1 U	0.17 U	1 U
WR-PG-23	1.1 U	1.1 U	0.53 U	12 U	0.094 U	1.7 U	0.55 U	1.1 U	0.13 U	0.59 U	1.7 U
WR-VC-23	0.75	1.1	0.17 U	7.7 U	0.069 U	0.18	0.11 U	0.41	0.89 U	1.5 U	0.74 U
WR-PG-27	0.38 U	1 U	0.15 U	13 U	0.067 U	2.7 U	0.67 U	1 U	2.5	2.6 U	2.1 U
West											
WR-PG-06	0.85 U	0.63	0.26 U	11 U	1 U	0.64 U	0.17 U	0.21 U	1 U	0.2 U	0.35 U
WR-VC-06	0.61 U	0.49 U	0.24 U	4.1 U	0.22 U	1.4 U	0.15 U	0.2 U	1 U	0.18 U	0.44 U
WR-VC-08	0.57 U	0.75	0.23 U	6.4 U	0.094 U	0.12 U	0.29 U	0.19 U	1 U	0.17 U	1 U
WR-VC-10	0.57 U	1.3 U	0.55 U	10 U	1 U	0.12 U	0.14 U	0.19 U	1 U	0.17 U	0.92 U
WR-PG-12	0.58 U	0.6	0.23 U	5.9 U	1 U	0.61 U	0.15 U	0.23 U	1 U	0.17 U	0.21 U
WR-VC-12	0.76 U	1 U	0.21 U	37 U	0.087 U	0.52 U	0.33	0.17 U	1 U	0.16 U	1.2 U
WR-PG-14	0.86 U	0.57	0.28 U	7.6 U	1 U	0.39 U	0.18 U	0.23 U	0.25 U	0.28	0.16 U
WR-VC-14	1 U	0.57 U	0.48 U	5 U	0.087 U	0.33 U	0.13 U	0.22	1 U	1 U	1 U
WR-PG-16	0.55 U	1 U	1 U	26	1 U	0.88	0.37 U	0.18 U	1 U	2.1 U	1 U
WR-VC-16	0.54 U	1.4	0.2 U	7.6 U	0.081 U	0.27 U	0.13 U	0.16 U	1 U	0.56 U	1 U
WR-PG-18	2 U	0.47	0.23 U	18 U	1 U	0.25	0.14 U	0.58 U	1 U	0.55 U	0.16 U
WR-VC-18	0.56 U	0.27 U	0.22 U	5.5 U	0.091 U	0.12 U	0.17 U	0.18 U	1 U	0.28 U	1 U
WR-VC-20	0.55 U	1.2	0.21 U	12 U	0.088 U	0.31 U	0.29 U	0.18 U	0.78 U	0.16 U	1 U
WR-PG-22	0.72 U	0.6	0.28 U	13 U	1.1 U	1.1 U	1.1 U	0.56 U	1.1 U	0.51	1.1 U
WR-VC-22	0.7 U	0.65 U	0.24 U	13 U	0.099 U	0.79 U	0.32 U	0.2 U	1 U	0.32 U	0.6 U
WR-PG-24	1.1 U	1.7	0.25 U	37 U	1 U	1 U	0.16 U	0.21 U	1 U	0.71 U	1.1 U
WR-VC-24	0.6 U	0.52	0.24 U	3.7 U	0.099 U	0.13 U	0.19 U	0.2 U	1 U	0.18 U	0.26 U
WR-PG-26	0.36 U	0.076 U	0.14 U	1.6 U	0.058 U	0.072 U	0.087 U	0.12 U	0.15	0.11 U	0.079 U
WR-VC-26	0.69 U	0.66	0.22 U	14 U	0.11 U	0.14 U	0.14 U	0.18 U	1 U	0.19 U	1 U
WR-VC-28	0.6 U	0.75 U	0.24 U	8 U	0.2 U	1.7 U	0.24 U	0.2 U	1 U	0.18 U	1.1 U
WR-PG-30	0.66 U	0.18 U	0.26 U	3.1 U	0.14 U	0.14 U	0.17 U	0.22 U	1 U	0.2 U	0.15 U
WR-VC-30	0.61 U	0.84	0.24 U	12 U	0.1 U	0.13 U	0.15 U	0.2 U	1 U	0.18 U	0.49 U
WR-VC-32	0.57 U	0.78 U	0.29	7 U	1 U	1 U	0.14 U	0.19 U	1 U	0.25 U	1.4 U
WR-PG-34	1.1 U	0.4	0.3 U	11 U	0.13 U	0.19 U	0.19 U	0.25 U	1.1 U	0.43	0.32
WR-VC-34	0.62 U	0.77	0.25 U	6.1 U	0.21 U	0.13 U	0.16 U	0.2 U	1 U	0.28 U	1.1
WR-PG-36	0.53 U	0.13 U	0.21 U	3.6 U	0.086 U	0.2 U	0.15 U	0.17 U	1 U	0.16 U	0.49
WR-VC-36	0.62 U	0.27	0.25 U	6.3 U	0.11 U	0.16 U	0.16 U	0.2 U	1 U	0.19 U	0.32 U
WR-PG-42	0.47 U	1 U	1.8 U	17 U	0.076 U	1.1 U	1.6 U	0.15 U	1 U	1 U	0.11 U
WR-VC-42	0.39 U	0.96 U	0.16 U	8.1 U	1 U	0.42 U	0.095 U	0.79 U	0.085 U	0.31 U	0.56 U
WR-VC-46	1 U	1 U	1.3 U	50 U	1 U	1.4 U	0.11 U	0.14 U	0.094 U	0.13 U	0.7 U
WR-PG-48	0.61 U	0.62 U	0.24 U	14 U	1 U	1 U	0.33	0.2 U	0.16 U	1 U	1.1 U
WRM 6 to 8											
East											
WR-PG-29	0.67 U	0.6	0.27 U	11 U	0.12 U	0.14 U	0.17 U	0.43	0.28 U	0.24 U	0.15 U
WR-VC-29	0.56 U	0.58	0.22 U	3.5 U	1 U	0.12 U	0.45 U	0.18 U	1 U	0.17 U	0.13 U
WR-VC-31	0.79 U	0.84	0.72	14 U	1 U	0.12 U	0.59	0.18 U	1 U	1 U	0.13 U
West											
WR-PG-50	0.65 U	1 U	1 U	14 U	1.3 U	0.89 U	1.1 U	0.58 U	1.5	1 U	1 U
WR-VC-50	8.4 U	10 U	10 U	300 U	10 U	8.4 U	11 U	10 U	13 U	30 U	18 U
WR-PG-52	0.58 U	1 U	1 U	21 U	0.094 U	1 U	0.68 U	2.6 U	1.6 U	2 U	1.1 U
WR-VC-52	7 U	15 U	8.2	320 U	10 U	10 U	10 U	6.3 U	25 U	10 U	12 U
WR-PG-54	0.65 U	1 U	1 U	14 U	0.11 U	0.61	0.16 U	0.21 U	1 U	0.73 U	0.23 U
WR-VC-54	5.8 U	10 U	8.2 U	280 U	10 U	5.2 U	1.4 U	1.8 U	1.3 U	3.2 U	1.3 U
WR-PG-56	0.54 U	1.2 U	0.22 U	22 U	1 U	1.1 U	0.14 U	0.93 U	0.12 U	0.16 U	1.2 U
WR-VC-56	1.4	3.1 U	0.94 U	19 U	1 U	16 U	1 U	1.8 U	0.63 U	1 U	1 U
WR-PG-58	0.56 U	86	1.1 U	14 U	1 U	5.8	1 U	5.9 U	0.11 U	1 U	4.4 U
WR-VC-58	0.4 U	0.83 j-P	0.99 U	16 U	0.71 U	0.71 U	0.098 U	1.1 U	0.77 j	0.12 U	1.2 j
WR-PG-60	4.4	4.2	0.53	19 U	1 U	1 U	0.42 U	1 U	1 U	1.6 U	5 U
WR-VC-60	0.42 U	1.1 U	0.17 U	29 U	1 U	1 U	1 U	1 U	1 U	1.1 U	0.37 U
WR-PG-62	0.62 U	1 U	0.25 U	12 U	0.11 U	0.13 U	0.16 U	0.2 U	0.16 U	0.3 U	0.14 U
WR-VC-62	0.98 U	1.4 U	0.22 U	19 U	0.98 U	0.77	0.14 U	2.9 U	0.86 U	0.6 U	0.88
WR-PG-64	0.66 U	1 U	0.26 U	21 U	1 U	1 U	0.17 U	1 U	1 U	0.34 U	1 U
WR-VC-64	0.64 U	0.84	0.25 U	7.6 U	1 U	1 U	0.27 U	1 U	1 U	0.19 U	1.3 U
WR-PG-66	0.71 U	1 U	0.28 U	15 U	1 U	1 U	0.18 U	1 U	0.16 U	0.51	2.8 U
WR-VC-66	0.57 U	1.2 U	0.23 U	12 U	0.094 U	0.12 U	0.15 U	0.19 U	1 U	0.17 U	0.69 U
WR-PG-68	1.2 U	7.3 U	1 U	33 U	1 U	1.5 U	1 U	0.43 U	1.5 U	1 U	2.2 U
WR-VC-68	0.59 U	1 U	0.23 U	37 U	1 U	0.77 U	0.18 U	0.19 U	1 U	0.18 U	1 U
WR-PG-70	0.65 U	21 U	0.39	20 U	0.11 U	1.8 U	1.2	1.2 U	0.14 U	1.3 U	1 U
WR-VC-70	0.67 U	2.5	0.23 U	16 U	0.093 U	0.39	0.14 U	0.19 U	1 U	1 U	1 U
WR-PG-72	0.74 U	11 U	0.29 U	19 U	0.58 U	1.3 U	0.56	0.24 U	1.4 U	0.9	1.1 U
WR-VC-72	0.63 U	1 U	0.22 U	20 U	1 U	0.51 U	0.2 U	0.18 U	0.13 U	1 U	1 U
WR-PG-74	0.72 U	1.1 U	0.28 U	12 U	0.12 U	0.15 U	0.23 U	0.23 U	0.37 U	0.24 U	1.1 U

	Methoxychlor	Toxaphene	Oxychlordane	2,4'-DDE	2,4'-DDD	2,4'-DDT	cis-Nonachlor	trans-Nonachlor	Mirex
DMEF SL	--	--	--	--	--	--	--	--	--
DMEF BT	--	--	--	--	--	--	--	--	--
DMEF ML	--	--	--	--	--	--	--	--	--
Reference Locations									
WR-PG-01-REF	0.32 U	12 U	0.26 U	0.37 U	0.26 U	0.24 U	0.26 U	0.098 U	0.26 U
WR-PG-02-REF	0.31 U	12 U	0.25 U	0.36 U	0.25 U	0.24 U	0.25 U	0.21	0.25 U
WR-PG-03-REF	0.43 U	43 U	0.34 U	0.49 U	0.34 U	0.32 U	0.34 U	0.27	0.34 U
WRM 0 to 3									
East									
WR-PG-01	0.52 U	25 U	0.42 U	0.6 U	1.1 U	2.1 U	0.42 U	0.73	0.42 U
WR-PG-02	0.78 U	20 U	0.43 U	0.62 U	0.43 U	2 U	0.43 U	0.6	0.43 U
WR-PG-03	0.57 U	18 U	0.39 U	0.56 U	0.39 U	1.5 U	0.39 U	0.47	0.39 U
WR-VC-03	0.4 U	29 U	0.32 U	0.72	0.52 U	1 U	0.39	0.79 U	0.32 U
West									
WR-PG-04	0.4 U	43 U	0.32 U	0.46 U	1.1 U	1.7 U	0.32 U	1.5	0.32 U
WR-VC-04	0.36 U	45 U	0.29 U	0.41 U	0.94 U	2.3 U	0.29 U	1.4 U	0.29 U
WRM 3 to 6									
East									
WR-VC-05	0.42 U	50 U	0.33 U	0.48 U	0.93 U	1.7 U	0.43	1.4 U	0.33 U
WR-VC-07	0.39 U	50 U	0.31 U	0.44 U	0.63 U	2.3 U	0.31 U	1.7	0.31 U
WR-PG-09	0.74 U	17 U	0.37 U	0.53 U	0.37 U	2 U	0.37 U	0.68	0.37 U
WR-VC-09	0.38 U	25 U	0.31 U	0.44 U	0.43 U	1.1 U	0.33	0.65	0.31 U
WR-PG-11	0.56 U	35 U	0.39 U	1 U	0.39 U	2.4 U	0.39 U	2.6	0.39 U
WR-VC-11	0.39 U	34 U	0.31 U	0.45 U	0.53 U	1 U	0.31 U	0.74 U	0.31 U
WR-PG-13	0.99 U	41 U	0.52 U	0.67 U	0.35 U	3.7 U	0.35 U	1.4	0.35 U
WR-VC-13	0.39 U	39 U	0.31 U	0.45 U	0.68 U	1 U	0.42	0.95	0.31 U
WR-PG-15	0.43 U	50 U	0.35 U	0.5 U	0.35 U	2.2 U	0.35 U	0.93	0.35 U
WR-VC-15	0.39 U	33 U	1 U	0.47 U	0.61 U	2.2	0.36	1	0.31 U
WR-PG-17	0.45 U	50 U	0.36 U	1 U	0.78 U	2.1 U	0.36 U	1.1 U	0.71 U
WR-VC-17	1.8 U	90 U	0.3 U	0.43 U	0.3 U	3 U	0.33 U	2.2 U	0.71 U
WR-PG-19	0.45 U	40 U	0.36 U	0.52 U	0.36 U	2.2 U	0.36 U	1.3	1 U
WR-VC-19	1.4	41 U	0.32 U	0.46 U	1.1 U	1.8 U	0.32 U	1.5 U	0.32 U
WR-PG-21	0.4 U	49 U	0.32 U	1.1 U	1 U	4.7 U	0.32 U	2.3 U	0.68 U
WR-PG-23	0.41 U	75 U	0.57 U	3.2	3 U	1.1 U	0.48 U	5.1	0.38
WR-VC-23	0.3 U	65 U	0.24 U	0.83 U	1.9 U	3.7	0.29 U	2.5 U	0.24 U
WR-PG-27	0.27 U	160 U	1 U	2.9 U	12 U	5.3	0.22 U	3.3 U	0.22 U
West									
WR-PG-06	0.47 U	18 U	0.38 U	0.54 U	0.38 U	2.5 U	0.38 U	0.9	0.38 U
WR-VC-06	0.44 U	31 U	0.35 U	0.5 U	0.92 U	1.9 U	0.35 U	1.6	0.35 U
WR-VC-08	0.43 U	39 U	0.38 U	1.1 U	0.33 U	3.5 U	0.33 U	1.6 U	1 U
WR-VC-10	0.41 U	71 U	1 U	0.47 U	1.6 U	4.2 U	0.45 U	2.2 U	0.33 U
WR-PG-12	0.42 U	27 U	0.34 U	0.48 U	0.34 U	2.3 U	0.34 U	0.99	0.34 U
WR-VC-12	0.38 U	45 U	0.32 U	1 U	2.5 U	4.2 U	0.3	3.4	0.3 U
WR-PG-14	0.78 U	79 U	0.4 U	0.58 U	0.4 U	2.5 U	0.4 U	0.47	0.4 U
WR-VC-14	2.5	55 U	0.3 U	0.84 U	1 U	3.2	0.3 U	2.4 U	0.3 U
WR-PG-16	0.39 U	140 U	1.2	1.1 U	1.5 U	3.3 U	0.75 U	2 U	0.31 U
WR-VC-16	0.36 U	51 U	0.29 U	0.47 U	1.2 U	2.9 U	0.29 U	1.6 U	0.29 U
WR-PG-18	0.41 U	65 U	0.33 U	0.5 U	0.33 U	3.2 U	0.33 U	0.64	0.33 U
WR-VC-18	0.62	89 U	0.32 U	0.88 U	1.1 U	2.5 U	0.35 U	1.5 U	0.32 U
WR-VC-20	0.39 U	52 U	0.31 U	1.3 U	1.4 U	5	0.31 U	1.9	0.31 U
WR-PG-22	1.6	63 U	0.41 U	0.94 U	0.41 U	3.9 U	0.41 U	1.3	0.41 U
WR-VC-22	0.43 U	75 U	0.39 U	0.7 U	0.64 U	2.9 U	0.46	0.93 U	0.35 U
WR-PG-24	1.1 U	110 U	0.37 U	2.7 U	2.3 U	7.8	0.37 U	5.6	0.37 U
WR-VC-24	0.43 U	20 U	0.35 U	0.59 U	1 U	1.9 U	0.35 U	0.79 U	0.35 U
WR-PG-26	0.26 U	9.2 U	1 U	0.29 U	0.21 U	0.2 U	0.21 U	0.079 U	0.21 U
WR-VC-26	0.4 U	25 U	0.32 U	0.59	0.6 U	2.7 U	0.32	0.86 U	0.32 U
WR-VC-28	0.43 U	74 U	0.35 U	1.2 U	0.6 U	3.1	0.79	2	0.4 U
WR-PG-30	0.47 U	47 U	0.38 U	0.54 U	0.64 U	2.7 U	0.38 U	0.96 U	0.38 U
WR-VC-30	0.44 U	41 U	0.35 U	1.3	1.3 U	4.8	0.79 j-JP	1.7	0.35 U
WR-VC-32	0.41 U	79 U	0.33 U	0.47 U	0.56 U	2.8 U	0.67	1.4 U	0.33 U
WR-PG-34	0.55 U	55 U	0.44 U	0.63 U	0.44 U	3.7 U	0.44 U	0.82	0.44 U
WR-VC-34	0.45 U	67 U	0.36 U	1.1 U	0.36 U	2.8	0.68	1.6 U	0.36 U
WR-PG-36	0.38 U	33 U	0.3 U	0.64 U	1 U	2.5 U	0.3 U	0.88	0.3 U
WR-VC-36	0.45 U	37 U	0.36 U	0.96 U	0.36 U	3.3 U	0.36 U	1 U	0.36 U
WR-PG-42	1.8 U	110 U	1	0.78 U	1 U	0.95 U	1.6 U	0.68 U	0.27 U
WR-VC-42	1 U	33 U	0.23 U	0.42	1 U	2.1	1 U	0.67	0.23 U
WR-VC-46	2.7 U	61 U	0.25 U	1.5 U	1.3 U	6.3	1.5 U	1.8 U	0.25 U
WR-PG-48	0.63 U	44 U	0.35 U	0.96	0.49 U	4.1 U	0.35 U	1.5	0.35 U
WRM 6 to 8									
East									
WR-PG-29	0.8 U	38 U	0.39 U	0.56 U	0.39 U	1.1 U	0.39 U	0.77	0.39 U
WR-VC-29	0.4 U	17 U	0.32 U	0.58 U	1 U	1 U	0.32 U	0.54 U	0.32 U
WR-VC-31	0.44 U	50 U	0.32 U	0.46 U	0.35 U	2.7 U	0.54	0.54	0.32 U
West									
WR-PG-50	2.4 U	160 U	1.6	1 U	2.5 U	16	0.97	3.6 U	3.8 U
WR-VC-50	10 U	1100 U	10 U	11 U	10 U	38 U	9.8 U	17 U	24
WR-PG-52	2.2 U	180 U	1.6	1 U	1.2 U	15	0.74 U	1	0.33 U
WR-VC-52	13 U	830 U	10 U	15 U	2.9 U	36 U	12 U	27 U	10 U
WR-PG-54	0.84 U	78 U	0.56 U	0.6 U	1 U	8.3	0.37 U	1.1 U	0.45 U
WR-VC-54	4.7 U	510 U	4.3 U	13 U	3.2 U	28 U	5.7 U	10 U	3.2 U
WR-PG-56	0.84 U	120 U	0.48 U	2.2	1.6 U	16	0.31 U	2.6	0.31 U
WR-VC-56	1.4 U	86 U	1.9 U	4.8 U	1.5	390	2.1 U	18	0.29 U
WR-PG-58	0.36 U	130 U	0.51 U	18 U	2.7 U	34	0.29 U	12	0.29 U
WR-VC-58	5.1 U	88 U	1.3 U	0.71 U	1.3 U	8.8 U	0.71 U	1.9 U	2.2 U
WR-PG-60	1.4 U	150 U	1 U	0.91 U	4.2 U	11	1 U	7	0.3 U
WR-VC-60	1.2 U	76 U	0.24 U	1.2 U	1.6	3.8	0.48 U	1.7 U	0.24 U
WR-PG-62	6	26 U	2.1	2 U	1 U	3.9	0.35 U	0.92	0.35 U
WR-VC-62	1.2 U	63 U	0.42	2.1	1.6	12	0.98 U	2.5 U	0.32 U
WR-PG-64	0.47 U	52 U	2.4	4.6 U	22 U	12	0.38 U	73	0.38 U
WR-VC-64	0.49 U	34 U	0.37 U	1.3 U	0.43 U	5.9	0.86	1.7 U	0.37 U
WR-PG-66	0.51 U	50 U	1.2	4.7	11	6.7	0.41 U	21	0.41 U
WR-VC-66	0.41 U	50 U	0.33 U	2	1.6 U	7.1	1 U	2.2	0.33 U
WR-PG-68	1 U	150 U	1.7 U	110	14 U	300	2.4 U	0.15 U	0.38 U
WR-VC-68	0.42 U	30 U	0.34 U	1.2	1.5 U	6.1	1 U	1.8	0.34 U
WR-PG-70	5.4	170 U	1.1	12 U	15 U	96	1.1 U	17 U	1.1 U
WR-VC-70	0.41 U	81 U	0.33 U	3.5	2.8 U	9.7	1 U	4.8	2.9
WR-PG-72	0.75 U	50 U	0.43 U	5.8 U	0.43 U	25	1.1 U	33	0.43 U
WR-VC-72	0.4 U	54 U	0.32 U	1.4	2.5 U	6.8	1 U	3.4	0.32 U
WR-PG-74	0.6 U	37 U	0.41 U	0.74 U	0.41 U	3 U	0.41 U	0.97	0.41 U

Please refer to the Notes at the end of this table.

Table 12 - Sediment Sampling Analytical Results - Pesticides

	4,4'-DDE	4,4'-DDD	4,4'-DDT	Total DDT	alpha-BHC	beta-BHC	gamma-BHC (Lindane)	delta-BHC	Heptachlor	Aldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Chlordane	Dieldrin	Endrin	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin Aldehyde	Endrin Ketone	Methoxychlor	Toxaphene	Oxychlordane	2,4'-DDE	2,4'-DDD	2,4'-DDT	cis-Nonachlor	trans-Nonachlor	Mirex
DMEF SL	--	--	--	**6.9**	--	--	**10**	--	**10**	**10**	--	--	--	**10**	**10**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DMEF BT	--	--	--	**50**	**10**	--	--	--	--	--	--	--	--	**37**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DMEF ML	--	--	--	**69**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WRM 8 to 10																														
East																														
WR-PG-33	0.47	0.2	1.2	1.9	0.25 U	0.78 U	0.36 U	0.26 U	0.4 U	0.16 U	0.46 U	0.18	0.18 U	7.6 U	0.086 U	0.24 U	0.12 U	0.15 U	0.1 U	0.16 U	0.96 U	0.33 U	20 U	0.26 U	0.38 U	0.63 U	0.96 U	0.26 U	0.96 U	0.26 U
WR-VC-33	1.1	0.57	0.67 U	1.7	0.21 U	0.65 U	0.3 U	0.22 U	0.23 U	0.13 U	0.38 U	0.081 U	0.15 U	5.1 U	0.18 U	0.077 U	0.18	0.18 U	0.082 U	0.12 U	0.25 U	0.27 U	9.9 U	0.22 U	0.31 U	0.47 U	0.8	0.22 U	0.66	0.22 U
WR-PG-35	1.3	0.6	1.1 U	1.9	0.31 U	0.99 U	0.73 U	0.33 U	0.68 U	0.2 U	0.58 U	0.31	0.23 U	8.9 U	0.33 U	0.36 U	0.15 U	0.19 U	0.13 U	0.17 U	0.43 U	0.55	15 U	0.33 U	0.48 U	0.33 U	0.99 U	0.33 U	0.46	0.33 U
WR-VC-35	5.6	2.9	3.2	11.7	0.26 U	0.81 U	0.37 U	0.27 U	0.49 U	0.19 U	0.81 U	0.29	0.19 U	10 U	1 U	2.5 U	0.35 U	0.54	1.8 U	1 U	2.9 U	0.34 U	72 U	0.3 U	0.56	1 U	4.5	0.29 U	3.8	0.27 U
WR-PG-37	2	0.98	1.8	4.8	0.29 U	0.93 U	0.43 U	0.31 U	0.57 U	0.19 U	0.54 U	0.6	0.22 U	11 U	1 U	0.73 U	0.14 U	0.18 U	0.12 U	0.2 U	0.18 U	0.65	50 U	0.31 U	0.45 U	0.61 U	1.9	0.31 U	0.95	0.31 U
WR-VC-37	2.3	0.99	2	5.3	0.25 U	0.78 U	0.36 U	0.26 U	0.64 U	0.16 U	0.46 U	0.16 U	0.18 U	5 U	1 U	1 U	0.13 U	0.34	0.1 U	0.18 U	0.11 U	0.33 U	30 U	0.26 U	0.38 U	1 U	1.6 U	0.26 U	1.6	0.26 U
WR-PG-39	1.2	0.15 U	0.93 U	1.2	0.3 U	0.96 U	0.71 U	0.32 U	0.34 U	0.2 U	0.57 U	0.42	0.22 U	8.7 U	0.21 U	0.33 U	0.14 U	0.18 U	0.24 U	0.17 U	1 U	0.4 U	15 U	0.32 U	0.46 U	0.32 U	1 U	0.32 U	0.49	0.32 U
WR-VC-39	1.7	0.89	1 U	2.6	0.29 U	0.9 U	1 U	0.49	0.32 U	0.18 U	0.66 U	0.12 U	0.21 U	12 U	0.086 U	0.11 U	0.39 U	0.17 U	0.12 U	0.16 U	0.19	0.38 U	50 U	0.3 U	0.43 U	0.63 U	1.5 U	0.3 U	1	1 U
WR-PG-41	1.4	1.1	1.9	4.4	0.28 U	0.9 U	0.41 U	0.3 U	0.99 U	0.18 U	0.99 U	0.3 U	0.21 U	9.9 U	0.99 U	0.63 U	0.13 U	0.32 U	0.12 U	0.16 U	0.42 U	0.38 U	50 U	0.3 U	0.47 U	0.54 U	0.99 U	0.3 U	0.84	0.3 U
WR-VC-41	2.6	1.3	0.19 U	3.9	0.31 U	0.98 U	0.45 U	0.33 U	0.35 U	0.36 U	1.1 U	0.42	0.28 U	13 U	1.1 U	1.2 U	0.33 U	0.19 U	1 U	0.2 U	1 U	1.1 U	24 U	0.77	0.47 U	1 U	1.9 U	0.33 U	1.9	0.33 U
WR-PG-43	1.4	0.43 U	0.97 U	1.4	0.34 U	1.1 U	1.5 U	0.36 U	1 U	0.25 U	0.86 U	0.74	0.25 U	9.6 U	0.3 U	0.38 U	0.16 U	0.2 U	0.22 U	0.19 U	1 U	0.45 U	17 U	0.36 U	0.51 U	0.36 U	0.34 U	0.36 U	0.49	0.36 U
WR-VC-43	2.6	1.2	0.17 U	3.8	0.28 U	0.87 U	0.4 U	0.83	0.31 U	0.18 U	0.66 U	0.63 U	0.2 U	15 U	0.083 U	0.11 U	0.61	0.18 U	1 U	0.15 U	0.12 U	0.37 U	90 U	1 U	0.59 U	0.49 U	0.86 U	0.29 U	0.64	0.29 U
WR-PG-45	2.1	1.2	1.2	4.5	0.28 U	1.5 U	0.41 U	0.3 U	0.32 U	0.18 U	0.67 U	0.46	0.21 U	6 U	0.13 U	0.46 U	0.13 U	0.17 U	0.12 U	0.15	0.19 U	0.37 U	19 U	0.3 U	0.43 U	0.53 U	2.3	0.3 U	0.99	0.3 U
WR-VC-45	2.3	1.4	2.6 U	3.7	0.29 U	0.91 U	0.42 U	0.31 U	0.33 U	0.19 U	0.67 U	0.91	0.21 U	16 U	0.088 U	0.11 U	0.43 U	0.32	1 U	0.21 U	0.14 U	0.38 U	60 U	0.31 U	0.44 U	0.81 U	1.1 U	0.31 U	1.1	0.31 U
West																														
WR-PG-76	2.3	0.6 U	1.2 U	2.3	0.38 U	1.2 U	0.55 U	0.4 U	1 U	0.33 U	1.4 U	0.36	0.28 U	10 U	1 U	0.38 U	0.18 U	1 U	0.33 U	0.24	0.16 U	0.91 U	21 U	0.4 U	0.57 U	0.4 U	1.6 U	0.4 U	0.54	0.4 U
WR-PG-78	2.6	1.1 U	1.2	3.8	0.4 U	1.3 U	0.58 U	0.42 U	0.45 U	0.26 U	1.3 U	0.41	0.29 U	15 U	1.1 U	0.48 U	0.28 U	0.24 U	0.37 U	0.22 U	1.1 U	1.1 U	26 U	0.42 U	0.61 U	0.42 U	1.9 U	0.42 U	0.65	0.42 U
WR-PG-80	2.4	1 U	1.7	4.1	0.37 U	1.2 U	0.54 U	0.4 U	1.3 U	0.34 U	0.69 U	0.44	0.27 U	22 U	1 U	0.14 U	0.23 U	0.23 U	0.85 U	0.21 U	2.4 U	0.82 U	36 U	0.4 U	0.57 U	1.1 U	2.2 U	0.4 U	1.7	0.4 U
WR-PG-82	2.6	0.11 U	0.99 U	2.6	0.3 U	0.96 U	0.44 U	0.32 U	0.68 U	0.2 U	1.3 U	0.42	0.22 U	9 U	0.81 U	0.5 U	0.24 U	0.18 U	0.33 U	0.17 U	1 U	0.52 U	21 U	0.32 U	0.46 U	0.32 U	2.3 U	0.32 U	0.32 U	0.5 U
WR-PG-84	2.3	1 U	1.3 U	2.3	0.37 U	1.2 U	0.54 U	0.39 U	0.94 U	0.3 U	0.68 U	0.37	0.27 U	16 U	0.79 U	0.46 U	0.26 U	0.22 U	0.33 U	0.2 U	1 U	0.49 U	21 U	0.39 U	0.56 U	0.39 U	2 U	0.39 U	0.6	0.39 U
WR-PG-86	2.5	1.1 U	0.92 U	2.5	0.4 U	1.3 U	0.58 U	0.42 U	1.1 U	0.38 U	0.74 U	0.44	0.29 U	4.7 U	0.85 U	0.49 U	0.23 U	0.24 U	0.37 U	0.22 U	1.1 U	0.53 U	23 U	0.42 U	0.61 U	0.54 U	1.1 U	0.42 U	0.91	0.42 U
WR-PG-88	1.2 U	0.29 U	1.7 U	1.7 U	0.43 U	1.4 U	0.87 U	0.45 U	0.82 U	0.32 U	1.4 U	0.46	0.31 U	18 U	0.17 U	0.46 U	0.2 U	0.26 U	0.27	0.23 U	1.2 U	0.57 U	24 U	0.45 U	0.65 U	0.45 U	0.43 U	0.45 U	0.66	0.45 U
WR-PG-90	1.5	0.68	1.3 U	2.2	0.42 U	1.4 U	0.85 U	0.45 U	1.1 U	0.35 U	1.5 U	0.64	0.31 U	14 U	0.4 U	0.54 U	0.2 U	0.25 U	1.2 U	0.23 U	1.2 U	0.61 U	25 U	0.45 U	0.64 U	0.45 U	0.42 U	0.45 U	0.7	0.45 U
WR-PG-92	1.6	0.78	1.4 U	2.4	0.42 U	1.4 U	0.89 U	0.45 U	1.2 U	0.41 U	2 U	0.87	0.31 U	23 U	0.13 U	0.5 U	0.2 U	0.26 U	1.2 U	0.23 U	1.2 U	0.56 U	35 U	0.45 U	0.65 U	0.45 U	0.42 U	0.45 U	0.7	0.45 U
WR-PG-94	1.7	0.27 U	1.6 U	1.7	0.42 U	1.4 U	0.77 U	0.45 U	0.47 U	0.39 U	1.5 U	0.55	0.31 U	18 U	1.1 U	0.66 U	0.2 U	0.27 U	0.31	0.62 U	1.3 U	0.83	41 U	1.1 U	0.64 U	0.55 U	1.1 U	0.45 U	1.1	0.45 U
WR-PG-96	1.8	0.92	1.7 U	2.7	0.47 U	1.5 U	1.1 U	0.5 U	0.53 U	0.42 U	1.6 U	0.35	0.34 U	16 U	0.15 U	0.57 U	0.32 U	0.28 U	1.3 U	0.34 U	1.3 U	0.62 U	31 U	0.5 U	0.71 U	0.5 U	0.47 U	0.5 U	0.74	0.5 U
WR-PG-98	1.8	1.1	1.2 U	2.9	0.4 U	1.3 U	1.1 U	0.43 U	1.2 U	0.33 U	1.6 U	1.1 U	0.3 U	11 U	0.13 U	0.31 U	0.19 U	0.24 U	0.34	0.22 U	1.7 U	0.54 U	20 U	1.1 U	0.62 U	0.43 U	0.4 U	0.43 U	0.56	0.43 U
WR-PG-100	1.7	0.93	2.1 U	2.6	0.45 U	1.5 U	1.2 U	0.48 U	0.51 U	0.4 U	1.7 U	0.84	0.33 U	17 U	0.14 U	0.56 U	0.24 U	0.27 U	0.19 U	0.25 U	1.2 U	0.64 U	26 U	0.48 U	0.69 U	0.48 U	0.45 U	0.48 U	0.72	0.48 U
WR-PG-102	2.7	1.5	1.4 U	4.2	0.39 U	1.3 U	0.67 U	0.42 U	1.1 U	0.42 U	1.1 U	0.57 U	0.44 U	5.8 U	0.41 U	0.53 U	0.26 U	0.24 U	0.16 U	0.23 U	1.1 U	0.52 U	19 U	0.42 U	0.59 U	0.48 U	1.3 U	0.42 U	0.79	0.42 U
WR-PG-104	2.1	1.6	3.4	7.1	0.41 U	1.4 U	0.81 U	0.44 U	1.1 U	0.27 U	1.6 U	0.91	0.3 U	14 U	1.1 U	1.1 U	0.19 U	0.25 U	1.1 U	0.23 U	1.1 U	0.82	46 U	0.44 U	0.63 U	0.44 U	1.6 U	0.44 U	3.1	0.44 U
WRM 10 to 12																														
East																														
WR-PG-47	1.3	0.12 U	1.2 U	1.3	0.33 U	1.1 U	1.2 U	0.35 U	1 U	0.21 U	0.98 U	0.65	0.25 U	4.1 U	0.23 U	0.42 U	0.16 U	0.2 U	0.14 U	0.18 U	0.14 U	0.99 U	50 U	1 U	1 U	0.35 U	1 U	0.35 U	0.55 U	0.35 U
WR-VC-47	1.7	0.51	9.7	11.9	0.28 U	0.9 U	0.41 U	0.3 U	0.32 U	0.18 U	0.73 U	0.59	0.21 U	13 U	0.086 U	0.11 U	0.22 U	0.17 U	1 U	0.16 U	0.12 U	0.68 U	50 U	1 U	0.43 U	0.59 U	1.5 U	0.3 U	1.1	0.3 U
WR-VC-49	5.4	1.8	5.5	12.7	0.28 U	0.89 U	0.41 U	0.32 U	0.32 U	0.18 U	2 U	4.1	0.58	35 U	1.3 U	0.13 U	0.27 U	1.3	1 U	0.16 U	1 U	0.37 U	150 U	0.34 U	1 U	3.5 U	7.7	0.43	5.4	0.7
WR-VC-51	2	1.5	7	10.5	0.26 U	0.81 U	0.37 U	0.27 U	0.29 U	0.17 U	0.48 U	2.5	0.48	14 U	0.83 U	0.16	0.88 U	1.6	0.83 U	1.2 U	2.2 U	2.4 U	180 U	0.27 U	0.42	0.27 U	3.1	0.36 U	2.2 U	0.27 U
WR-VC-53	1.5	0.58	1.4	3.5	0.23 U	0.74 U	0.34 U	0.25 U	0.27 U	0.15 U	0.43 U	1.7	0.51	21 U	0.77 U	0.12	0.77 U	0.3	0.77 U	0.13 U	0.77 U	0.31 U	27 U	0.25 U	0.4	1.2 U	2.1	0.72	1.2	0.25 U
WR-VC-55	2.3	2.2	3.6	8.1	0.23 U	0.73 U	0.34 U	0.25 U	0.26 U	0.15 U	1.5 U	2.2	0.17 U	26 U	0.07 U	1 U	0.4 U	1.1	0.82 U	1 U	1.1 U	0.31 U	97 U	0.25 U	1 U	1.8 U	2.3 U	0.25 U	2.5	0.25 U
WR-VC-57	3.6	1.1	4.7 U	4.7	0.28 U	0.88 U	0.41 U	0.47 U	0.32 U	0.18 U	1 U	2.7	0.48 U	24 U	1 U	0.11 U	0.26 U	1.1	0.12 U	0.15 U	1 U	0.37 U	71 U	0.46	0.42 U	1 U	2.7	0.3 U	4.4	0.3 U
WR-VC-59	2.7	2.2	3.9	8.8	0.26 U	0.81 U	0.37 U	0.44 U	1 U	0.17 U	1.8	1 U	0.19 U	19 U	1.3 U	0.096 U	0.23 U	0.8	0.11 U	1.5 U	1 U	0.34 U	65 U	0.37 U	0.39 U	3.2 U	3.6	0.27 U	2.8	0.27 U
WR-PG-61	1.8	1.6	1.3	4.7	0.33 U	1.1 U	0.48 U	0.35 U	1 U	0.4 U	1 U	0.13 U	0.24 U	9.9 U	0.78 U	0.71 U	1.5	0.2 U	0.14 U	0.18 U	1 U	0.44 U	28 U	0.39 U	0.5 U	0.5 U	0.33 U	0.35 U	0.93	0.35 U
WR-VC-61	3.2	1.8	4.8 U	5	0.27 U	0.84 U	0.47 U	0.28 U	0.3 U	1 U	1 U	1 U	0.2 U	13 U	0.081 U	0.16	0.45 U	0.95	1 U	0.15 U	1 U	0.35 U	58 U	0.28 U	3.8 U	2.9 U	3.8	0.28 U	4.7	0.28 U
WR-PG-63	1.5	1.7 U	12	13.5	0.27 U	0.86 U	0.4 U	0.29 U	1 U	0.18 U	1 U	1 U	0.2 U	17 U	1 U	1.8 U	0.34	1 U	0.12 U	0.15 U	2.3 U	1.6 U	230 U	0.29 U	0.42 U	0.29 U	3.3	0.29 U	2.2 U	0.29 U
West																														
WR-PG-106	2.5	2.1	5.1 U	4.6	0.36 U	1.2 U	0.96 U	0.38 U	0.85 U	0.23 U	0.99 U	1.4	0.27 U	21 U	0.99 U	0.14 U	0.17 U	0.43 U	0.99 U	1.1 U	2.3 U	0.84 U	73 U	0.44 U	0.55 U	3.2	5.7	0.38 U	3.5	0.38 U
WR-VC-106	3.5 U	5.8	20	25.8	0.28 U	1.1 U	0.41 U	0.5 U	0.32 U	0.18 U	2.5 U	13	0.21 U	92 U	3.6 U	1.8	0.66 U	1.4 U	1.4 U	2 U	2 U	1 U	250 U	0.3 U	5.3 U	11 U	6.7 U	0.3 U	15	0.3 U
WR-PG-108	1 U	2.5	4.7	7.2	0.22 U	0.69 U	0.37 U	0.23 U	1 U	0.14 U	1 U	0.9	0.16 U	12 U	0.77 U	1.5 U	0.099 U	0.39 U	1 U	1 U	0.089 U	0.67 U	84 U	1 U	0.33 U	2 U	2.5 U	0.23 U	3.4	0.23 U
WR-VC-108	3.4 U	13	140	***153***	0.27 U	0.86 U	1 U	0.29 U	0.31 U	0.18 U	5.2 U	1.2 U	4.5 U	310 U	8.6 U	6.6	4.8 U	36 U	1 U	9.9	1.1 U	1 U	1,600 U	0.76 U	18 U	3.3 U	15 U	4.4 U	140	0.29 U
WR-VC-110	3 U	25	26	*51*	1 U	0.65 U	1 U	1.1 U	0.55	1 U	2.5 U	1.4 U	0.15 U	19 U	1 U	1	1 U	0.13 U	1 U	1.1 U	1.6 U	1 U	360 U	1 U	1.9 U	3.6 U	9.1 U	0.3 U	13	1 U
WR-PG-112	1.8	1.1	4	6.9	0.38 U	1.3 U	1.1 U	0.41 U	1 U	0.3 U	1.2 U	0.91	0.28 U	6.2 U	0.33 U	1.1 U	0.18 U	0.23 U	0.16 U	0.21 U	1 U	1.8 U	61 U	0.41 U	0.58 U	1.2 U	1 U	0.41 U	2	0.41 U
WR-PG-114	2.7	2.1	1.6	6.4	0.35 U	1.1 U	0.5 U	0.37 U	1.7	0.24 U	0.82 U	0.26	0.25 U	7.3 U	0.11 U	1.1 U	0.16 U	0.21 U	0.25 U	0.19 U	0.15 U	0.46 U	36 U	0.37 U	0.53 U	0.44 U	0.35 U	0.37 U	1.4	0.37 U
WR-VC-114	3.2	1.9	2.4 U	5.1	0.29 U	0.93 U	0.43 U	0.31 U	0.33 U	0.19 U	0.55 U	0.87	0.22 U	14 U	1 U	0.12 U	0.32 U	0.29	1 U	1 U	0.12 U	0.39 U	50 U	0.31 U	0.45 U	0.84 U	1.2 U	0.31 U	1.2	0.31 U
WR-PG-116	2	1.2	0.97 U	3.2	0.36 U	1.2 U	0.56 U	0.38 U	1 U	0.35 U	1.3 U	0.47	0.26 U	5.2 U	0.34 U	0.34 U	0.17 U	0.22 U	0.2 U	0.2 U	1 U	0.47 U	20 U	0.38 U	0.54 U	0.38 U	0.36 U	0.38 U	1.2	0.38 U
WR-VC-116	3.3	1.2	1.6 U	4.5	0.32 U	1.1 U	0.46 U	0.34 U	0.36 U	0.21 U	0.59 U	0.68	0.23 U	7.1 U	0.097 U	0.12 U	0.16 U	1 U	1 U	0.18 U	0.72	0.42 U	69 U	0.39 U	0.49 U	0.84 U	1.2 U	0.34 U	1.2 U	0.34 U
WR-PG-118	1.2	0.62	1.7 U	1.8	0.37 U	1.2 U	0.83 U	0.39 U	1 U	0.25 U	0.9 U	0.25	0.27 U	14 U	0.24 U	0.14 U	0.19 U	0.22 U	1 U	0.2 U	1 U	0.49 U	18 U	0.39 U	0.56 U	0.39 U	0.37 U	0.39 U	0.46 U	0.39 U
WR-VC-118	4.9	2.7	3.3	10.9	0.27 U	1.6 U	0.39 U	0.29 U	0.3 U	0.17 U	0.76 U	1 U	0.2 U	8.3 U	0.081 U	0.1 U	0.51 U	0.39 U	1 U	0.16 U	1 U	0.49 U	50 U	0.29 U	0.85 U	1.6 U	4	0.29 U	2.5	0.29 U
WR-PG-120	3.1	2.7	1.5 U	5.8	0.54 U	1.8 U	0.79 U	0.57 U	1.5 U	0.38 U	1 U	0.73	0.4 U	26 U	0.36 U	1.2 U	0.64 U	0.32 U	1.5 U	0.3 U	1.5 U	0.71 U	26 U	0.57 U	0.82 U	0.57 U	0.54 U	0.57 U	1.5 U	0.57 U
WR-VC-120	3.7	2.2	2.3	8.2	0.28 U	1.2 U	0.41 U	0.3 U	0.32 U	0.37 U	0.52 U	0.99	1 U	40 U	2.1 U	1 U	0.68 U	0.3 U	1 U	0.16 U	1 U	0.37 U	46 U	0.3 U	0.43 U	1.2 U	1.3 U	0.3 U	1.8	0.3 U
WR-PG-122	3.5	3.2	1.7 U	6.7	0.37 U	1.2 U	0.74 U	0.39 U	0.92 U	0.28 U	1.2 U	0.53	0.27 U	20 U	0.4 U	0.14 U	0.17 U	0.22 U	1 U	0.2 U	0.16 U	1 U	50 U	0.39 U	1 U	1 U	0.37 U	0.39 U	1.2	0.39 U
WR-VC-122	0.83	0.43	1 U	1.3	0.26 U	0.82 U	0.38 U	0.28 U	1 U	0.39 U	1.4 U	0.24	0.19 U	26 U	0.77 U	0.097 U	0.31 U	0.16 U	0.11 U	0.14 U	0.11 U	0.34 U	14 U	0.28 U	0.39 U	0.28 U	1 U	0.28 U	0.34	0.28 U
WR-PG-124	1.7	1.1	1.5 U	2.8	0.34 U	1.1 U	0.78 U	0.36 U	1 U	0.22 U	0.79 U	0.4	0.25 U	4.2 U	0.24 U	0.13 U	0.16 U	0.21 U	0.21 U	0.19 U	1 U	0.45 U	30 U	0.36 U	0.52 U	0.36 U	0.34 U	0.36 U	1 U	0.36 U
WR-VC-124	2.3	1.2	1.8	5.3	0.27 U	0.86 U	0.4 U	0.29 U	0.31 U	0.18 U	0.57 U	0.6	0.2 U	10 U	1 U	0.11 U	0.42 U	0.2 U	1 U	0.18 U	0.59 U	0.36 U	14 U	0.29 U	0.42 U	0.6 U	2.1 U	0.29 U	0.85	0.29 U
WR-PG-126	1 U	2.4 U	1.1	1.1	0.3 U	0.94 U	0.43 U	0.32 U	0.72	0.19 U	0.55 U	0.31	0.22 U	8.6 U	0.26 U	0.68 U	0.14 U	0.18 U	0.23 U	0.16 U	0.13 U	0.39 U	15 U	0.32 U	0.45 U	0.32 U	0.3 U	0.32 U	0.99	0.32 U
WR-VC-126	1.7	0.76	2	4.5	0.25 U	0.79 U	0.37 U	0.27 U	0.28 U	0.16 U	0.5 U	0.88	0.22	11 U	0.076 U	0.094 U	0.39 U	0.26 U	1 U	0.19 U	0.84 U	0.48 U	50 U	0.27 U	0.49 U	0.57 U	2	0.27 U	1	0.27 U
WR-PG-128	2	1.7 U	2 U	2	0.35 U	1.1 U	0.62 U	0.37 U	1 U	0.27 U	2.1 U	0.39	0.25 U	14 U	1 U	1 U	1 U	0.21 U	1.8 U	0.19 U	1 U	0.46 U	79 U	0.37 U	0.53 U	0.37 U	0.35 U	0.37 U	1 U	0.37 U
WR-VC-128	1.2	0.82	3.4	5.4	0.23 U	0.71 U	0.33 U	0.24 U	0.25 U	0.24 U	0.68	0.089 U	0.87 U	8.1 U	0.068 U	0.084 U	0.93 U	0.16 U	1 U	0.13 U	0.95 U	0.3 U	50 U	0.24 U	0.34 U	0.63 U	1.6 U	0.24 U	0.91	0.24 U
WR-PG-130	1.3	1.4	1 U	2.7	0.32 U	1.1 U	0.47 U	0.35 U	0.37 U	0.95 U	1.6 U	1.4	0.24 U	8 U	2.5	0.13 U	1 U	0.7	1 U	0.47	0.54	0.43 U	50 U	1 U	0.96 U	0.53 U	1.2 U	0.35 U	0.71	0.35 U
WR-VC-130	1.7	1.1	2.3 U	2.8	0.21 U	0.66 U	0.3 U	0.25 U	0.24 U	0.14 U	0.94	0.68 U	0.15 U	13 U	0.68 U	0.078 U	0.094 U	0.68 U	0.68 U	0.77 U	0.68 U	0.28 U	40 U	0.22 U	0.68 U	0.82 U	2.5	0.22 U	1.7	0.22 U
WR-PG-132	1.1	0.39	1.1	2.6	0.39 U	1.3 U	0.58 U	0.42 U	0.45 U	0.25 U	1.1 U	0.37	0.84 U	11 U	0.76 U	0.15 U	1.1 U	0.26 U	1.1 U	0.22 U	0.22	0.52 U	24 U	1.1 U	0.6 U	0.42 U	0.39 U	0.42 U	1.1 U	0.42 U
WR-VC-132	4.7	4.2	8	16.9	0.26 U	0.84 U	0.42 U	0.36 U	1 U	0.17 U	3.1	1.5 U	0.59	8.3 U	1.3 U	1 U	0.12 U	1.2 U	0.8 U	0.65 U	1.3 U	2.5	45 U	0.7 U	0.78 U	3.7 U	7.6	0.52 U	4.9	0.28 U
WR-PG-134	0.89	0.3 U	1.3	2.2	0.31 U	0.99 U	0.46 U	0.33 U	0.35 U	0.2 U	1.2 U	0.27	0.23 U	21 U	0.68 U	0.12 U	0.96 U	0.19 U	1 U	0.17 U	0.63 U	0.46 U	50 U	1 U	0.48 U	0.34 U	1 U	0.33 U	0.63	0.33 U
WR-VC-134	2	0.99	2.8	5.8	0.2 U	0.64 U	0.3 U	0.45 U	0.23 U	0.13 U	1 U	1.3	0.15 U	10 U	1.4 U	0.076 U	0.092 U	0.42 U	0.082 U	0.11 U	1 U	0.27 U	40 U	0.22 U	0.31 U	0.77 U	2.9 U	0.22 U	2.4	0.22 U

Notes:

Concentrations reported in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL; Italics indicates an exceedence of DMEF-BT; Bold indicates an exceedence of DMEF-ML.

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit; D = The reported result is from a dilution.

Tetra Tech EC Qualifiers:

j = The result should be considered an estimated value.

See Volume II of this report for more analytical testing details.

Table 13 - Sediment Sampling Analytical Results - Polychlorinated Biphenyls

	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Aroclor 1262	Aroclor 1268
DMEF SL	--	--	--	--	--	--	--	**130**	--	--
DMEF ML	--	--	--	--	--	--	--	**3100**	--	--
WR-PG-01-REF	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
WR-PG-02-REF	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	4.8	2.1 U	4.8	2.1 U	2.1 U
WR-PG-03-REF	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
WRM 0 to 3										
East										
WR-PG-01	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	9.9	9.8	19.7	3.4 U	3.4 U
WR-PG-02	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	9.3	9.6	18.9	3.5 U	3.5 U
WR-PG-03	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	8.9	11	19.9	3.2 U	3.2 U
WR-VC-03	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	12	9.2	21.2	2.6 U	2.6 U
West										
WR-PG-04	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	21	19	40	2.6 U	2.6 U
WR-VC-04	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	21	18	39	2.3 U	2.3 U
WRM 3 to 6										
East										
WR-VC-05	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	25	24	49	2.7 U	2.7 U
WR-VC-07	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	41	33	74	2.5 U	2.5 U
WR-PG-09	3 U	3 U	3 U	3 U	3 U	12	12	24	3 U	3 U
WR-VC-09	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	13	11	24	2.5 U	2.5 U
WR-PG-11	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	55	31	86	3.2 U	3.2 U
WR-VC-11	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	18	15	33	2.6 U	2.6 U
WR-PG-13	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	8.3	27	35.3	2.8 U	2.8 U
WR-VC-13	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	23	18	41	2.6 U	2.6 U
WR-PG-15	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	15	15	2.8 U	2.8 U
WR-VC-15	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	14 U	19	19	2.5 U	2.5 U
WR-PG-17	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	17	17	2.9 U	2.9 U
WR-VC-17	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	22	24	46	2.5 U	2.5 U
WR-PG-19	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	17	17	2.9 U	2.9 U
WR-VC-19	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	19	39	64.5	2.6 U	2.6 U
WR-PG-21	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	26	26	2.6 U	2.6 U
WR-PG-23	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	99	81	180	2.7 U	2.7 U
WR-VC-23	2 U	2 U	2 U	2 U	2 U	50	55	105	2 U	2 U
WR-PG-27	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	250	250	1.8 U	1.8 U
West										
WR-PG-06	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	12	14	26	3.1 U	3.1 U
WR-VC-06	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	26	20	46	2.8 U	2.8 U
WR-VC-08	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	37	28	65	2.7 U	2.7 U
WR-VC-10	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	53	38	91	2.7 U	2.7 U
WR-PG-12	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	13	11	24	2.7 U	2.7 U
WR-VC-12	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	73	59	132	2.5 U	2.5 U
WR-PG-14	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	8.9 U	7.8	7.8	3.3 U	3.3 U
WR-VC-14	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	45	45	90	2.5 U	2.5 U
WR-PG-16	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	15 U	27	27	2.6 U	2.6 U
WR-VC-16	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	36	27	63	2.3 U	2.3 U
WR-PG-18	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	11 U	8	8	2.7 U	2.7 U
WR-VC-18	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	36	28	64	2.6 U	2.6 U
WR-VC-20	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	46	33	79	2.5 U	2.5 U
WR-PG-22	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	15	15	3.3 U	3.3 U
WR-VC-22	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	12 U	11	11	2.8 U	2.8 U
WR-PG-24	3 U	3 U	3 U	3 U	3 U	74	50	124	3 U	3 U
WR-VC-24	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	16	10	26	2.8 U	2.8 U
WR-PG-26	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
WR-VC-26	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	14	15	29	2.6 U	2.6 U
WR-VC-28	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	19 U	18 U	19 U	2.8 U	2.8 U
WR-PG-30	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	14	14	3.1 U	3.1 U
WR-VC-30	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	35	25	60	2.9 U	2.9 U
WR-VC-32	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	20 U	22	22	2.7 U	2.7 U
WR-PG-34	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	14	14	3.6 U	3.6 U
WR-VC-34	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	18 U	25	25	2.9 U	2.9 U
WR-PG-36	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	12	12	2.5 U	2.5 U
WR-VC-36	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	15	16	31	2.9 U	2.9 U
WR-PG-42	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	10 U	2.2 U	2.2 U
WR-VC-42	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	13	6.5	19.5	1.8 U	1.8 U
WR-VC-46	2 U	2 U	2 U	2 U	2 U	16	20	36	2 U	2 U
WR-PG-48	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	22	22	2.9 U	2.9 U

Please refer to the Notes at the end of this table.

Table 13 - Sediment Sampling Analytical Results - Polychlorinated Biphenyls

	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Aroclor 1262	Aroclor 1268
DMEF SL	--	--	--	--	--	--	--	**130**	--	--
DMEF ML	--	--	--	--	--	--	--	**3100**	--	--
WRM 6 to 8										
East										
WR-PG-29	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	21	16	37	3.2 U	3.2 U
WR-VC-29	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	9.4	9.7	19.1	2.6 U	2.6 U
WR-VC-31	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	11 U	8.8	8.8	2.8 U	2.8 U
West										
WR-PG-50	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	37 U	17	17	3.1 U	3.1 U
WR-VC-50	2.7 U	2.7 U	2.7 U	2.7 U	96	88 U	79	175	2.7 U	2.7 U
WR-PG-52	2.7 U	2.7 U	2.7 U	2.7 U	20	18 U	16	36	2.7 U	2.7 U
WR-VC-52	2.4 U	2.4 U	2.4 U	2.4 U	97	160 U	200	297	2.4 U	2.4 U
WR-PG-54	3 U	3 U	3 U	3 U	3 U	21 U	8.8	8.8	3 U	3 U
WR-VC-54	2.6 U	2.6 U	2.6 U	2.6 U	74	78 U	78	152	2.6 U	2.6 U
WR-PG-56	19 U	12 U	21 U	13 U	18 U	50 U	20 U	50 U	17 U	1.7 U
WR-VC-56	32 U	53 U	59 U	43 U	30 U	720 U	68 U	720 U	24 U	24 U
WR-PG-58	36 U	45 U	94 U	68 U	49 U	96 U	59 U	96 U	36 U	44 U
WR-VC-58	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	50 U	23 U	50 U	1.9 U	1.9 U
WR-PG-60	2.4 U	2.4 U	2.4 U	2.4 U	62	150	110	322	2.4 U	2.4 U
WR-VC-60	2 U	2 U	2 U	2 U	2 U	33	25	58	2 U	2 U
WR-PG-62	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	24	10	34	2.9 U	2.9 U
WR-VC-62	2.6 U	2.6 U	2.6 U	2.6 U	41	77 U	61	102	2.6 U	2.6 U
WR-PG-64	7.7 U	20 U	25 U	17 U	12 U	37 U	13 U	37 U	14 U	7 U
WR-VC-64	3 U	3 U	3 U	3 U	3 U	38	21	59	3 U	3 U
WR-PG-66	9 U	30 U	28 U	9.6 U	8.9 U	19 U	11 U	30 U	16 U	10 U
WR-VC-66	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	29	24	53	2.7 U	2.7 U
WR-PG-68	22 U	23 U	44 U	42 U	41 U	330 U	72 U	330 U	38 U	14 U
WR-VC-68	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	50	24	74	2.8 U	2.8 U
WR-PG-70	21 U	20 U	59 U	34 U	40 U	75 U	21 U	75 U	32 U	15 U
WR-VC-70	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	23 U	36	36	2.7 U	2.7 U
WR-PG-72	28 U	22 U	39 U	40 U	30 U	96 U	20 U	96 U	19 U	11 U
WR-VC-72	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	58	35	93	2.6 U	2.6 U
WR-PG-74	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	20	14	34	3.4 U	3.4 U
WRM 8 to 10										
East										
WR-PG-33	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	16	16	2.2 U	2.2 U
WR-VC-33	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	12	14	26	1.8 U	1.8 U
WR-PG-35	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	8.3	8.8	17.1	2.7 U	2.7 U
WR-VC-35	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	49	62	111	2.2 U	2.2 U
WR-PG-37	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	15	19	34	2.5 U	2.5 U
WR-VC-37	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	25	30	55	2.2 U	2.2 U
WR-PG-39	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	8.3	9.6	17.9	2.6 U	2.6 U
WR-VC-39	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11 U	15	15	2.2 U	2.2 U
WR-PG-41	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	18	17	35	2.5 U	2.5 U
WR-VC-41	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	7.9 U	9.4	9.4	2.7 U	2.7 U
WR-PG-43	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	7.2	8.3	15.5	2.9 U	2.9 U
WR-VC-43	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	16 U	13	13	2.4 U	2.4 U
WR-PG-45	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	8.3	15	23.3	2.4 U	2.4 U
WR-VC-45	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	32	28	60	2.5 U	2.5 U
West										
WR-PG-76	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	9.5	13	22.5	3.3 U	3.3 U
WR-PG-78	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	11	15	26	3.4 U	3.4 U
WR-PG-80	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	11	28	39	3.2 U	3.2 U
WR-PG-82	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	9.5	7.9	17.3	2.6 U	2.6 U
WR-PG-84	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	9.1	13	22.1	3.2 U	3.2 U
WR-PG-86	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	10	11	21	3.5 U	3.5 U
WR-PG-88	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	14	13	27	3.7 U	3.7 U
WR-PG-90	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	8.6	9.6	18.2	3.7 U	3.7 U
WR-PG-92	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	8	9.3	17.3	3.7 U	3.7 U
WR-PG-94	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	19	19	38	3.6 U	3.6 U
WR-PG-96	4 U	4 U	4 U	4 U	4 U	9.2	10	19.2	4 U	4 U
WR-PG-98	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	8.3	8.5	16.8	3.5 U	3.5 U
WR-PG-100	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	11	15	26	3.9 U	3.9 U
WR-PG-102	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	10	12	22	3.4 U	3.4 U
WR-PG-104	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	51	51	3.6 U	3.6 U

Please refer to the Notes at the end of this table.

Table 13 - Sediment Sampling Analytical Results - Polychlorinated Biphenyls

	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Aroclor 1262	Aroclor 1268
DMEF SL	--	--	--	--	--	--	--	**130**	--	--
DMEF ML	--	--	--	--	--	--	--	**3100**	--	--
WRM 10 to 12										
East										
WR-PG-47	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	7.9	9.8	17.7	2.9 U	2.9 U
WR-VC-47	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	17 U	22	22	2.5 U	2.5 U
WR-VC-49	2.4 U	2.4 U	2.4 U	180	2.4 U	140	110	430	2.4 U	2.4 U
WR-VC-51	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	55	150	205	2.2 U	2.2 U
WR-VC-53	2 U	2 U	2 U	2 U	2 U	31	32	63	2 U	2 U
WR-VC-55	2 U	2 U	2 U	2 U	2 U	61	96	157	2 U	2 U
WR-VC-57	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	48	78	126	2.4 U	2.4 U
WR-VC-59	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	53	83	136	2.2 U	2.2 U
WR-PG-61	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	8	11	19	2.9 U	2.9 U
WR-VC-61	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	63	63	2.3 U	2.3 U
WR-PG-63	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	190	190	2.4 U	2.4 U
West										
WR-PG-106	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	81	65	146	3.1 U	3.1 U
WR-VC-106	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	560	320	880	2.4 U	2.4 U
WR-PG-108	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	29	66	95	1.9 U	1.9 U
WR-VC-108	24 U	24 U	24 U	24 U	24 U	2400	24 U	2,400	24 U	24 U
WR-VC-110	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	700	300	1,000	1.8 U	1.8 U
WR-PG-112	3.3 U	3.3 U	3.3 U	3.3 U	3.3 U	9.5	38	47.5	3.3 U	3.3 U
WR-PG-114	3 U	3 U	3 U	3 U	3 U	9.8	9.9	19.7	3 U	3 U
WR-VC-114	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	33 U	30	30	2.6 U	2.6 U
WR-PG-116	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	8.9	7.7	16.6	3.1 U	3.1 U
WR-VC-116	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	18	22	40	2.8 U	2.8 U
WR-PG-118	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	7.9	10	17.9	3.2 U	3.2 U
WR-VC-118	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	44	39	83	2.3 U	2.3 U
WR-PG-120	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	10	8.1	18.1	4.7 U	4.7 U
WR-VC-120	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	20	24	44	2.4 U	2.4 U
WR-PG-122	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	17	16	33	3.2 U	3.2 U
WR-VC-122	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	5.4	6.3	11.7	2.2 U	2.2 U
WR-PG-124	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	8.6	7.8	16.4	2.9 U	2.9 U
WR-VC-124	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	12	13	25	2.4 U	2.4 U
WR-PG-126	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	6.7	6.1	12.8	2.6 U	2.6 U
WR-VC-126	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	17	18	35	2.2 U	2.2 U
WR-PG-128	3 U	3 U	3 U	3 U	3 U	9.6	8.3	17.9	3 U	3 U
WR-VC-128	2 U	2 U	2 U	2 U	2 U	9	15	24	2 U	2 U
WR-PG-130	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	13	20	33	2.8 U	2.8 U
WR-VC-130	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	36	42	78	1.8 U	1.8 U
WR-PG-132	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	9.2	9.5	19	3.4 U	3.4 U
WR-VC-132	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	150	110	260	2.4 U	2.4 U
WR-PG-134	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	9.3	7.8	17.1	2.7 U	2.7 U
WR-VC-134	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	37	37	74	1.8 U	1.8 U

Notes:

Concentrations reported in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL.

Columbia Analytical Services (CAS) Qualifier:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 14 - Sediment Sampling Analytical Results - Polychlorinated Biphenyls TOC Normalized

DMEF BT	Aroclor 1016 --	Aroclor 1221 --	Aroclor 1232 --	Aroclor 1242 --	Aroclor 1248 --	Aroclor 1254 --	Aroclor 1260 --	Total PCBs 38	Aroclor 1262 --	Aroclor 1268 --
WR-PG-01-REF	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
WR-PG-02-REF	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	1.09	0.48 U	1.09	0.48 U	0.48 U
WR-PG-03-REF	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
WRM 0 to 3										
East										
WR-PG-01	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.34	0.34	0.68	0.12 U	0.12 U
WR-PG-02	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.33	0.34	0.66	0.12 U	0.12 U
WR-PG-03	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.39	0.48	0.87	0.14 U	0.14 U
WR-VC-03	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.63	0.48	1.11	0.14 U	0.14 U
West										
WR-PG-04	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	1.41	1.28	2.69	0.17 U	0.17 U
WR-VC-04	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.43	1.22	2.65	0.16 U	0.16 U
WRM 3 to 6										
East										
WR-VC-05	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.45	1.4	2.85	0.16 U	0.16 U
WR-VC-07	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.19	1.76	3.95	0.13 U	0.13 U
WR-PG-09	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.59	0.59	1.18	0.15 U	0.15 U
WR-VC-09	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.66	0.56	1.22	0.13 U	0.13 U
WR-PG-11	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.3	1.3	3.60	0.13 U	0.13 U
WR-VC-11	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.82	0.68	1.50	0.12 U	0.12 U
WR-PG-13	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.43	1.4	1.83	0.15 U	0.15 U
WR-VC-13	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	1.04	0.81	1.85	0.12 U	0.12 U
WR-PG-15	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.74	0.74	0.14 U	0.14 U
WR-VC-15	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.66 U	0.9	0.90	0.12 U	0.12 U
WR-PG-17	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.83	0.83	0.14 U	0.14 U
WR-VC-17	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	1.41	1.54	2.95	0.16 U	0.16 U
WR-PG-19	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.83	0.83	0.14 U	0.14 U
WR-VC-19	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	1.04	2.13	3.17	0.14 U	0.14 U
WR-PG-21	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	1.44	1.44	0.14 U	0.14 U
WR-PG-23	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	3.96	3.24	7.20	0.11 U	0.11 U
WR-VC-23	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	3.31	3.64	6.95	0.13 U	0.13 U
WR-PG-27	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U	37.31	37.31	0.27 U	0.27 U
West										
WR-PG-06	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.55	0.64	1.19	0.14 U	0.14 U
WR-VC-06	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.23	0.94	2.17	0.13 U	0.13 U
WR-VC-08	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	1.7	1.28	2.98	0.12 U	0.12 U
WR-VC-10	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.38	1.7	4.08	0.12 U	0.12 U
WR-PG-12	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.72	0.61	1.33	0.15 U	0.15 U
WR-VC-12	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	3.72	3.01	6.73	0.13 U	0.13 U
WR-PG-14	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.31 U	0.27	0.27	0.12 U	0.12 U
WR-VC-14	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	2.59	2.59	5.18	0.14 U	0.14 U
WR-PG-16	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.54 U	0.97	0.97	0.09 U	0.09 U
WR-VC-16	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	2.28	1.71	3.99	0.15 U	0.15 U
WR-PG-18	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.6 U	0.44	0.44	0.15 U	0.15 U
WR-VC-18	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	1.61	1.25	2.86	0.12 U	0.12 U
WR-VC-20	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	2.72	1.95	4.67	0.15 U	0.15 U
WR-PG-22	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.48	0.48	0.11 U	0.11 U
WR-VC-22	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.38 U	0.34	0.34	0.09 U	0.09 U
WR-PG-24	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	3.12	2.11	5.23	0.13 U	0.13 U
WR-VC-24	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.67	0.42	1.09	0.12 U	0.12 U
WR-PG-26	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U	0.81 U
WR-VC-26	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.61	0.65	1.26	0.11 U	0.11 U
WR-VC-28	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.79 U	0.75 U	0.79 U	0.12 U	0.12 U
WR-PG-30	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.6	0.60	0.13 U	0.13 U
WR-VC-30	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	1.76	1.26	3.02	0.15 U	0.15 U
WR-VC-32	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.9 U	0.99	0.99	0.12 U	0.12 U
WR-PG-34	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.46	0.46	0.12 U	0.12 U
WR-VC-34	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.68 U	0.94	0.94	0.11 U	0.11 U
WR-PG-36	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	1.01	1.01	0.21 U	0.21 U
WR-VC-36	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.71	0.76	1.47	0.14 U	0.14 U
WR-PG-42	0.08 U	0.08 U	0.08 U	0.08 U	0.08 U	0.36 U	0.36 U	0.36 U	0.08 U	0.08 U
WR-VC-42	0.47 U	0.47 U	0.47 U	0.47 U	0.47 U	3.42	1.71	5.13	0.47 U	0.47 U
WR-VC-46	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.98	1.23	2.21	0.12 U	0.12 U
WR-PG-48	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	1.12	1.12	0.15 U	0.15 U
WRM 6 to 8										
East										
WR-PG-29	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.84	0.64	1.48	0.13 U	0.13 U
WR-VC-29	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.4	0.41	0.81	0.11 U	0.11 U
WR-VC-31	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.49 U	0.39	0.39	0.12 U	0.12 U
West										
WR-PG-50	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	1.19 U	0.55	0.55	0.1 U	0.1 U
WR-VC-50	0.08 U	0.08 U	0.08 U	0.08 U	2.86	2.62 U	2.35	5.21	0.08 U	0.08 U
WR-PG-52	0.1 U	0.1 U	0.1 U	0.1 U	0.73	0.66 U	0.59	1.32	0.1 U	0.1 U
WR-VC-52	0.09 U	0.09 U	0.09 U	0.09 U	3.5	5.78 U	7.22	10.72	0.09 U	0.09 U
WR-PG-54	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.97 U	0.41	0.41	0.14 U	0.14 U
WR-VC-54	0.13 U	0.13 U	0.13 U	0.13 U	3.74	3.94 U	3.94	7.68	0.13 U	0.13 U
WR-PG-56	1.19 U	0.75 U	1.31 U	0.81 U	1.12 U	3.12 U	1.25 U	3.12 U	1.06 U	0.11 U
WR-VC-56	1.25 U	2.08 U	2.31 U	1.69 U	1.18 U	28.24 U	2.67 U	28.24 U	0.94 U	0.94 U
WR-PG-58	1.53 U	1.91 U	3.98 U	2.88 U	2.08 U	4.07 U	2.5 U	4.07 U	1.53 U	1.86 U
WR-VC-58	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	17.86 U	8.21 U	17.86 U	0.68 U	0.68 U
WR-PG-60	0.11 U	0.11 U	0.11 U	0.11 U	2.95	7.14	5.24	15.33	0.11 U	0.11 U
WR-VC-60	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	3.3	2.5	5.80	0.2 U	0.2 U
WR-PG-62	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	1.26	0.52	1.78	0.15 U	0.15 U
WR-VC-62	0.12 U	0.12 U	0.12 U	0.12 U	1.96	3.68 U	2.92	4.88	0.12 U	0.12 U
WR-PG-64	0.37 U	0.97 U	1.21 U	0.82 U	0.58 U	1.79 U	0.63 U	1.79 U	0.68 U	0.34 U
WR-VC-64	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	1.78	0.99	2.77	0.14 U	0.14 U
WR-PG-66	0.38 U	1.26 U	1.18 U	0.4 U	0.37 U	0.8 U	0.46 U	1.26 U	0.67 U	0.42 U
WR-VC-66	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.39	1.15	2.54	0.13 U	0.13 U
WR-PG-68	0.97 U	1.02 U	1.95 U	1.86 U	1.81 U	14.6 U	3.19 U	14.6 U	1.68 U	0.62 U
WR-VC-68	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.28	1.1	3.38	0.13 U	0.13 U
WR-PG-70	0.94 U	0.9 U	2.65 U	1.52 U	1.79 U	3.36 U	0.94 U	3.36 U	1.43 U	0.67 U
WR-VC-70	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.12 U	1.75	1.75	0.13 U	0.13 U
WR-PG-72	1.01 U	0.79 U	1.41 U	1.44 U	1.08 U	3.47 U	0.72 U	3.47 U	0.69 U	0.4 U
WR-VC-72	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.69	1.62	4.31	0.12 U	0.12 U
WR-PG-74	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.69	0.48	1.17	0.12 U	0.12 U

Please refer to the Notes at the end of this table.

Table 14 - Sediment Sampling Analytical Results - Polychlorinated Biphenyls TOC Normalized

	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs	Aroclor 1262	Aroclor 1268
DMEF BT	--	--	--	--	--	--	--	38	--	--
WRM 8 to 10										
East										
WR-PG-33	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	1.82	1.82	0.25 U	0.25 U
WR-PG-35	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.5	0.53	1.03	0.16 U	0.16 U
WR-PG-37	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.94	1.19	2.13	0.16 U	0.16 U
WR-PG-39	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.53	0.61	1.14	0.16 U	0.16 U
WR-PG-41	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	1.36	1.29	2.65	0.19 U	0.19 U
WR-PG-43	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.33	0.38	0.71	0.13 U	0.13 U
WR-PG-45	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.64	1.15	1.79	0.18 U	0.18 U
West										
WR-VC-33	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.61	0.71	1.32	0.09 U	0.09 U
WR-VC-35	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.93	3.71	6.64	0.13 U	0.13 U
WR-VC-37	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	2.17	2.61	4.78	0.19 U	0.19 U
WR-VC-39	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.79 U	1.07	1.07	0.16 U	0.16 U
WR-VC-41	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.42 U	0.51	0.51	0.15 U	0.15 U
WR-VC-43	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.85 U	0.69	0.69	0.13 U	0.13 U
WR-VC-45	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.67	1.46	3.13	0.13 U	0.13 U
WR-PG-76	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.37	0.51	0.88	0.13 U	0.13 U
WR-PG-78	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.41	0.55	0.96	0.13 U	0.13 U
WR-PG-80	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.42	1.08	1.50	0.12 U	0.12 U
WR-PG-82	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.61	0.51	1.12	0.17 U	0.17 U
WR-PG-84	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.37	0.53	0.90	0.13 U	0.13 U
WR-PG-86	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.34	0.38	0.72	0.12 U	0.12 U
WR-PG-88	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.44	0.41	0.85	0.12 U	0.12 U
WR-PG-90	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.28	0.32	0.60	0.12 U	0.12 U
WR-PG-92	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.26	0.3	0.56	0.12 U	0.12 U
WR-PG-94	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.6	0.6	1.20	0.11 U	0.11 U
WR-PG-96	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.3	0.33	0.63	0.13 U	0.13 U
WR-PG-98	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.26	0.26	0.52	0.11 U	0.11 U
WR-PG-100	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.32	0.43	0.75	0.11 U	0.11 U
WR-PG-102	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.36	0.44	0.80	0.12 U	0.12 U
WR-PG-104	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.78	1.78	0.13 U	0.13 U
WRM 10 to 12										
East										
WR-PG-47	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.35	0.44	0.79	0.13 U	0.13 U
WR-VC-47	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	1.25 U	1.62	1.62	0.18 U	0.18 U
WR-VC-49	0.14 U	0.14 U	0.14 U	10.78	0.14 U	8.38	6.59	25.75	0.14 U	0.14 U
WR-VC-51	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	3.35	9.15	12.50	0.13 U	0.13 U
WR-VC-53	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	2.17	2.24	4.41	0.14 U	0.14 U
WR-VC-55	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	3.1	4.87	7.97	0.1 U	0.1 U
WR-VC-57	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.65	4.31	6.96	0.13 U	0.13 U
WR-VC-59	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	4.21	6.59	10.80	0.17 U	0.17 U
WR-PG-61	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.41	0.56	0.97	0.15 U	0.15 U
WR-VC-61	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	3.73	3.73	0.14 U	0.14 U
WR-PG-63	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	12.93	12.93	0.16 U	0.16 U
West										
WR-PG-106	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	2.86	2.3	5.16	0.11 U	0.11 U
WR-VC-106	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	26.54	15.17	41.71	0.11 U	0.11 U
WR-PG-108	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	2.42	5.5	7.92	0.16 U	0.16 U
WR-VC-108	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	126.32	1.26 U	126.32	1.26 U	1.26 U
WR-VC-110	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	56.91	24.39	81.30	0.15 U	0.15 U
WR-PG-112	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.31	1.26	1.57	0.11 U	0.11 U
WR-PG-114	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.44	0.45	0.89	0.14 U	0.14 U
WR-VC-114	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.65 U	1.5	1.50	0.13 U	0.13 U
WR-PG-116	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.32	0.28	0.63	0.11 U	0.11 U
WR-VC-116	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.79	0.96	1.75	0.12 U	0.12 U
WR-PG-118	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.31	0.4	0.71	0.13 U	0.13 U
WR-VC-118	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.24	1.99	4.23	0.12 U	0.12 U
WR-PG-120	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.28	0.22	0.50	0.13 U	0.13 U
WR-VC-120	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	1.03	1.24	2.27	0.12 U	0.12 U
WR-PG-122	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.67	0.63	1.30	0.13 U	0.13 U
WR-VC-122	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.46	0.54	1	0.19 U	0.19 U
WR-PG-124	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.41	0.37	0.78	0.14 U	0.14 U
WR-VC-124	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.63	0.68	1.31	0.13 U	0.13 U
WR-PG-126	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.61	0.55	1.16	0.24 U	0.24 U
WR-VC-126	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.02	1.08	2.10	0.13 U	0.13 U
WR-PG-128	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.43	0.37	0.80	0.13 U	0.13 U
WR-VC-128	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	1.07	1.79	2.86	0.24 U	0.24 U
WR-PG-130	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.62	0.96	1.58	0.13 U	0.13 U
WR-VC-130	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	5.07	5.92	11.03	0.25 U	0.25 U
WR-PG-132	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.36	0.37	0.73	0.13 U	0.13 U
WR-VC-132	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	7.04	5.16	12.20	0.11 U	0.11 U
WR-PG-134	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.68	0.57	1.25	0.2 U	0.2 U
WR-VC-134	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	5.07	5.07	10.14	0.25 U	0.25 U

Notes:
Concentrations in mg/kg (Total Organic Carbon Normalized)
Total PCBs = The sum of Aroclors 1016 through 1260
DMEF SL = Dredge Material Evaluation Framework Bioaccumulation Trigger BT; -- = Not available
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)
Shading indicates an exceedance of DMEF-BT.

Columbia Analytical Services (CAS) Qualifier:
U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 15 - Sediment Sampling Analytical Results - Phenols

	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2,3,4,5-Trichlorophenol	2,3,5,6-Trichlorophenol	Pentachlorophenol	2-Methyl-4,6-dinitrophenol
DMEF SL	**--**	**--**	**--**	**--**	**400**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**504**	**--**
DMEF ML	**--**	**--**	**--**	**--**	**690**	**--**
Reference Locations						
WR-PG-01-REF	0.4 U	7.9 U	0.68 U	0.67 U	0.73 U	2.7 U
WR-PG-02-REF	0.39 U	7.7 U	0.67 U	0.65 U	0.71 U	2.7 U
WR-PG-03-REF	0.54 U	0.71 U	0.92 U	0.9 U	0.98 U	3.7 U
WRM 0 to 3						
East						
WR-PG-01	0.65 U	0.86 U	1.2 U	1.1 U	1.2 U	4.5 U
WR-PG-02	0.67 U	0.88 U	1.2 U	1.2 U	1.3 U	4.6 U
WR-PG-03	0.61 U	0.81 U	1.1 U	1.1 U	1.2 U	4.2 U
WR-VC-03	0.5 U	0.66 U	0.86 U	0.84 U	0.92 U	3.4 U
West						
WR-PG-04	0.5 U	0.66 U	0.85 U	0.83 U	1.2	17 U
WR-VC-04	0.45 U	6.3 U	0.76 U	0.75 U	1.7	3.1 U
WRM 3 to 6						
East						
WR-VC-05	0.52 U	0.68 U	0.89 U	0.87 U	0.95 U	3.5 U
WR-VC-07	0.48 U	0.64 U	0.83 U	0.81 U	1.1	3.3 U
WR-PG-09	0.58 U	0.76 U	0.99 U	0.96 U	2	3.9 U
WR-VC-09	0.48 U	0.63 U	0.82 U	0.8 U	0.88 U	6.5 U
WR-PG-11	0.61 U	0.8 U	1.1 U	1.1 U	5 U	4.2 U
WR-VC-11	0.57 U	1.2 U	0.83 U	0.81 U	1.4	6.6 U
WR-PG-13	0.54 U	0.71 U	0.92 U	0.9 U	3.2	19 U
WR-VC-13	0.49 U	0.64 U	0.84 U	0.82 U	2.6	6.6 U
WR-PG-15	0.54 U	0.71 U	0.92 U	0.9 U	5.2	3.7 U
WR-VC-15	0.49 U	0.64 U	0.83 U	0.81 U	1.2	3.3 U
WR-PG-17	0.56 U	11 U	11 U	0.93 U	7.3	3.8 U
WR-VC-17	0.47 U	0.62 U	0.81 U	0.79 U	0.86 U	3.2 U
WR-PG-19	0.56 U	12 U	12 U	0.94 U	4.7	3.8 U
WR-VC-19	0.5 U	8.8 U	0.86 U	0.84 U	1.8	3.4 U
WR-PG-21	0.49 U	9.6 U	0.84 U	0.83 U	7.1 U	3.4 U
WR-PG-23	0.51 U	0.68 U	11 U	13	15	3.5 U
WR-VC-23	0.38 U	0.5 U	0.65 U	0.63 U	1.7 U	13 U
WR-PG-27	0.34 U	0.45 U	0.58 U	0.57 U	3.3	23 U
West						
WR-PG-06	0.59 U	7.8 U	1.1 U	0.98 U	1.1 U	4 U
WR-VC-06	2.2 U	0.71 U	0.93 U	0.91 U	1.8	3.7 U
WR-VC-08	0.51 U	0.67 U	0.88 U	0.86 U	0.94 U	6.9 U
WR-VC-10	0.51 U	0.67 U	0.88 U	0.86 U	0.94 U	6.9 U
WR-PG-12	0.52 U	0.69 U	0.9 U	0.87 U	3.5	3.6 U
WR-VC-12	0.47 U	0.62 U	0.81 U	0.79 U	2	6.4 U
WR-PG-14	0.63 U	0.82 U	1.1 U	1.1 U	4.2	4.3 U
WR-VC-14	0.78	0.62 U	0.81 U	0.79 U	2.2	6.4 U
WR-PG-16	0.49 U	0.64 U	0.84 U	0.82 U	0.89 U	66 U
WR-VC-16	0.44 U	8.8 U	0.76 U	0.74 U	2.9	3 U
WR-PG-18	0.51 U	0.67 U	0.87 U	0.85 U	11 U	18 U
WR-VC-18	0.5 U	0.65 U	0.85 U	1.1 U	3.1	6.7 U
WR-VC-20	0.48 U	0.63 U	6.8 U	0.8 U	1.5	3.3 U
WR-PG-22	0.64 U	0.84 U	11	1.1 U	4.5	4.4 U
WR-VC-22	0.54 U	0.71 U	0.93 U	0.9 U	1.6	3.7 U
WR-PG-24	0.57 U	0.75 U	12 U	0.96 U	1.1 U	3.9 U
WR-VC-24	0.54 U	9.8 U	0.92 U	0.9 U	0.99 U	3.7 U
WR-PG-26	0.32 U	0.42 U	0.55 U	0.53 U	0.58 U	2.2 U
WR-VC-26	0.71 U	0.66 U	0.86 U	0.84 U	0.92 U	6.8 U
WR-VC-28	0.54 U	0.71 U	0.92 U	0.9 U	0.99 U	7.3 U
WR-PG-30	0.59 U	0.78 U	1.1 U	0.99 U	1.1 U	4 U
WR-VC-30	0.54 U	0.72 U	0.93 U	0.91 U	2.6	19 U
WR-VC-32	0.51 U	0.67 U	0.87 U	0.85 U	0.93 U	3.5 U
WR-PG-34	0.68 U	0.9 U	1.2 U	1.2 U	4.7	4.7 U
WR-VC-34	0.56 U	0.73 U	0.95 U	0.93 U	1.1 U	3.8 U
WR-PG-36	0.47 U	0.62 U	0.81 U	0.79 U	140	3.2 U
WR-VC-36	0.56 U	0.73 U	0.95 U	0.93 U	1.1 U	7.6 U
WR-PG-42	0.42 U	0.55 U	0.71 U	0.7 U	0.76 U	150 U
WR-VC-42	0.35 U	5.3 U	0.6 U	0.58 U	0.64 U	2.4 U
WR-VC-46	0.39 U	6.8 U	0.66 U	0.65 U	0.71 U	26 U
WR-PG-48	0.54 U	6.3 U	0.93 U	0.91 U	6	37 U

Please refer to the Notes at the end of this table.

Table 15 - Sediment Sampling Analytical Results - Phenols

	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2,3,4,5-Trichlorophenol	2,3,5,6-Trichlorophenol	Pentachlorophenol	2-Methyl-4,6-dinitrophenol
DMEF SL	**--**	**--**	**--**	**--**	**400**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**504**	**--**
DMEF ML	**--**	**--**	**--**	**--**	**690**	**--**
WRM 6 to 8						
East						
WR-PG-29	0.6 U	0.79 U	1.1 U	1.1 U	1.2 U	4.1 U
WR-VC-29	0.5 U	5.4 U	0.85 U	0.83 U	0.91 U	3.4 U
WR-VC-31	0.5 U	7.5 U	0.86 U	0.84 U	0.92 U	3.4 U
West						
WR-PG-50	0.58 U	12 U	1 U	0.98 U	1.1 U	200 U
WR-VC-50	0.51 U	0.68 U	11 U	0.93 U	2.2	70 U
WR-PG-52	0.51 U	0.68 U	0.88 U	0.86 U	0.94 U	180 U
WR-VC-52	0.45 U	0.6 U	31 U	0.76 U	6.9 U	61 U
WR-PG-54	5.8 U	7.7 U	10 U	9.7 U	11 U	40 U
WR-VC-54	0.5 U	0.65 U	11 U	0.83 U	0.91 U	34 U
WR-PG-56	2.7	9.6 U	0.83 U	0.81 U	1.5 U	3.3 U
WR-VC-56	1.2 U	0.59 U	0.77 U	0.75 U	0.83 U	6.1 U
WR-PG-58	0.45 U	0.59 U	0.76 U	0.74 U	5.1 U	3 U
WR-VC-58	7.1 U	7.1 U	7.1 U	4.4 U	8.7	2.5 U
WR-PG-60	0.47 U	0.61 U	0.8 U	0.78 U	0.85 U	3.2 U
WR-VC-60	0.37 U	0.49 U	0.64 U	1.9 U	0.68 U	13 U
WR-PG-62	0.55 U	0.73 U	0.94 U	0.92 U	1.1 U	3.8 U
WR-VC-62	0.5 U	0.66 U	0.86 U	10 U	0.92 U	3.4 U
WR-PG-64	0.59 U	0.78 U	1.1 U	0.99 U	1.1 U	4 U
WR-VC-64	0.57 U	0.75 U	12 U	0.96 U	1.1 U	3.9 U
WR-PG-66	3.2	9.9 U	1.1 U	1.1 U	16	4.3 U
WR-VC-66	0.51 U	6.2 U	11 U	0.86 U	11 U	3.5 U
WR-PG-68	0.6 U	0.79 U	1.1 U	1 U	1.1 U	4.1 U
WR-VC-68	0.53 U	11 U	0.9 U	0.88 U	47	3.6 U
WR-PG-70	0.58 U	0.76 U	7.4 U	0.97 U	5 U	3.9 U
WR-VC-70	0.51 U	0.67 U	0.87 U	0.85 U	7.4	3.5 U
WR-PG-72	13 U	13 U	1.2 U	1.2 U	1.3 U	4.5 U
WR-VC-72	0.5 U	9.4 U	0.85 U	0.84 U	0.91 U	3.4 U
WR-PG-74	0.64 U	0.84 U	1.1 U	1.1 U	1.2 U	4.4 U
WRM 8 to 10						
East						
WR-PG-33	0.41 U	0.54 U	0.7 U	0.69 U	0.75 U	2.8 U
WR-VC-33	0.34 U	4.8 U	0.58 U	0.57 U	0.62 U	2.3 U
WR-PG-35	0.52 U	0.68 U	1.6 U	0.94 U	1.6 U	3.5 U
WR-VC-35	0.42 U	0.56 U	0.72 U	0.71 U	1.6	2.9 U
WR-PG-37	0.48 U	0.64 U	0.83 U	0.81 U	1.1 j-J	3.3 U
WR-VC-37	0.52 U	0.54 U	0.7 U	0.69 U	0.75 U	2.8 U
WR-PG-39	0.5 U	0.66 U	9.5 U	0.84 U	0.92 U	3.4 U
WR-VC-39	0.47 U	5.8 U	0.81 U	0.79 U	4	3.2 U
WR-PG-41	0.47 U	0.62 U	3.1 U	0.78 U	7 U	3.2 U
WR-VC-41	0.52 U	5.5 U	0.88 U	0.86 U	0.94 U	3.5 U
WR-PG-43	0.56 U	0.73 U	0.95 U	0.93 U	1.1 U	3.8 U
WR-VC-43	0.46 U	6.1 U	0.78 U	0.76 U	0.83 U	3.1 U
WR-PG-45	0.46 U	0.61 U	0.79 U	0.77 U	1.5 U	3.2 U
WR-VC-45	0.48 U	4.6 U	0.82 U	0.8 U	0.88 U	3.3 U
West						
WR-PG-76	0.62 U	0.82 U	1.1 U	1.1 U	1.2 U	4.2 U
WR-PG-78	0.66 U	0.87 U	1.2 U	1.1 U	1.3 U	4.5 U
WR-PG-80	0.62 U	0.81 U	1.1 U	1.1 U	1.2 U	4.2 U
WR-PG-82	0.5 U	0.66 U	0.86 U	0.84 U	0.92 U	3.4 U
WR-PG-84	0.61 U	0.8 U	1.1 U	1.1 U	1.2 U	4.2 U
WR-PG-86	0.66 U	0.87 U	1.2 U	1.1 U	1.3 U	4.5 U
WR-PG-88	0.71 U	0.93 U	1.3 U	1.2 U	12 U	4.8 U
WR-PG-90	0.7 U	0.92 U	1.2 U	1.2 U	1.3 U	9.5 U
WR-PG-92	0.7 U	0.92 U	1.2 U	1.2 U	9.5 U	4.8 U
WR-PG-94	0.69 U	0.91 U	6.3 U	1.2 U	1.3 U	4.7 U
WR-PG-96	0.92 U	1.1 U	1.4 U	1.3 U	1.5 U	5.3 U
WR-PG-98	0.67 U	0.88 U	1.2 U	1.2 U	1.3 U	4.6 U
WR-PG-100	0.75 U	0.99 U	1.3 U	1.3 U	1.4 U	5.1 U
WR-PG-102	0.65 U	0.85 U	1.2 U	1.1 U	1.2 U	4.7 U
WR-PG-104	0.68 U	0.9 U	3.9 U	1.7 U	3.6 U	2.8 U

Please refer to the Notes at the end of this table.

Table 15 - Sediment Sampling Analytical Results - Phenols

	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	2,3,4,5-Trichlorophenol	2,3,5,6-Trichlorophenol	Pentachlorophenol	2-Methyl-4,6-dinitrophenol
DMEF SL	**--**	**--**	**--**	**--**	**400**	**--**
DMEF BT	**--**	**--**	**--**	**--**	**504**	**--**
DMEF ML	**--**	**--**	**--**	**--**	**690**	**--**
WRM 10 to 12						
East						
WR-PG-47	0.55 U	0.73 U	4.9 U	0.92 U	8.7 U	3.8 U
WR-VC-47	0.47 U	6.1 U	0.81 U	0.79 U	0.86 U	3.2 U
WR-VC-49	0.46 U	7.4 U	1.6 U	6.3 U	6.2	3.2 U
WR-VC-51	0.43 U	8.3 U	0.73 U	0.71 U	64	2.9 U
WR-VC-53	0.39 U	7.6 U	0.66 U	0.65 U	0.71 U	2.7 U
WR-VC-55	0.38 U	4.1 U	0.66 U	0.64 U	0.7 U	2.6 U
WR-VC-57	0.46 U	6.2 U	0.79 U	0.77 U	9.1 U	3.2 U
WR-VC-59	0.43 U	0.56 U	0.73 U	0.71 U	0.78 U	2.9 U
WR-PG-61	0.55 U	7.9 U	0.94 U	0.91 U	1 U	3.7 U
WR-VC-61	0.44 U	0.58 U	0.76 U	0.74 U	0.81 U	3 U
WR-PG-63	0.45 U	0.59 U	0.83 U	0.75 U	11	16 U
West						
WR-PG-106	0.6 U	0.79 U	2.1 U	1 U	12 U	4.1 U
WR-VC-106	0.46 U	7 U	0.79 U	0.77 U	2.7	3.2 U
WR-PG-108	0.36 U	4.5 U	0.62 U	0.6 U	2.6	2.5 U
WR-VC-108	0.45 U	6.9 U	1.3 U	4.2 U	1.8	3.1 U
WR-VC-110	0.34 U	4.9 U	0.58 U	0.57 U	4.4	12 U
WR-PG-112	0.63 U	0.83 U	1.1 U	1.1 U	5	4.3 U
WR-PG-114	0.57 U	0.75 U	0.98 U	2.4 U	23	3.9 U
WR-VC-114	0.49 U	0.64 U	0.84 U	0.82 U	9.5 U	3.3 U
WR-PG-116	0.59 U	12 U	1.1 U	0.99 U	7.5 U	4 U
WR-VC-116	0.53 U	6.4 U	0.9 U	0.88 U	0.97 U	3.6 U
WR-PG-118	0.61 U	0.8 U	1.1 U	1.1 U	38	4.2 U
WR-VC-118	0.44 U	8.5 U	0.76 U	0.74 U	1.5	3 U
WR-PG-120	0.89 U	1.2 U	5.9 U	1.5 U	16 U	6.1 U
WR-VC-120	0.46 U	6 U	9.2 U	0.78 U	6.3 U	3.2 U
WR-PG-122	0.61 U	0.8 U	1.1 U	1.1 U	1.2 U	4.2 U
WR-VC-122	0.43 U	6.7 U	0.73 U	0.71 U	0.78 U	2.9 U
WR-PG-124	0.56 U	0.74 U	0.96 U	0.94 U	1.1 U	3.8 U
WR-VC-124	0.45 U	6.6 U	0.77 U	0.75 U	0.83 U	3.1 U
WR-PG-126	0.49 U	0.65 U	0.84 U	0.82 U	0.9 U	3.4 U
WR-VC-126	0.41 U	0.55 U	0.71 U	0.69 U	0.76 U	2.8 U
WR-PG-128	0.57 U	0.75 U	0.98 U	0.96 U	1.1 U	3.9 U
WR-VC-128	0.37 U	7.4 U	0.64 U	0.62 U	0.68 U	2.5 U
WR-PG-130	0.54 U	0.71 U	0.92 U	0.9 U	11 U	3.7 U
WR-VC-130	0.35 U	6.8	0.59 U	0.58 U	0.63 U	2.4 U
WR-PG-132	0.65 U	0.86 U	1.2 U	1.1 U	1.2 U	4.5 U
WR-VC-132	0.44 U	0.58 U	0.75 U	0.73 U	1.8	3 U
WR-PG-134	0.52 U	0.68 U	0.89 U	0.87 U	0.95 U	3.5 U
WR-VC-134	0.34 U	0.44 U	0.58 U	0.56 U	0.62 U	2.3 U

Notes:

Concentrations reported in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Columbia Analytical Services (CAS) Qualifier:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Tetra Tech EC Qualifiers:

j = The result should be considered an estimated value.

Table 16 - Sediment Sampling Analytical Results - Chlorinated Herbicides

Sample ID	Dalapon	Dicamba	MCPP	MCPA	Dichlorprop	2,4-D	Silvex	2,4,5-T	2,4-DB	Dinoseb
Reference Locations										
WR-PG-01-REF	24	4.5 U	1,300 U	380 U	4 U	3.7 U	2.9 U	3 U	21 U	4 U
WR-PG-02-REF	11 U	4.4 U	590 U	380 U	3.9 U	3.6 U	2.8 U	3 U	21 U	3.9 U
WR-PG-03-REF	15 U	6 U	2,500 U	510 U	5.4 U	4.9 U	3.9 U	4.1 U	28 U	5.4 U
WRM 3 to 6										
West										
WR-PG-06	16 U	6.6 U	4,100 U	560 U	5.9 U	5.4 U	4.2 U	4.5 U	31 U	5.9 U
WRM 6 to 8										
West										
WR-PG-58	12 U	5 U	4,200	430 U	4.5 U	4.1 U	3.2 U	3.4 U	23 U	4.5 U
WR-VC-58	12	4 U	3,100 U	340 U	3.6 U	3.3 U	2.6 U	2.7 U	19 U	3.6 U
WR-PG-60	13 U	5.2 U	3,200 U	450 U	4.7 U	4.3 U	3.4 U	3.5 U	24 U	4.7 U
WR-PG-62	15 U	6.2 U	1,800 U	530 U	5.5 U	5.1 U	4 U	4.2 U	29 U	5.5 U
WR-VC-62	16	5.6 U	3,000 J	480 U	5 U	4.6 U	3.6 U	3.8 U	26 U	5 U
WR-PG-64	16 U	6.6 U	2,100 U	570 U	5.9 U	5.4 U	4.3 U	4.5 U	31 U	5.9 U

Notes:
Concentrations reported in µg/kg
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Columbia Analytical Services (CAS) Qualifier:
U = The compound was analyzed for, but was not detected at or above the indicated detection limit.
J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

Table 17 - Sediment Sampling Analytical Results - Dioxins/Furans

	Reference Locations			WRM 3 to 6 - West	WRM 6 to 8 - West								
	WR-PG-01-REF	WR-PG-02-REF	WR-PG-03-REF	WR-PG-36	WR-PG-56	WR-PG-58	WR-PG-60	WR-PG-62	WR-PG-64	WR-PG-66	WR-PG-68	WR-PG-70	WR-PG-72
2,3,7,8-Tetrachlorodibenzo-p-dioxin	0.057 U	0.12 U	0.047 U	0.064 U	0.105	0.118	1.68	0.057 U	0.051 U	0.081 U	0.326 U	0.099 U	0.09 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxins	0.053 U	0.082 U	0.042 U	0.149	0.164	0.038 U	0.935	0.04 U	0.386	0.089 U	0.395 U	0.1 U	0.103 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	0.035 U	0.078 U	0.023 U	0.132	0.126	0.269	2.301	0.154	0.56	0.284	0.395 U	0.205 U	0.15
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	0.24	0.456	0.343	0.842	0.957	2.289	23.95	0.893	2.504	1.076	2.374	0.892	0.672
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	0.199	0.277	0.263	0.555	0.559	0.776	7.129	0.556	1.704	0.671	1.545	0.224 U	0.446
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	4.253	12.355	6.38	15.753	22.477	63.268	649.209	17.566	46.658	23.935	56.709	22.12	23.525
Octachlorodibenzo-p-dioxin	41.823	87.909	47.52	119.242 B	209.406	572.872	6,374.098	165.105	401.536	220.763	622.145	224.324	175.512
2,3,7,8-Tetrachlorodibenzofuran	0.084 U	0.108 U	0.05 U	1.959	5.014	0.729	0.702	1.248	9.789	3.802	60.064	16.451	12.836
1,2,3,7,8-Pentachlorodibenzofuran	0.041 U	0.066 U	0.03 U	2.592	5.243	0.819	2.232	0.941	13.13	4.156	139.503	23.46	34.054
2,3,4,7,8-Pentachlorodibenzofuran	0.043 U	0.069 U	0.044 U	1.286	1.99	0.428	2.532	0.483	5.252	1.569	64.839	9.126	9.573
1,2,3,4-Hexachlorodibenzofuran	0.102	0.181	0.102	2.22	5.894	4.075	23.491	1.405	59.574	9.882	213.017	49.244	51.912
1,2,3,6-Hexachlorodibenzofuran	0.032 U	0.05 U	0.03 U	0.614	1.696	1.381	11.067	0.5	13.213	2.883	54.551	13.603	10.788
1,2,3,7-Hexachlorodibenzofuran	0.035 U	0.052 U	0.036 U	0.334	0.103 U	0.077 U	0.496	0.053 U	0.78	0.924	2.739	4.776	4.464
2,3,4,6-Hexachlorodibenzofuran	0.031 U	0.047 U	0.033 U	0.259	0.589	0.836	10.679	0.291	2.815	0.093 U	15.611	2.864	2.286
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.706 u-JB	1.377	1.68	2.373	4.698	15.101	176.108	4.59	36.387	9.195	64.946	29.369	14.91
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.053 U	0.135	0.126	0.245	1.38	2.025	17.252	0.447	11.504	1.969	25.244	10.94	6.486
Octachlorodibenzofuran	2.179	5.145	4.312	7.26 JB	14.005	58.33	771.04	12.682	61.501	15.064	94.842	70.469	23.673
Total Tetra-Dioxins	0.057 U	0.611	0.34	0.282	0.767	0.215	4.101	0.057 U	1.939	0.081 U	2.461	0.099 U	0.09 U
Total Penta-Dioxins	0.053 U	0.082 U	0.042 U	0.585	0.501	0.038 U	11.712	0.04 U	0.863	0.089 U	0.395 U	0.1 U	0.103 U
Total Hexa-Dioxins	1.539	2.616	2.065	6.034	6.106	10.58	119.806	5.227	13.544	7.217	18.745	6.494	5.108
Total Hepta-Dioxins	8.437	25.04	11.783	35.233	49.925	115.338	1,182.306	43.319	46.658	51.641	173.936	75.786	59.2
Total Tetra-Furans	0.084 U	0.108 U	0.05 U	3.447	12.031	1.472	7.774	2.047	22.687	6.848	181.965	40.544	24.74
Total Penta-Furans	0.24	0.705	0.487	8.158	15.08	6.601	70.923	3.649	35.998	11.649	400.189	59.544	71.015
Total Hexa-Furans	0.831	1.851	0.848	4.988	13.32	25.508	315.524	5.961	94.712	20.399	350.605	83.652	78.554
Total Hepta-Furans	2.063	4.627	4.784	6.765	12.808	59.979	811.625	11.812	71.547	20.545	133.447	57.208	31.157

Notes:
Concentrations reported in ng/kg
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample).

Columbia Analytical Services (CAS) Qualifier:
U = The compound was analyzed for, but was not detected at or above the indicated detection limit.
J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.
B = The compound was found in the asociated method blank at a level that is significant to the sample result.

Tetra Tech EC Qualifiers:
u = The result should be considered not detected at the indicated detection limit.

See Volume II of this report for more analytical testing details.

Table 18 - Sediment Sampling Analytical Results - Volatile Organic Compounds

	Reference Locations			WRM 3 to 6 - West		WRM 6 to 8 - West													WRM 8 to 10 - West		
Sample ID	WR-PG-01-REF	WR-PG-02-REF	WR-PG-03-REF	WR-PG-14	WR-PG-42	WR-PG-50	WR-PG-52	WR-PG-54	WR-PG-56	WR-PG-58	WR-PG-60	WR-PG-62	WR-PG-64	WR-PG-66	WR-PG-68	WR-PG-70	WR-PG-72	WR-PG-74	WR-PG-84	WR-PG-86	WR-PG-88
Sample Date	5/21/2005	5/21/2005	5/21/2005	5/26/2005	5/26/2005	5/27/2005	5/27/2005	5/27/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/25/2005	5/24/2005	5/24/2005	5/24/2005
Dichlorodifluoromethane	0.18 U	0.17 U	0.24 U	0.28 U	0.19 U	0.26 U	0.23 U	0.26 U	0.22 U	0.2 U	0.21 U	0.25 U	0.26 U	0.28 U	0.27 U	0.26 U	0.29 U	0.28 U	0.27 U	0.29 U	0.31 U
Chloromethane	0.3 U	0.3 U	0.41 U	0.48 U	0.32 U	0.44 U	0.39 U	0.44 U	0.37 U	0.34 U	0.35 U	0.42 U	0.45 U	0.48 U	0.45 U	0.44 U	0.5 U	0.49 U	0.46 U	0.5 U	0.54 U
Vinyl Chloride	0.14 U	0.14 U	0.19 U	0.22 U	0.15 U	0.2 U	0.18 U	0.2 U	0.17 U	0.15 U	0.16 U	0.19 U	0.2 U	0.22 U	0.21 U	0.2 U	0.23 U	0.22 U	0.21 U	0.23 U	0.24 U
Bromomethane	0.59 U	0.58 U	0.79 U	0.92 U	0.62 U	0.86 U	0.76 U	0.86 U	0.71 U	0.66 U	0.69 U	0.81 U	0.87 U	0.93 U	0.88 U	0.85 U	0.98 U	0.95 U	0.9 U	0.97 U	1.1 U
Chloroethane	0.45 U	0.44 U	0.6 U	0.7 U	0.47 U	0.65 U	0.58 U	0.65 U	0.54 U	0.5 U	0.52 U	0.62 U	0.66 U	0.71 U	0.67 U	0.65 U	0.74 U	0.72 U	0.68 U	0.74 U	0.79 U
Trichlorofluoromethane	0.13 U	0.13 U	0.18 U	0.21 U	0.14 U	0.19 U	0.17 U	0.19 U	0.16 U	0.15 U	0.15 U	0.18 U	0.19 U	0.21 U	0.2 U	0.19 U	0.22 U	0.21 U	0.2 U	0.22 U	0.23 U
Acetone	8.9 u-BJ	10 u-B	19 u-B	30 u	13 u	54 u	15 u	26 u	9.5 u-J	17 u	27 u-B	17 u-B	26 u-B	11 u-BJ	18 u-B	34 u-B	53 u-B	51 u-B	27 u-B	33 u-B	22 u-B
Iodomethane (Methyl Iodide)	1.1 U	1.1 U	1.5 U	1.7 U	1.2 U	1.6 U	1.4 U	1.6 U	1.3 U	1.2 U	1.3 U	1.5 U	1.6 U	1.7 U	1.6 U	1.6 U	1.8 U	1.8 U	1.7 U	1.8 U	1.9 U
1,1-Dichloroethene	0.13 U	0.13 U	0.18 U	0.21 U	0.14 U	0.19 U	0.17 U	0.19 U	0.16 U	0.15 U	0.16 U	0.18 U	0.2 U	0.21 U	0.2 U	0.19 U	0.22 U	0.21 U	0.2 U	0.22 U	0.23 U
Carbon Disulfide	0.21 U	0.22 u-J	0.34 u-J	0.33 U	0.22 U	0.45 u-J	0.27 U	0.3 U	0.25 U	0.23 U	0.31 u-J	0.29 U	0.31 U	0.33 U	0.31 U	0.3 U	0.37 u-J	0.34 U	0.32 U	0.35 U	0.37 U
Methylene Chloride	2.6 u-J	3 u-J	3 u-J	2 u-J	1.5 u-J	1.3 u-J	1 u-J	1.3 u-J	1.5 u-J	2 u-J	3.8 u-J	3.3 u-J	2.1 u-J	3.4 u-J	2.6 u-J	2.2 u-J	2.8 u-J	2.5 u-J	2.4 u-J	2.7 u-J	2.7 u-J
Acrylonitrile	0.37 U	0.36 U	0.49 U	0.58 U	0.38 U	0.54 U	0.47 U	0.53 U	0.45 U	0.41 U	0.43 U	0.51 U	0.54 U	0.58 U	0.55 U	0.53 U	0.61 U	0.59 U	0.56 U	0.61 U	0.65 U
Methyl tert-Butyl Ether	0.062 U	0.061 U	0.083 U	0.097 U	0.065 U	0.091 U	0.08 U	0.09 U	0.075 U	0.069 U	0.072 U	0.086 U	0.092 U	0.098 U	0.093 U	0.09 U	0.11 U	0.1 U	0.095 U	0.11 U	0.11 U
trans-1,2-Dichloroethene	0.3 U	0.3 U	0.41 U	0.48 U	0.32 U	0.44 U	0.39 U	0.44 U	0.37 U	0.34 U	0.35 U	0.42 U	0.45 U	0.48 U	0.45 U	0.44 U	0.5 U	0.49 U	0.46 U	0.5 U	0.54 U
1,1-Dichloroethane	0.09 U	0.088 U	0.13 U	0.15 U	0.095 U	0.14 U	0.12 U	0.14 U	0.11 U	0.11 U	0.11 U	0.13 U	0.14 U	0.15 U	0.14 U	0.14 U	0.25	0.15 U	0.14 U	0.15 U	0.16 U
Vinyl Acetate	0.57 r-U	0.17 r-U	2.4 r-U	0.9 U	0.6 U	0.84 U	0.74 U	0.83 U	0.69 r-U	0.64 r-U	0.67 r-U	0.79 r-U	0.85 r-U	0.91 r-U	0.86 r-U	0.83 r-U	0.95 r-U	0.92 r-U	0.87 r-U	0.95 r-U	1.1 r-U
2-Butanone (MEK)	1.8 U	1.7 U	2.4 U	4.3	1.9 U	9.6	2.3 U	3.8	2.2 U	2 U	3.3	2.5 U	3.3	2.8 U	2.7 U	5.3	8.2	7.2	3	4.6	3.1 U
Chloroform	0.089 U	0.087 U	0.12 U	0.14 U	0.093 U	0.13 U	0.12 U	0.13 U	0.11 U	0.099 U	0.11 U	0.13 U	0.14 U	0.2	0.14 U	0.13 U	0.15 U	0.15 U	0.14 U	0.15 U	0.16 U
Bromochloromethane	0.095 U	0.093 U	0.13 U	0.15 U	0.1 U	0.14 U	0.13 U	0.14 U	0.12 U	0.11 U	0.12 U	0.14 U	0.15 U	0.16 U	0.15 U	0.14 U	0.16 U	0.16 U	0.15 U	0.16 U	0.17 U
1,1,1-Trichloroethane (TCA)	0.094 U	0.092 U	0.13 U	0.15 U	0.098 U	0.14 U	0.13 U	0.14 U	0.12 U	0.11 U	0.11 U	0.13 U	0.14 U	0.15 U	0.14 U	0.14 U	0.16 U	0.16 U	0.15 U	0.16 U	0.17 U
Bromodichloromethane	0.11 U	0.11 U	0.15 U	0.17 U	0.12 U	0.16 U	0.14 U	0.16 U	0.14 U	0.12 U	0.13 U	0.15 U	0.16 U	0.18 U	0.17 U	0.16 U	0.18 U	0.18 U	0.17 U	0.18 U	0.2 U
Carbon Tetrachloride	0.16 U	0.16 U	0.22 U	0.25 U	0.17 U	0.23 U	0.21 U	0.23 U	0.19 U	0.18 U	0.19 U	0.22 U	0.24 U	0.25 U	0.24 U	0.23 U	0.27 U	0.26 U	0.24 U	0.26 U	0.28 U
1,2-Dichloroethane (EDC)	0.049 U	0.048 U	0.066 U	0.077 U	0.052 U	0.072 U	0.064 U	0.072 U	0.06 U	0.055 U	0.058 U	0.068 U	0.073 U	0.078 U	0.074 U	0.071 U	0.11	0.079 U	0.075 U	0.082 U	0.087 U
Benzene	0.079	0.079	0.12	0.097 U	0.07 u-J	0.12 u-J	0.1 u-J	0.09 U	0.075 U	0.069 U	0.075	0.086 U	0.092 U	0.1	0.18	0.098	0.33	0.13	0.11	0.12	0.13
Trichloroethene (TCE)	0.098 U	0.096 U	0.14 U	0.16 U	0.11 U	0.15 U	0.13 U	0.15 U	0.12 U	0.11 U	0.12 U	0.14 U	0.15 U	0.16 U	0.15 U	0.15 U	0.17 U	0.16 U	0.15 U	0.17 U	0.18 U
1,2-Dichloropropane	0.056 U	0.055 U	0.075 U	0.087 U	0.058 U	0.082 U	0.072 U	0.081 U	0.068 U	0.062 U	0.065 U	0.077 U	0.082 U	0.088 U	0.083 U	0.081 U	0.093 U	0.09 U	0.085 U	0.092 U	0.099 U
2-Chloroethyl Vinyl Ether	0.24 U	0.24 U	0.32 U	0.38 U	0.25 U	0.35 U	0.31 U	0.35 U	0.29 U	0.27 U	0.28 U	0.33 U	0.36 U	0.38 U	0.36 U	0.35 U	0.4 U	0.39 U	0.37 U	0.4 U	0.43 U
Dibromomethane	0.13 U	0.13 U	0.18 U	0.21 U	0.14 U	0.19 U	0.17 U	0.19 U	0.16 U	0.15 U	0.16 U	0.18 U	0.2 U	0.21 U	0.2 U	0.19 U	0.22 U	0.21 U	0.2 U	0.22 U	0.23 U
2-Hexanone	1.1 U	0.99 U	1.4 U	1.6 U	1.1 U	1.5 U	1.4 U	1.5 U	1.3 U	1.2 U	1.2 U	1.4 U	1.5 U	1.7 U	1.6 U	1.5 U	1.7 U	1.7 U	1.6 U	1.7 U	1.8 U
cis-1,3-Dichloropropene	0.049 U	0.048 U	0.066 U	0.077 U	0.052 U	0.072 U	0.064 U	0.072 U	0.06 U	0.055 U	0.058 U	0.068 U	0.073 U	0.078 U	0.074 U	0.071 U	0.082 U	0.079 U	0.075 U	0.082 U	0.087 U
Toluene	0.24 U	0.24 U	1.9	0.38 U	0.25 U	0.35 U	0.31 U	0.35 U	0.29 U	0.27 U	0.28 U	0.33 U	0.36 U	0.38 U	0.36 U	0.35 U	0.55	0.39 U	0.37 U	0.4 U	0.43 U
trans-1,3-Dichloropropene	0.07 U	0.068 U	0.094 U	0.11 U	0.073 U	0.11 U	0.09 U	0.11 U	0.085 U	0.078 U	0.082 U	0.097 U	0.11 U	0.12 U	0.11 U	0.11 U	0.12 U	0.12 U	0.11 U	0.12 U	0.13 U
1,1,2-Trichloroetane	0.094 U	0.092 U	0.13 U	0.15 U	0.098 U	0.14 U	0.13 U	0.14 U	0.12 U	0.11 U	0.11 U	0.13 U	0.14 U	0.15 U	0.14 U	0.14 U	0.16 U	0.16 U	0.15 U	0.16 U	0.17 U
4-Methyl-2-pentanone (MIBK)	0.38 U	0.38 U	0.51 U	0.6 U	0.4 U	0.56 U	0.49 U	0.56 U	0.46 U	0.43 U	0.45 U	0.53 U	0.57 U	0.61 U	0.57 U	0.55 U	0.64 U	0.62 U	0.58 U	0.63 U	0.68 U
Tetrachloroethene (PCE)	0.16 U	0.15 U	0.21 U	0.24 U	0.16 U	0.23 U	0.2 U	0.23 U	0.19 U	0.17 U	0.18 U	0.21 U	0.23 U	0.25 U	0.23 U	0.22 U	0.26 U	0.25 U	0.24 U	0.26 U	0.27 U
Dibromochloromethane	0.11 U	0.11 U	0.15 U	0.17 U	0.12 U	0.16 U	0.14 U	0.16 U	0.14 U	0.12 U	0.13 U	0.15 U	0.16 U	0.18 U	0.17 U	0.16 U	0.18 U	0.18 U	0.17 U	0.18 U	0.2 U
Chlorobenzene	0.12 U	0.11 U	0.15 U	0.18 U	0.12 U	0.29 u-J	0.15 U	0.17 U	0.14 U	0.13 U	0.13 U	0.16 U	0.26	0.3	4.2	5.4	1.1	0.18 U	0.17 U	0.19 U	0.2 U
1,1,1,2-Tetrachloroethane	0.049 U	0.048 U	0.066 U	0.077 U	0.052 U	0.072 U	0.064 U	0.072 U	0.06 U	0.055 U	0.058 U	0.068 U	0.073 U	0.078 U	0.074 U	0.071 U	0.082 U	0.079 U	0.075 U	0.082 U	0.087 U
Ethylbenzene	0.12 U	0.11 U	0.16 U	0.18 U	0.12 U	0.6	0.15 U	0.17 U	0.14 U	0.13 U	0.14 U	0.16 U	0.17 U	0.18 U	0.17 U	0.17 U	0.19 U	0.19 U	0.18 U	0.19 U	0.2 U
m,p-Xylene	0.21 U	0.21 U	0.28 U	0.33 U	0.22 U	1.8	0.27 U	0.3 U	0.25 U	0.23 U	0.24 U	0.35	0.31 U	0.33 U	0.31 U	0.3 U	0.35 U	0.34 U	0.32 U	0.35 U	0.37 U
o-Xylene	0.12 U	0.12 U	0.16 U	0.19 U	0.13 U	2.2	0.16 U	0.18 U	0.15 U	0.14 U	0.14 U	0.66	0.18 U	0.19 U	0.18 U	0.18 U	0.2 U	0.2 U	0.19 U	0.2 U	0.22 U
Stryene	0.12 U	0.12 U	0.16 U	0.19 U	0.13 U	0.18 U	0.16 U	0.18 U	0.15 U	0.14 U	0.14 U	0.17 U	0.18 U	0.19 U	0.18 U	0.17 U	0.2 U	0.19 U	0.18 U	0.2 U	0.21 U
Bromoform	0.073 U	0.071 U	0.098 U	0.12 U	0.076 U	0.11 U	0.094 U	0.11 U	0.089 U	0.081 U	0.085 U	0.11 U	0.11 U	0.12 U	0.11 U	0.11 U	0.13 U	0.12 U	0.12 U	0.13 U	0.13 U
Isopropyplbenzene	0.07 U	0.068 U	0.094 U	0.11 U	0.073 U	7.1	0.09 U	0.11 U	0.085 U	0.078 U	0.082 U	0.097 U	0.11 U	0.12 U	0.11 U	0.11 U	0.12 U	0.12 U	0.11 U	0.12 U	0.13 U
1,1,2,2-Tetrachloroethane	0.16 U	0.15 U	0.21 U	0.24 U	0.16 U	0.23 U	0.2 U	0.23 U	0.19 U	0.17 U	2.6 U	0.21 U	0.23 U	0.25 U	0.23 U	0.22 U	0.26 U	0.25 U	0.24 U	0.26 U	0.27 U
trans-1,4-Dichloro-2-butene	0.81 U	0.79 U	1.1 U	1.3 U	0.85 U	1.2 U	1.1 U	1.2 U	0.98 U	0.9 U	0.94 U	1.2 U	1.2 U	1.3 U	1.3 U	1.2 U	1.4 U	1.3 U	1.3 U	1.4 U	1.5 U
1,2,3-Trichloropropane	0.18 U	0.17 U	0.24 U	0.28 U	0.86	0.26 U	0.23 U	0.26 U	0.22 U	0.2 U	0.21 U	0.25 U	0.26 U	0.28 U	0.27 U	0.26 U	0.29 U	0.28 U	0.27 U	0.29 U	0.31 U
Acrolein	0.81 r-U	0.79 r-U	1.1 r-U	1.3 U	0.85 U	1.2 U	1.1 U	1.2 U	0.22 r-U	0.2 r-U	0.21 r-U	0.25 r-U	0.26 r-U	0.28 r-U	0.27 r-U	0.26 r-U	0.29 r-U	0.28 r-U	0.27 r-U	0.29 r-U	0.31 r-U
1,2-Dibromoethane (EDB)	0.081 U	0.079 U	0.11 U	0.13 U	0.085 U	0.12 U	0.11 U	0.12 U	0.098 U	0.09 U	0.094 U	0.12 U	0.12 U	0.13 U	0.13 U	0.12 U	0.14 U	0.13 U	0.13 U	0.14 U	0.15 U

Notes:

Concentrations reported in µg/kg

WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel

PG = Power Grab (surface sample).

Columbia Analytical Services (CAS) Qualifier:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

B = The compound was found in the asociated method blank at a level that is significant to the sample result.

Tetra Tech EC Qualifiers:

u = The result should be considered not detected at the indicated detection limit; r = The result is rejected due to MS/MSD recovery was 0%

See Volume II of this report for more analytical testing details.

Table 19 - Sediment Sampling Analytical Results - Total Petroleum Hydrocarbons

Sample ID	NWTPH-Dx		NWTPH-Gx
	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics
Reference Locations			
WR-PG-01-REF	16	100	1.6 U
WR-PG-02-REF	8.9	64	1.6 U
WR-PG-03-REF	53	380	2.2 U
WRM 0 to 3			
East			
WR-PG-01	92	600	2.6 uj-U
WR-PG-02	87	540	2.7 uj-U
WR-PG-03	74	450	2.5 uj-U
WR-VC-03	48	280	2 U
West			
WR-PG-04	69	310	2 uj-U
WR-VC-04	97	340	2.7 u-J
WRM 3 to 6			
East			
WR-VC-05	120	440	3 u-J
WR-VC-07	150	530	2.4 u-J
WR-PG-09	67	360	2.3 uj-U
WR-VC-09	87	400	2.2 u-J
WR-PG-11	88	500	2.5 uj-U
WR-VC-11	110	490	2.5 u-J
WR-PG-13	94	450	2.2 uj-U
WR-VC-13	130	540	2.3 u-J
WR-PG-15	76	370	2.2 U
WR-VC-15	160	580	2.9 u-J
WR-PG-17	92	450	2.3 U
WR-VC-17	76	380	1.9 U
WR-PG-19	89	440	2.3 U
WR-VC-19	69	340	2.5 u-J
WR-PG-21	77	370	2 U
WR-PG-23	290	700	5.4 u-J
WR-VC-23	150	420	1.5 U
WR-PG-27	76	530	2.9 u-J
West			
WR-PG-06	71	380	2.4 uj-U
WR-VC-06	190	670	4.3 u-J
WR-VC-08	240	700	3.2 u-J
WR-VC-10	230	710	2.8 u-J
WR-PG-12	68	330	
WR-VC-12	240	630	5.3 j-H
WR-PG-14	110	610	2.5 uj-U
WR-VC-14	190	520	4.6 j-H
WR-PG-16	540	1,000	17
WR-VC-16	220	610	4 j-H
WR-PG-18	72	390	2.1 uj-U
WR-VC-18	220	690	2.8 u-J
WR-VC-20	240	740	2 U
WR-PG-22	130	730	2.6 U
WR-VC-22	160	680	3 u-J
WR-PG-24	250	690	6.4 u-Z
WR-VC-24	94	470	3.4 u-J
WR-PG-26	4.3 U	8.4	1.3 U
WR-VC-26	140	570	2.4 u-J
WR-VC-28	240	800	2.2 uj-U
WR-PG-30	140	650	2.4 uj-U
WR-VC-30	250	750	2.2 U
WR-VC-32	250	690	2.2 uj-J
WR-PG-34	120	720	2.8 uj-U
WR-VC-34	280	870	2.3 uj-U
WR-PG-36	110	390	1.9 U
WR-VC-36	210	710	3.2 u-J
WR-PG-42	660	1,100	15
WR-VC-42	20	60	1.4 U
WR-VC-46	340	680	1.6 uj-U
WR-PG-48	120	530	2.2 U

Please refer to Notes at the end of this table.

Table 19 - Sediment Sampling Analytical Results - Total Petroleum Hydrocarbons

Sample ID	NWTPH-Dx		NWTPH-Gx
	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics
WRM 6 to 8			
East			
WR-PG-29	77	520	2.4 U
WR-VC-29	96	460	2 U
WR-VC-31	100	450	2 U
West			
WR-PG-50	840	1,300	7 uj-Z
WR-VC-50	6,000 j-Z	3,600	22 j-Z
WR-PG-52	840	1,600	3.8 uj-J
WR-VC-52	2,900	2,100	87 j-Z
WR-PG-54	190	620	2.4 uj-U
WR-VC-54	710	740	270 j-Z
WR-PG-56	120	460	2 U
WR-VC-56	540	1,000	27 j-H
WR-PG-58	150	530	1.8 U
WR-VC-58	190	410	1.5 U
WR-PG-60	360	770	6.9 u-Z
WR-VC-60	130	270	5.1 uj-Z
WR-PG-62	68	410	2.2 U
WR-VC-62	220	660	2 U
WR-PG-64	84	500	2.4 U
WR-VC-64	200	690	4.1 uj-J
WR-PG-66	68	420	2.6 U
WR-VC-66	200	630	2.3 u-J
WR-PG-68	190	700	3.7 u-J
WR-VC-68	210	670	2.1 U
WR-PG-70	96	520	2.3 U
WR-VC-70	180	590	2.1 U
WR-PG-72	100	630	2.7 U
WR-VC-72	210	650	2 U
WR-PG-74	110	700	2.6 U
WRM 8 to 10			
East			
WR-PG-33	27	180	1.7 U
WR-VC-33	28	100	4.3 u-H
WR-PG-35	74	420	2.1 U
WR-VC-35	110	310	2.5 uj-J
WR-PG-37	130	510	2 U
WR-VC-37	90	270	2.1 uj-J
WR-PG-39	63	410	2 U
WR-VC-39	67	340	1.9 uj-U
WR-PG-41	53	340	1.9 U
WR-VC-41	72	410	2.1 U
WR-PG-43	61	460	2.3 U
WR-VC-43	56	330	1.9 U
WR-PG-45	41	270	1.9 U
WR-VC-45	180	730	1.9 U
West			
WR-PG-76	81	540	2.5 U
WR-PG-78	94	620	2.7 uj-U
WR-PG-80	76	530	2.5 U
WR-PG-82	56	350	2 U
WR-PG-84	72	510	2.5 U
WR-PG-86	88	620	2.7 U
WR-PG-88	110	760	2.9 uj-U
WR-PG-90	110	690	2.8 U
WR-PG-92	110	730	2.8 uj-U
WR-PG-94	110	720	2.8 uj-U
WR-PG-96	120	800	3.1 U
WR-PG-98	110	810	2.7 U
WR-PG-100	130	850	3 uj-U
WR-PG-102	100	650	2.6 U
WR-PG-104	130	850	2.8 uj-U

Please refer to Notes at the end of this table.

Table 19 - Sediment Sampling Analytical Results - Total Petroleum Hydrocarbons

Sample ID	NWTPH-Dx		NWTPH-Gx
	Diesel Range Organics	Residual Range Organics	Gasoline Range Organics
WRM 10 to 12			
East			
WR-PG-47	89	550	2.2 U
WR-VC-47	97	460	1.9 U
WR-VC-49	180	630	3.8 u-J
WR-VC-51	75	390	1.7 U
WR-VC-53	110	420	1.6 U
WR-VC-55	110	490	1.9 u-J
WR-VC-57	210	680	3.6 u-J
WR-VC-59	160	570	1.7 U
WR-PG-61	84	590	2.2 U
WR-VC-61	160	610	2.4 u-J
WR-PG-63	59	490	1.8 U
West			
WR-PG-106	170	820	2.4 U
WR-VC-106	250	780	7.5 u-H
WR-PG-108	61	330	1.5 U
WR-VC-108	330	1,000	18 u-H
WR-VC-110	380	1,200	34
WR-PG-112	100	690	2.6 U
WR-PG-114	120	900 j-Z	2.3 uj-U
WR-VC-114	220	770	3.5 u-J
WR-PG-116	85	610	2.4 U
WR-VC-116	260	980	2.1 U
WR-PG-118	86	610	2.5 U
WR-VC-118	130	420	1.8 uj-U
WR-PG-120	140	960	7.1 uj-J
WR-VC-120	150	500	1.9 U
WR-PG-122	130	760	2.5 U
WR-VC-122	45	280	1.7 U
WR-PG-124	72	510	2.3 U
WR-VC-124	87	390	2 u-J
WR-PG-126	46	320	2 U
WR-VC-126	120	460	1.7 U
WR-PG-128	78	550	2.3 U
WR-VC-128	75	280	1.5 U
WR-PG-130	150	900	2.2 U
WR-VC-130	76	230	1.4 U
WR-PG-132	77	530	2.6 U
WR-VC-132	220	650	4.2 u-J
WR-PG-134	57	380	2.1 U
WR-VC-134	56	180	1.4 U

Notes:
Concentrations reported in mg/kg
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample).

Columbia Analytical Services (CAS) Qualifier:
U = The compound was analyzed for, but was not detected at or above the indicated detection limit.
J = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.
H = The chromotographic fingerprint resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
Z = The chromotographic fingerprint resembles a petroleum product.

Tetra Tech EC Qualifiers:
u = The result should be considered not detected at the indicated detection limit; j = The result should be considered an estimated value.

See Volume II of this report for more analytical testing details.

Table 20 - Statistical Summary of Sediment Sampling Analytical Results

Parameter	Number of Samples	Detection Frequency	Percent Detected	Core Samples - Detected Concentrations		Surface Samples - Detected Concentrations	
				Detect Range (Min-Max)	Sample ID of Maximum Detection	Detect Range (Min-Max)	Sample ID of Maximum Detection
Metals in mg/kg							
Aluminum	154	154/154	100%	8,550 - 36,700	WR-VC-10	3,280 - 35,500	WR-PG-98
Antimony	154	153/154	99%	0.04 - 2.01	WR-VC-110	0.06 - 1.48	WR-PG-42
Arsenic	154	154/154	100%	2.04 - 12.6	WR-VC-110	1.54 - 6.79	WR-PG-42
Cadmium	154	152/154	99%	0.126 - 1.23	WR-VC-116	0.09 - 0.5	WR-PG-23
Chromium	154	154/154	100%	10.9 - 54.1	WR-VC-110	4.07 - 35.1	WR-PG-104
Copper	154	154/154	100%	16.2 - 523	WR-VC-110	6.19 - 127	WR-PG-23
Lead	154	154/154	100%	8.33 - 348	WR-VC-110	2.75 - 72	WR-PG-104
Mercury	154	154/154	100%	0.025 - 0.698	WR-VC-110	0.008 - 0.32	WR-PG-23
Nickel	154	154/154	100%	13.9 - 29.3	WR-VC-110	6.22 - 26.3	WR-PG-41
Selenium	154	104/154	68%	0.02 - 0.2	WR-VC-03	0.1 - 0.28	WR-PG-11
Silver	154	153/154	99%	0.05 - 4.32	WR-VC-110	0.014 - 3.71	WR-PG-27
Zinc	154	154/154	100%	47 - 342	WR-VC-110	33 - 220	WR-PG-23
Butyltins (pore water) in µg/L							
Tertra-n-butyltin	153	1/153	1%	0.0073 - 0.0073	WR-VC-62	--	--
Tri-n-butyltin	153	143/153	93%	0.0025 - 1.2	WR-VC-62	0.0012 - 0.26	WR-PG-52
Di-n-butyltin	153	80/153	52%	0.0011 - 0.059	WR-VC-05	0.002 - 0.05	WR-PG-86
n-Butyltin	153	63/153	41%	0.0019 - 0.032	WR-VC-36	0.0019 - 0.065	WR-PG-86
Butyltins (bulk) in µg/kg							
Tertra-n-butyltin	11	2/11	18%	--	--	0.65 - 7.5	WR-PG-23
Tri-n-butyltin	11	10/11	91%	--	--	0.72 - 350	WR-PG-23
Di-n-butyltin	11	11/11	100%	--	--	0.15 - 43	WR-PG-23
n-Butyltin	11	10/11	91%	--	--	0.24 - 2.8	WR-PG-23
NWTPH-Dx in mg/kg							
Diesel Range Organics	154	153/154	99%	20 - 6,000	WR-VC-50	8.9 - 840	WR-PG-50
Residual Range Organics	154	154/154	100%	60 - 3,600	WR-VC-50	8.4 - 1,600	WR-PG-52
NWTPH-Gx in mg/kg							
Gasoline Range Organics	153	10/153	7%	4 - 270	WR-VC-54	15 - 17	WR-PG-16
Semivolatiles in µg/kg							
N-Nitrosodimethylamine	154	0/154	0%	--	--	--	--
Aniline	154	11/154	7%	8.1 - 320	WR-VC-64	--	--
Bis(2-chloroethyl) Ether	154	0/154	0%	--	--	--	--
Phenol	154	76/154	49%	2.8 - 140	WR-VC-50	12 - 32	WR-PG-102
2-Chlorophenol	154	0/154	0%	--	--	--	--
1,3-Dichlorobenzene	154	2/154	1%	12 - 25	WR-VC-60	--	--
1,4-Dichlorobenzene	154	13/154	8%	4.4 - 240	WR-VC-60	11 - 11	WR-PG-130
1,2-Dichlorobenzene	154	2/154	1%	42 - 91	WR-VC-60	--	--
Benzyl Alcohol	154	8/154	5%	20 - 20	WR-VC-56	9.3 - 17	WR-PG-120
Bis(2-chloroisopropyl) Ether	154	0/154	0%	--	--	--	--
2-Methylphenol	154	0/154	0%	--	--	--	--
Hexachloroethane	154	1/154	1%	--	--	7.2 - 7.2	WR-PG-70
N-Nitrosodi-n-propylamine	154	0/154	0%	--	--	--	--
4-Methylphenol	154	125/154	81%	5.3 - 150	WR-VC-118	6.5 - 370	WR-PG-120
Nitrobenzene	154	0/154	0%	--	--	--	--
Isophorone	154	0/154	0%	--	--	--	--
2-Nitrophenol	154	0/154	0%	--	--	--	--
2,4-Dimethylphenol	154	0/154	0%	--	--	--	--
Bis(2-chloroethoxy)methane	154	0/154	0%	--	--	--	--
2,4-Dichlorophenol	154	0/154	0%	--	--	--	--
Benzoic Acid	154	22/154	14%	170 - 980	WR-VC-70	--	--
1,2,4-Trichlorobenzene	154	0/154	0%	--	--	--	--
4-Chloroaniline	154	0/154	0%	--	--	--	--
Hexachlorobutadiene	154	0/154	0%	--	--	--	--
2-Chloronaphthalene	154	0/154	0%	--	--	--	--
2-Nitroaniline	154	0/154	0%	--	--	--	--
2,4-Dinitrophenol	154	0/154	0%	--	--	--	--
4-Nitrophenol	154	0/154	0%	--	--	--	--
Azobenzene	154	0/154	0%	--	--	--	--
2,4-Dinitrotoluene	154	0/154	0%	--	--	--	--
4-Chlorophenyl Phenyl Ether	154	0/154	0%	--	--	--	--
Diethyl Phthalate	154	0/154	0%	--	--	--	--
4-Nitroaniline	154	0/154	0%	--	--	--	--
N-Nitrosodiphenylamine	154	2/154	1%	5.9 - 62	WR-VC-110	--	--
4-Bromophenyl Phenyl Ether	154	0/154	0%	--	--	--	--
Hexachlorobenzene	154	1/154	1%	--	--	5.2 - 5.2	WR-PG-108
Carbazole	154	90/154	58%	1.8 - 9,500	WR-VC-50	2.9 - 440	WR-PG-48
Di-n-butyl Phthalate	154	42/154	27%	4.3 - 22	WR-VC-61	6.6 - 28	WR-PG-72
Butyl Benzyl Pthalate	154	82/154	53%	3.5 - 650	WR-VC-23	4.4 - 38	WR-PG-61
3,3'-Dichlorobenzidine	98	0/98	0%	--	--	--	--
Bis(2ethylhexyl) Phthalate	154	91/154	59%	14 - 18,000	WR-VC-110	30 - 3,200	WR-PG-52
Di-n-octyl Phthalate	154	16/154	10%	3.1 - 480	WR-VC-110	3.4 - 26	WR-PG-63

Please refer to the Notes at the end of this table.

Table 20 - Statistical Summary of Sediment Sampling Analytical Results

Parameter	Number of Samples	Detection Frequency	Percent Detected	Core Samples - Detected Concentrations		Surface Samples - Detected Concentrations	
				Detect Range (Min-Max)	Sample ID of Maximum Detection	Detect Range (Min-Max)	Sample ID of Maximum Detection
Pesticides in µg/kg							
Dieldrin	154	1/154	1%	--	--	2.5 - 2.5	WR-PG-130
4,4-DDE	154	140/154	91%	0.81 - 57	WR-VC-70	0.32 - 30	WR-PG-70
4,4-DDD	154	132/154	86%	0.43 - 680	WR-VC-56	0.2 - 620	WR-PG-68
4,4'-DDT	154	102/154	66%	1.1 - 1,200	WR-VC-28	0.41 - 800	WR-PG-72
Total DDT	154	153/154	99%	1.26 - 1,226	WR-VC-28	0.52 - 1,050	WR-PG-68
Endrin	154	13/154	8%	0.12 - 6.6	WR-VC-108	0.25 - 5.8	WR-PG-58
Endosulfan II	154	19/154	12%	0.22 - 1.6	WR-VC-51	0.23 - 0.7	WR-PG-130
Endrin Aldehyde	154	13/154	8%	9.9 - 9.9	WR-VC-108	0.15 - 0.9	WR-PG-72
Endosulfan Sulfate	154	7/154	5%	0.77 - 0.77	WR-VC-58	0.15 - 2.5	WR-PG-27
Endrin Ketone	154	10/154	6%	0.19 - 1.2	WR-VC-58	0.22 - 0.54	WR-PG-130
Methoxychlor	154	11/154	7%	0.62 - 2.5	WR-VC-14	0.55 - 6	WR-PG-62
Toxaphene	154	0/154	0%	--	--	--	--
Chlordane	154	1/154	1%	--	--	26 - 26	WR-PG-16
Oxychlordane	154	11/154	7%	0.42 - 0.77	WR-VC-41	1 - 2.4	WR-PG-64
2,4'-DDE	154	17/154	11%	0.4 - 3.5	WR-VC-70	0.96 - 110	WR-PG-68
cis-Nonachlor	154	5/154	3%	1.5 - 1.6	WR-VC-60	3.2 - 11	WR-PG-66
2,4'-DDD	154	47/154	31%	0.8 - 390	WR-VC-56	1.9 - 300	WR-PG-68
trans-Nonachlor	154	17/154	11%	0.3 - 0.86	WR-VC-64	0.97 - 0.97	WR-PG-50
2,4'-DDT	154	104/154	68%	0.34 - 140	WR-VC-108	0.21 - 73	WR-PG-64
Mirex	154	4/154	3%	0.7 - 24	WR-VC-50	0.38 - 0.38	WR-PG-23
PCBs in µg/kg							
Aroclor 1016	154	0/154	0%	--	--	--	--
Aroclor 1221	154	0/154	0%	--	--	--	--
Aroclor 1232	154	0/154	0%	--	--	--	--
Aroclor 1242	154	1/154	1%	180 - 180	WR-VC-49	--	--
Aroclor 1248	154	6/154	4%	41 - 97	WR-VC-52	20 - 62	WR-PG-60
Aroclor 1254	154	105/154	68%	5.4 - 2,400	WR-VC-108	4.8 - 150	WR-PG-60
Aroclor 1260	154	138/154	90%	6.3 - 320	WR-VC-106	6.1 - 250	WR-PG-27
Total PCBs	154	140/154	91%	8.8 - 2,400	WR-VC-108	4.8 - 322	WR-PG-60
Aroclor 1262	154	0/154	0%	--	--	--	--
Aroclor 1268	154	0/154	0%	--	--	--	--
Phenols in µg/kg							
2,4,6-Trichlorophenol	154	3/154	2%	0.78 - 0.78	WR-VC-14	2.7 - 3.2	WR-PG-66
2,4,5-Trichlorophenol	154	1/154	1%	6.8 - 6.8	WR-VC-130	--	--
2,3,4,5-Trichlorophenol	154	1/154	1%	--	--	11 - 11	WR-PG-22
2,3,5,6-Trichlorophenol	154	1/154	1%	--	--	13 - 13	WR-PG-23
Pentachlorophenol	154	48/154	31%	1.1 - 64	WR-VC-51	1.1 - 140	WR-PG-36
2-Methyl-4,6-dinitrophenol	154	0/154	0%	--	--	--	--
Chlorinated Herbicides in µg/kg							
Dalapon	10	3/10	30%	12 - 16	WR-VC-62	24 - 24	WR-PG-01-REF
Dicamba	10	0/10	0%	--	--	--	--
MCPP	10	2/10	20%	3,000 - 3,000	WR-VC-62	4,200 - 4,200	WR-PG-58
MCPA	10	0/10	0%	--	--	--	--
Dichlorprop	10	0/10	0%	--	--	--	--
2,4-D	10	0/10	0%	--	--	--	--
Silvex	10	0/10	0%	--	--	--	--
2,4,5-T	10	0/10	0%	--	--	--	--
2,4-DB	10	0/10	0%	--	--	--	--
Dinoseb	10	0/10	0%	--	--	--	--
LPAHs in µg/kg							
Naphthalene	154	82/154	53%	9.1 - 17,0000	WR-VC-52	10 - 3,000	WR-PG-52
2-Methylnapthalene	154	145/154	94%	0.76 - 78,000	WR-VC-50	0.49 - 2,000	WR-PG-50
Acenaphthylene	154	151/154	98%	0.75 - 3,600	WR-VC-50	0.37 - 1,200	WR-PG-52
Acenapthene	154	151/154	98%	0.66 - 55,000	WR-VC-52	0.31 - 7,600	WR-PG-50
Fluorene	154	152/154	99%	0.78 - 38,000	WR-VC-50	0.32 - 3,300	WR-PG-50
Phenanthrene	154	154/154	100%	5.7 - 210,000	WR-VC-50	1 - 20,000	WR-PG-42
Anthracene	154	153/154	99%	1.4 - 34,000	WR-VC-50	0.43 - 3,900	WR-PG-50
Total LPAHs	154	154/154	100%	10.28 - 575,600	WR-VC-50	1 - 38,891.9	WR-PG-50
HPAHs in µg/kg							
Total HPAH	154	154/154	100%	105.2 - 404,600	WR-VC-50	17 - 84,260	WR-PG-42
Fluoranthene	154	154/154	100%	20 - 100,000	WR-VC-50	2.7 - 20,000	WR-PG-42
Pyrene	154	154/154	100%	18 - 130,000	WR-VC-50	2.7 - 25,000	WR-PG-42
Benzo(b)fluoranthene	154	154/154	100%	9.3 - 18,000	WR-VC-50	1.6 - 6,000	WR-PG-52
Benzo(k)fluoranthene	154	154/154	100%	7 - 15,000	WR-VC-50	1.6 - 4,800	WR-PG-52
Benzo(b+k)fluoranthene	154	154/154	100%	16.3 - 33,000	WR-VC-50	3.2 - 10,800	WR-PG-52
Benz(a)anthracene	154	154/154	100%	8.2 - 27,000	WR-VC-50	1.6 - 5,300	WR-PG-50
Chrysene	154	154/154	100%	12 - 32,000	WR-VC-50	2.1 - 6,700	WR-PG-52
Benzo(a)pyrene	154	154/154	100%	10 - 32,000	WR-VC-50	1.6 - 9,700	WR-PG-52
Indeno(1,2,3-cd)pyrene	154	154/154	100%	8.5 - 24,000	WR-VC-50	1.3 - 9,100	WR-PG-52
Dibenz(a,h)anthracene	154	152/154	99%	1.5 - 2,600	WR-VC-50	0.54 - 980	WR-PG-52
Benzo(g,h,i)perylene	154	154/154	100%	8.3 - 24,000	WR-VC-50	1.3 - 9,600	WR-PG-52

Please refer to the Notes at the end of this table.

Table 20 - Statistical Summary of Sediment Sampling Analytical Results

Parameter	Number of Samples	Detection Frequency	Percent Detected	Core Samples - Detected Concentrations		Surface Samples - Detected Concentrations	
				Detect Range (Min-Max)	Sample ID of Maximum Detection	Detect Range (Min-Max)	Sample ID of Maximum Detection
Dioxins/Furans in ng/kg							
2,3,7,8-Tetrachlorodibenzo-p-dioxin	13	3/13	23%	--	--	0.1 - 1.6	WR-PG-60
1,2,3,7,8-Pentachlorodibenzo-p-dioxins	13	4/13	31%	--	--	0.1 - 0.9	WR-PG-60
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	13	8/13	62%	--	--	0.12 - 2.3	WR-PG-60
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	13	13/13	100%	--	--	0.2 - 23.9	WR-PG-60
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	13	12/13	92%	--	--	0.19 - 7.1	WR-PG-60
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	13	13/13	100%	--	--	4.3 - 649	WR-PG-60
Octachlorodibenzo-p-dioxin	13	13/13	100%	--	--	41.8 - 6,374	WR-PG-60
2,3,7,8-Tetrachlorodibenzofuran	13	10/13	77%	--	--	0.7 - 60	WR-PG-68
1,2,3,7,8-Pentachlorodibenzofuran	13	10/13	77%	--	--	0.81 - 139.5	WR-PG-68
2,3,4,7,8-Pentachlorodibenzofuran	13	10/13	77%	--	--	0.4 - 64.8	WR-PG-68
1,2,3,4-Hexachlorodibenzofuran	13	13/13	100%	--	--	0.1 - 213	WR-PG-68
1,2,3,6-Hexachlorodibenzofuran	13	10/13	77%	--	--	0.5 - 54.6	WR-PG-68
1,2,3,7-Hexachlorodibenzofuran	13	7/13	54%	--	--	0.33 - 4.8	WR-PG-70
2,3,4,6-Hexachlorodibenzofuran	13	9/13	69%	--	--	0.25 - 15.6	WR-PG-68
1,2,3,4,6,7,8-Heptachlorodibenzofuran	13	12/13	92%	--	--	1.37 - 176	WR-PG-60
1,2,3,4,7,8,9-Heptachlorodibenzofuran	13	12/13	92%	--	--	0.126 - 25	WR-PG-68
Octachlorodibenzofuran	13	13/13	100%	--	--	2.17 - 771	WR-PG-60
Total Tetra-Dioxins	13	8/13	62%	--	--	0.2 - 4.1	WR-PG-60
Total Penta-Dioxins	13	4/13	31%	--	--	0.5 - 11.7	WR-PG-60
Total Hexa-Dioxins	13	13/13	100%	--	--	1.5 - 119.8	WR-PG-60
Total Hepta-Dioxins	13	13/13	100%	--	--	8.4 - 1,182	WR-PG-60
Total Tetra-Furans	13	10/13	77%	--	--	1.47 - 181	WR-PG-68
Total Penta-Furans	13	13/13	100%	--	--	0.24 - 400	WR-PG-68
Total Hexa-Furans	13	13/13	100%	--	--	0.83 - 350	WR-PG-68
Total Hepta-Furans	13	13/13	100%	--	--	2.1 - 811	WR-PG-60
VOCs in µg/kg							
Dichlorodifluoromethane	21	0/21	0%	--	--	--	--
Chloromethane	21	0/21	0%	--	--	--	--
Vinyl Chloride	21	0/21	0%	--	--	--	--
Bromomethane	21	0/21	0%	--	--	--	--
Chloroethane	21	0/21	0%	--	--	--	--
Trichlorofluoromethane	21	0/21	0%	--	--	--	--
Acetone	21	0/21	0%	--	--	--	--
Iodomethane (Methyl Iodide)	21	0/21	0%	--	--	--	--
1,1-Dichloroethene	21	0/21	0%	--	--	--	--
Carbon Disulfide	21	0/21	0%	--	--	--	--
Methylene Chloride	21	0/21	0%	--	--	--	--
Acrylonitrile	21	0/21	0%	--	--	--	--
Methyl tert-Butyl Ether	21	0/21	0%	--	--	--	--
trans-1,2-Dichloroethene	21	0/21	0%	--	--	--	--
1,1-Dichloroethane	21	1/21	5%	--	--	0.25 - 0.25	WR-PG-72
Vinyl Acetate	5	0/5	0%	--	--	--	--
2-Butanone (MEK)	21	10/21	48%	--	--	3 - 9.6	WR-PG-50
Chloroform	21	1/21	5%	--	--	0.2 - 0.2	WR-PG-66
Bromochloromethane	21	0/21	0%	--	--	--	--
1,1,1-Trichloroethane (TCA)	21	0/21	0%	--	--	--	--
Bromodichloromethane	21	0/21	0%	--	--	--	--
Carbon Tetrachloride	21	0/21	0%	--	--	--	--
1,2-Dichloroethane (EDC)	21	1/21	5%	--	--	0.11 - 0.11	WR-PG-72
Benzene	21	12/21	57%	--	--	0.075 - 0.33	WR-PG-72
Trichloroethene (TCE)	21	0/21	0%	--	--	--	--
1,2-Dichloropropane	21	0/21	0%	--	--	--	--
2-Chloroethyl Vinyl Ether	21	0/21	0%	--	--	--	--
Dibromomethane	21	0/21	0%	--	--	--	--
2-Hexanone	21	0/21	0%	--	--	--	--
cis-1,3-Dichloropropene	21	0/21	0%	--	--	--	--
Toluene	21	2/21	10%	--	--	0.55 - 1.9	WR-PG-03-REF
trans-1,3-Dichloropropene	21	0/21	0%	--	--	--	--
1,1,2-Trichloroetane	21	0/21	0%	--	--	--	--
4-Methyl-2-pentanone (MIBK)	21	0/21	0%	--	--	--	--
Tetrachloroethene (PCE)	21	0/21	0%	--	--	--	--
Dibromochloromethane	21	0/21	0%	--	--	--	--
Chlorobenzene	21	5/21	24%	--	--	0.26 - 5.4	WR-PG-70
1,1,1,2-Tetrachloroethane	21	0/21	0%	--	--	--	--
Ethylbenzene	21	1/21	5%	--	--	0.6 - 0.6	WR-PG-50
m,p-Xylene	21	2/21	10%	--	--	0.35 - 1.8	WR-PG-50
o-Xylene	21	2/21	10%	--	--	0.66 - 2.2	WR-PG-50
Stryene	21	0/21	0%	--	--	--	--
Bromoform	21	0/21	0%	--	--	--	--
Isopropyplbenzene	21	1/21	5%	--	--	7.1 - 7.1	WR-PG-50
1,1,2,2-Tetrachloroethane	21	0/21	0%	--	--	--	--
trans-1,4-Dichloro-2-butene	21	0/21	0%	--	--	--	--
1,2,3-Trichloropropane	21	1/21	5%	--	--	0.86 - 0.86	WR-PG-42
Acrolein	5	0/5	0%	--	--	--	--
1,2-Dibromoethane (EDB)	21	0/21	0%	--	--	--	--

Notes:

-- = Not Applicable.

Table 21 - Summary of DMEF SL Exceedances for Surface Samples

Parameter	Total Number Samples Analyzed	Total Number Samples Exceeding SL	% of Samples Exceeding SL
Butyltins			
Tri-n-butyltin	81	2	2%
PAHs			
2-Methylnapthalene	82	2	2%
Acenaphthylene	82	2	2%
Acenapthene	82	4	5%
Anthracene	82	3	4%
Benz(a)anthracene	82	6	7%
Benzo(a)pyrene	82	7	9%
Benzo(b+k)fluoranthene	82	3	4%
Benzo(g,h,i)perylene	82	10	12%
Chrysene	82	7	9%
Dibenz(a,h)anthracene	82	6	7%
Fluoranthene	82	7	9%
Fluorene	82	4	5%
Indeno(1,2,3-cd)pyrene	82	10	12%
Naphthalene	82	2	2%
Phenanthrene	82	8	10%
Pyrene	82	6	7%
Total LPAHs	82	4	5%
Total HPAH	82	7	9%
Pesticides			
Chlordane	82	1	1%
Total DDT	82	33	40%
PCBs			
Total PCBs	82	4	5%

Table 22 - Summary of DMEF SL Exceedances for Subsurface Samples

Parameter	Total Number Samples Analyzed	Total Number Samples Exceeding SL	% of Samples Exceeding SL
Metals			
Mercury	72	2	3%
Copper	72	1	1%
Butyltins			
Tri-n-butyltin	72	23	32%
SVOCs			
1,2-Dichlorobenzene	72	2	3%
1,4-Dichlorobenzene	72	1	1%
Benzoic Acid	72	5	7%
N-Nitrosodiphenylamine	72	1	1%
Bis(2ethylhexyl) Phthalate	72	1	1%
PAHs			
2-Methylnapthalene	72	3	4%
Acenaphthylene	72	2	3%
Acenapthene	72	6	8%
Anthracene	72	4	6%
Benz(a)anthracene	72	5	7%
Benzo(a)pyrene	72	5	7%
Benzo(b+k)fluoranthene	72	3	4%
Benzo(g,h,i)perylene	72	5	7%
Chrysene	72	5	7%
Dibenz(a,h)anthracene	72	3	4%
Dibenzofuran	72	4	6%
Fluoranthene	72	6	8%
Fluorene	72	6	8%
Indeno(1,2,3-cd)pyrene	72	5	7%
Naphthalene	72	2	3%
Phenanthrene	72	7	10%
Pyrene	72	5	7%
Total HPAH	72	5	7%
Total LPAHs	72	6	8%
Pesticides			
Total DDT	72	53	74%
PCBs			
Total PCBs	72	10	14%

Table 23 - Physical Characteristics for Bioassay Sediment Samples

	% Silt/Clay <62.5 μm	% Sand/Gravel >62.5 μm	% Total Organic Carbon	% Total Volatile Solids	Ammonia as Nitrogen (mg/kg)
Reference Locations					
WR-PG-01-REF	14.3	84.7	0.7	3.1	13.2
WR-PG-02-REF	16.1	82.2	0.4	3.2	9.8
WR-PG-03-REF	57.7	40.7	2.1	6.7	95.3
WRM 3 to 6					
East					
WR-VC-05	80.4	20.4	1.7	6.1	184
WR-VC-07	81.0	16.9	1.9	7.3	297
WR-VC-11	88.7	16.3	2.2	8.1	328
WR-PG-13	77.1	22.0	1.9	7.3	153
WR-VC-15	76.4	23.4	2.1	7.2	274
WR-VC-23	28.9	69.0	1.5	4.2	70.6
West					
WR-VC-12	84.4	16.4	2.0	6.8	417
WR-PG-16	64.0	37.6	2.8	6.8	143
WR-VC-18	90.5	12.9	2.2	7.3	414
WR-VC-46	53.4	46.4	1.6	4.9	192
WR-PG-48	75.6	25.5	2.0	7.2	102
WRM 6 to 8					
East					
WR-VC-29	87.6	15.5	2.3	7.5	393
WR-VC-31	92.4	11.6	2.3	8.7	280
West					
WR-PG-54	86.0	14.7	2.2	7.9	201
WR-VC-62	80.7	19.6	2.1	8.6	203
WR-PG-66	95.8	6.1	2.4	8.1	78.1
WR-VC-66	90.5	11.1	2.1	7.2	361
WRM 8 to 10					
East					
WR-VC-35	53.6	45.3	1.7	5.5	257
WR-VC-41	80.2	22.3	1.9	7.1	266
WRM 10 to 12					
East					
WR-VC-49	72.0	27.8	1.7	6.6	570
WR-VC-53	49.3	59.0	1.4	4.8	150
WR-VC-59	49.8	50.0	1.3	5.1	44
West					
WR-PG-106	77.6	19.5	2.8	9.1	137
WR-VC-106	74.0	25.3	2.1	7.9	775
WR-VC-132	56.7	45.2	2.1	7.2	633

Notes:
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample).
VC = Vibracore (subsurface sample)

Table 24 - Summary of Sediment Bioassay Results - 10-Day Amphipod Survival Bioassay*(Hyalella azteca)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 15%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-07	1.3	0	1.3	Pass	No	**Pass**
WR-VC-11	0.0	0	0.0	Pass	No	**Pass**
WR-VC-12	3.8	0	3.8	Pass	Yes	**Fail**
WR-VC-18	1.3	0	1.3	Pass	No	**Pass**
WR-PG-03-REF	0.0	--	--	--	--	--
Neg. Control	0.0	--	--	--	--	--

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 24, 25, and 26; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 24, 25, and 26.

Table 25 - Summary of Sediment Bioassay Results - 10-Day Midge Survival Bioassay *(Chironomus tentans)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 20%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-07	3.8	5	-1.2	Pass	No	**Pass**
WR-VC-11	5	5	0.0	Pass	No	**Pass**
WR-VC-12	13.8	5	8.8	Pass	Yes	**Fail**
WR-VC-18	7.5	5	2.5	Pass	No	**Pass**
WR-PG-03-REF	5	--	--	--	--	--
Neg. Control	3.8	--	--	--	--	--

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 24, 25, and 26; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 24, 25, and 26.

Table 26 - Summary of Sediment Bioassay Results - 10-Day Midge Growth Bioassay*(Chironomus tentans)*

Sample ID	Test Mean Individual Biomass (B_T) in mg	Reference Mean Individual Biomass (B_R) in mg	B_T/B_R*100	One-Hit Criteria [1] (B_T/B_R < 60%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-07	0.89	0.93	95.7	Pass	No	**Pass**
WR-VC-11	0.91	0.93	97.8	Pass	No	**Pass**
WR-VC-12	0.93	0.93	100	Pass	No	**Fail**
WR-VC-18	0.85	0.93	91.4	Pass	Yes	**Pass**
WR-PG-03-REF	0.93	--	--	--	--	**--**
Neg. Control	0.89	--	--	--	--	**--**

Notes:
1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
"Fail" of the one-hit criteria for the corresponding sample from any of Tables 24, 25, and 26; or
"Yes" for any two-hit criteria for the corresponding sample from any two of Tables 24, 25, and 26.

Table 27 - Summary of Sediment Bioassay Results - 10-Day Amphipod Survival Bioassay*(Hyalella azteca)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 15%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-23	0.0	0	0.0	Pass	No	**Pass**
WR-VC-31	1.3	0	1.3	Pass	No	**Pass**
WR-VC-41	0.0	0	0.0	Pass	No	**Pass**
WR-VC-46	2.5	0	2.5	Pass	No	**Pass**
WR-VC-49	0.0	0	0.0	Pass	No	**Pass**
WR-VC-132	1.3	0	1.3	Pass	No	**Pass**
WR-PG-03-REF	0.0	--	--	--	--	--
Neg. Control	0.0	--	--	--	--	--

Notes:
1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
"Fail" of the one-hit criteria for the corresponding sample from any of Tables 27, 28, and 29; or
"Yes" for any two-hit criteria for the corresponding sample from any two of Tables 27, 28, and 29.

Table 28 - Summary of Sediment Bioassay Results - 10-Day Midge Survival Bioassay*(Chironomus tentans)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 20%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-23	5	2.5	2.5	Pass	No	**Pass**
WR-VC-31	2.5	2.5	0.0	Pass	No	**Pass**
WR-VC-41	8.8	2.5	6.3	Pass	No	**Pass**
WR-VC-46	6.3	2.5	3.8	Pass	No	**Pass**
WR-VC-49	2.5	2.5	0.0	Pass	No	**Pass**
WR-VC-132	5	2.5	2.5	Pass	No	**Pass**
WR-PG-03-REF	2.5	--	--	--	--	--
Neg. Control	5	--	--	--	--	--

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 27, 28, and 29; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 27, 28, and 29.

Table 29 - Summary of Sediment Bioassay Results - 10-Day Midge Growth Bioassay*(Chironomus tentans)*

Sample ID	Test Mean Individual Biomass (B_T) in mg	Reference Mean Individual Biomass (B_R) in mg	B_T/B_R*100	One-Hit Criteria [1] (B_T/B_R < 60%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-VC-23	0.90	0.90	100	Pass	No	**Pass**
WR-VC-31	0.77	0.90	85.6	Pass	Yes	**Pass**
WR-VC-41	0.89	0.90	98.9	Pass	No	**Pass**
WR-VC-46	0.76	0.90	84.4	Pass	Yes	**Pass**
WR-VC-49	0.76	0.90	84.4	Pass	Yes	**Pass**
WR-VC-132	0.84	0.90	93.3	Pass	No	**Pass**
WR-PG-03-REF	0.90	--	--	--	--	**--**
Neg. Control	0.71	--	--	--	--	**--**

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 27, 28, and 29; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 27, 28, and 29.

Table 30 - Summary of Sediment Bioassay Results - 10-Day Amphipod Survival Bioassay*(Hyalella azteca)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 15%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-PG-13	3.8	1.3	2.5	Pass	No	**Pass**
WR-PG-16	2.5	1.3	1.2	Pass	No	**Pass**
WR-PG-48	1.3	1.3	0.0	Pass	No	**Pass**
WR-PG-54	2.5	1.3	1.2	Pass	No	**Pass**
WR-PG-66	2.5	1.3	1.2	Pass	No	**Pass**
WR-PG-106	0.0	1.3	-1.3	Pass	No	**Pass**
WR-VC-05	5	1.3	3.7	Pass	No	**Pass**
WR-VC-15	11.3	1.3	10	Pass	No	**Pass**
WR-VC-29	5	1.3	3.7	Pass	No	**Pass**
WR-VC-35	1.3	1.3	0.0	Pass	No	**Pass**
WR-VC-53	1.3	1.3	0.0	Pass	No	**Pass**
WR-VC-59	0.0	1.3	-1.3	Pass	No	**Pass**
WR-VC-62	1.3	1.3	0.0	Pass	No	**Pass**
WR-VC-66	2.5	1.3	1.2	Pass	No	**Pass**
WR-VC-106	3.8	1.3	2.5	Pass	No	**Pass**
WR-PG-03-REF	1.3	--	--	--	--	--
Neg. Control	2.5	--	--	--	--	--

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 30, 31, and 32; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 30, 31, and 32.

Table 31 - Summary of Sediment Bioassay Results - 10-Day Midge Survival Bioassay*(Chironomus tentans)*

Sample ID	Test Mean Mortality (M_T) in percent	Reference Mean Mortality (M_R) in percent	M_T - M_R	One-Hit Criteria [1] (M_T - M_R > 20%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-PG-13	8.8	22.5	-13.7	Pass	No	**Pass**
WR-PG-16	31.3	22.5	8.8	Pass	No	**Pass**
WR-PG-48	16.3	22.5	-6.2	Pass	No	**Pass**
WR-PG-54	28.8	22.5	6.3	Pass	No	**Pass**
WR-PG-66	12.5	22.5	-10	Pass	No	**Pass**
WR-PG-106	37.5	22.5	15	Pass	No	**Pass**
WR-VC-05	18.8	22.5	-3.7	Pass	No	**Pass**
WR-VC-15	13.8	22.5	-8.7	Pass	No	**Pass**
WR-VC-29	30	22.5	7.5	Pass	No	**Pass**
WR-VC-35	17.5	22.5	-5	Pass	No	**Pass**
WR-VC-53	18.8	22.5	-3.7	Pass	No	**Pass**
WR-VC-59	17.5	22.5	-5	Pass	No	**Pass**
WR-VC-62	17.5	22.5	-5	Pass	No	**Pass**
WR-VC-66	23.8	22.5	1.3	Pass	No	**Pass**
WR-VC-106	25	22.5	2.5	Pass	No	**Pass**
WR-PG-03-REF	22.5	--	--	--	--	--
Neg. Control	10	--	--	--	--	--

Notes:

1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
   "Fail" of the one-hit criteria for the corresponding sample from any of Tables 30, 31, and 32; or
   "Yes" for any two-hit criteria for the corresponding sample from any two of Tables 30, 31, and 32.

Table 32 - Summary of Sediment Bioassay Results - 10-Day Midge Growth Bioassay*(Chironomus tentans)*

Sample ID	Test Mean Individual Biomass (B_T) in mg	Reference Mean Individual Biomass (B_R) in mg	B_T/B_R*100	One-Hit Criteria [1] (B_T/B_R < 60%) Pass/Fail	Two-Hit Criteria [2] (significant diff. btwn M_T and M_R) Yes/No	Overall Result[3]
WR-PG-13	0.72	0.84	85.7	Pass	No	**Pass**
WR-PG-16	0.71	0.84	84.5	Pass	No	**Pass**
WR-PG-48	0.68	0.84	81	Pass	Yes	**Pass**
WR-PG-54	0.69	0.84	82.1	Pass	No	**Pass**
WR-PG-66	0.66	0.84	78.6	Pass	Yes	**Pass**
WR-PG-106	0.84	0.84	100	Pass	No	**Pass**
WR-VC-05	0.72	0.84	85.7	Pass	No	**Pass**
WR-VC-15	0.71	0.84	84.5	Pass	No	**Pass**
WR-VC-29	0.83	0.84	98.8	Pass	No	**Pass**
WR-VC-35	0.76	0.84	90.5	Pass	No	**Pass**
WR-VC-53	0.74	0.84	88.1	Pass	No	**Pass**
WR-VC-59	0.79	0.84	94	Pass	No	**Pass**
WR-VC-62	0.71	0.84	84.5	Pass	No	**Pass**
WR-VC-66	0.63	0.84	75	Pass	Yes	**Pass**
WR-VC-106	0.72	0.84	85.7	Pass	No	**Pass**
WR-PG-03-REF	0.84	--	--	--	--	**--**
Neg. Control	0.75	--	--	--	--	**--**

Notes:
1) One Hit Required to Fail Bioassay
2) Two Hits Required to Fail Bioassay
3) A test fails if either of the following is true:
"Fail" of the one-hit criteria for the corresponding sample from any of Tables 30, 31, and 32; or
"Yes" for any two-hit criteria for the corresponding sample from any two of Tables 30, 31, and 32.

Table 33 - Physical Characteristics for Bioaccumulation Sediment Samples

	% Silt/Clay <62.5 μm	% Sand/Gravel >62.5 μm	% Total Organic Carbon	% Total Volatile Solids
Reference Locations				
WR-PG-03-REF	57.72	40.71	2.05	6.7
WRM 3 to 6				
East				
WR-VC-11	88.7	16.25	2.2	8.13
West				
WR-VC-28	92.8	8.27	2.41	8.63
WR-VC-46	53.4	46.38	1.63	4.9
WRM 6 to 8				
East				
WR-VC-29	87.6	15.48	2.34	7.47
West				
WR-VC-66	90.5	11.08	2.09	7.17
WR-VC-72	93.2	9.12	2.16	7.41
WRM 8 to 10				
East				
WR-VC-43	74.8	28.68	1.89	7.13
WRM 10 to 12				
East				
WR-VC-57	73.9	25.74	1.81	7.07
West				
WR-VC-108	63.5	34.58	1.9	7.15
WR-VC-118	73.3	27.57	1.96	6.78

Notes:
WRM = Willamette River Mile; East and West = East and West Sides of Willamette River Federal Navigation Channel
PG = Power Grab (surface sample).
VC = Vibracore (subsurface sample)

Table 34 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase I*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
Conventionals as Wet Wt.								
Sample Weight in grams	286.98	81.54	114.45	67.9	71.15	80.17	54.61	82.09
Total Lipids in %	3.2	1.8	1.6	2.4	2.2	2.3	2.2	2
Total Solids in %	15.9	12	13.1	15	14.8	14.5	13.8	13
Metals in mg/kg as Wet Wt.								
Antimony	0.01	0.02	0.016	0.026	0.019	0.023	0.048	0.026
Arsenic (10.1 TTL)	2.22	6.02	11.6	3.09	4.69	3.18	1.78	3.15
Cadmium	0.362	0.51	0.26	0.6	0.555	0.661	0.667	0.586
Chromium	0.3 U	2.2	1.5	0.8	1.1	1.1	1.2	1.3
Copper	10.6	10.6	14.2	16.6	18.2	17.1	21.5	16.2
Lead	0.73	1.9	0.82	2.19	2.18	2.6	4.05	2.13
Mercury (1.0 TTL)	0.02	0.05	0.068	0.006 U	0.031	0.023	0.023	0.021
Nickel (20,000 TTL)	0.42	1.63	1.97	1.46	1.64	1.79	1.86	1.99
Silver (200 TTL)	0.013	0.02	0.029	0.05	0.035	0.072	0.103	0.062
Zinc	138	157	168	200	202	193	206	197
Butyltins in µg/kg as Wet Wt.								
Tetra-n-butyltin	0.067 U	0.07 U	0.067 U	0.067 U	1 U	0.067 U	0.067 U	0.067 U
Tributyltin (TBT) (600 TTL)	0.027 U	0.03 U	0.072 U	7.9	31	12	3.1	1.1
Dibutyltin	0.63	0.16	0.3	15	76	22	4.8	2
n-Butyltin	0.59	1	0.9	130	520	300	46	17
Pesticides in µg/kg as Wet Wt.								
4,4'-DDD	0.62	0.22 U	0.96	27	6.7	210	11	3.8
4,4'-DDE	3.7	1.6	6.1	29	19	71	17	13
4,4'-DDT	0.6	0.2 U	0.2 U	8.3	3.2	6.1	16	3.7
Total DDT (5,000 TTL)	4.92	1.6	7.06	64.3	28.9	287.1	44	20.5
alpha-BHC	0.32 U	0.32 U	0.32 U	0.46 U	0.46 U	0.32 U	0.97 U	0.32 U
Hexachlorobenzene (180,000 TTL)	5.9 U	5.9 U	0.78	5.9 U	5.9 U	5.9 U	59 U	5.9 U
beta-BHC	0.31 U	0.31 U	0.31 U	0.45 U	1.5 U	0.31 U	0.94 U	0.31 U
gamma-BHC (Lindane)	0.76 U	0.60 U	0.74 U	0.46 U	0.61 U	0.17 U	1.2 U	0.29 U
delta-BHC	1 U	0.21 U	0.21 U	1.5 U	0.58 U	0.75 U	0.64 U	0.21 U
Heptachlor	0.31 U	0.33 U	0.58 U	0.45 U	0.52 U	0.31 U	0.94 U	1 U
Aldrin	0.15 U	1 U	0.36	0.22 U	0.22 U	1 U	0.46 U	0.15 U
Heptachlor Epoxide	0.34 U	0.34 U	0.34 U	3.1	1.9	1.5 U	9.8	1.4
gamma-Chlordane	1.5	1.2	1 U	4	5.7	5.7	10	4.4
Endosulfan I	0.2	0.17 U	0.36	0.95 U	0.25 U	0.48 U	0.52 U	0.21 U
alpha-Chlordane	0.43	0.33 U	0.11 U	1.8	2.1	1.6 U	0.69 U	1
Dieldrin	0.33	0.10 U	0.22	1.5 U	0.61 U	1 U	3.1 U	1 U
Endrin	0.075 U	0.08 U	1 U	0.71	0.70	0.31	1.3	0.18 U
Endosulfan II	0.24 U	0.24 U	0.24 U	0.35 U	0.35 U	1.5	3.1 U	0.24 U
Endrin Aldehyde	0.26 U	0.17 U	0.25 U	1.5 U	0.25 U	0.17 U	0.52 U	0.17 U
Endosulfan Sulfate	0.47 U	0.20 U	0.19 U	0.37 U	0.78	1 U	0.58 U	0.64 U
Endrin Ketone	0.40 U	0.40 U	0.40 U	1.8 U	0.58 U	0.89 U	2	0.40 U
Methoxychlor	0.32 U	0.32 U	0.58 U	1.3 U	1.4 U	1.7 U	1.1 U	0.32 U
Toxaphene	24 U	25 U	25 U	66 U	49 U	91 U	170 U	37 U
Oxychlordane	0.39 U	0.39 U	0.39 U	0.56 U	0.56 U	0.98	1.2 U	0.39 U
2,4'-DDE	1 U	1 U	0.56	2.7 U	1.5 U	6.9 U	5.5 U	1 U
cis-Nonachlor	0.82 U	0.25 U	1 U	5.4 U	4.6 U	3.8 U	9.3 U	3.5 U
2,4'-DDD	0.76 U	1 U	0.32 U	14	4.1	99	7.3 U	3.9
trans-Nonachlor	1 U	0.19 U	0.29 U	1.5 U	0.78 U	1.3 U	0.58 U	1 U
2,4'-DDT	0.77	0.25 U	3.7	5.1	2.4	7.7	14	2.9
Mirex	0.24 U	0.24 U	0.24 U	0.35 U	0.35 U	0.24 U	0.73 U	0.24 U
Hexachloroethane	8.5 U	8.50 U	0.31 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
Hexachlorobutadiene	8.5 U	8.50 U	0.31 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
PCBs in µg/kg as Wet Wt.								
Aroclor 1016	4.3 U	4.3 U	4.3 U	6.2 U	6.2 U	4.3 U	14 U	4.3 U
Aroclor 1221	2.4 U	2.4 U	2.4 U	3.5 U	3.5 U	2.4 U	7.3 U	2.4 U
Aroclor 1232	3 U	3 U	3 U	4.3 U	4.3 U	3 U	9.1 U	3 U
Aroclor 1242	1.4 U	1.4 U	3.3 U	2 U	2 U	1.4 U	4.3 U	1.4 U
Aroclor 1248	2.6 U	2.6 U	2.9 U	3.7 U	3.8 U	2.6 U	7.9 U	2.6 U
Aroclor 1254	11	0.82 U	5.5 U	170	55	270	470	72
Aroclor 1260	3.1 U	3.1 U	5.3 U	4.5 U	4.5 U	3.1 U	9.4 U	3.1 U
Total PCBs (750 TTL)	11	4.3 U	5.5 U	170	55	270	470	72
Aroclor 1262	1.6 U	1.6 U	2.1 U	2.3 U	2.3 U	1.6 U	4.9 U	1.6 U
Aroclor 1268	1.3 U	1.3 U	1.9 U	1.9 U	1.9 U	1.3 U	4 U	1.3 U

Please refer to Notes at the end of this table.

Table 34 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase I*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
PCB Congeners in µg/kg as Wet Wt.								
PCB-1	0.88 U	0.37 U	0.81 U	0.53 U	0.53 U	0.37 U	3.1 U	0.37 U
PCB-5	0.15 U	0.15 U	0.15 U	0.22 U	0.22 U	0.15 U	0.46 U	0.15 U
PCB-8	0.57	0.13 U	0.13 U	0.88	0.71 U	0.53 U	2.7	0.26
PCB-18	0.24	0.11 U	0.11 U	1.7	0.36	4.1	6.1	0.41
PCB-28	0.3	0.12 U	0.12 U	2.4	0.87	4.5	8	0.84
PCB-31	0.27	0.12 U	0.12 U	1.4	0.53	3.6	4.9	0.61
PCB-33	0.5 U	0.07 U	0.5 U	0.72 U	0.11 U	0.5 U	1.6 U	0.071 U
PCB-37	0.14 U	0.14 U	0.14 U	0.65 U	0.36 U	0.99 U	1.6 U	1.1
PCB-44	0.28	0.11 U	0.14 U	3.3	1.5	6.7	12	1.2
PCB-49	0.28	0.14 U	0.21	4.1	1.5	7.1	14	1.8
PCB-52	0.47	0.08 U	0.23 U	5.6	2.1	9.6	23	2.4
PCB-56	0.19 U	0.19 U	0.19 U	1.2	0.44	1.8 U	3.9	0.56
PCB-60	0.25 U	0.10 U	0.40 U	1.4 U	0.15 U	1.6 U	3.1 U	2 U
PCB-66	0.21 U	0.09 U	0.31 U	4.2	1.1	6.7	11	1.6
PCB-70	0.35	0.09 U	0.24	4.9	1.3	8.7	16	1.8
PCB-74	0.16 U	0.16 U	0.16 U	1.8	0.56	3.5	5.4	0.7
PCB-77	0.11 U	0.11 U	0.11 U	0.72 U	0.72 U	0.50 U	1.6 U	0.50 U
PCB-81	0.17 U	0.17 U	0.17 U	13 U	4.2 U	0.17 U	32 U	0.17 U
PCB-87	3.2	0.67	4.4 U	46	23	41	26	18
PCB-90	0.12 U	0.12 U	0.25 U	4.3 U	0.18 U	12	2.8 U	4.2 U
PCB-95	0.58	0.13 U	0.48	8.1	2.7	11	30	4.1
PCB-97	0.5 U	0.1 U	0.5 U	2.9	0.75 U	4.4	16	1.1 U
PCB-99	0.45	0.09 U	0.57	5.3	1.8	6.4	14	2.4
PCB-101	0.72	0.14	0.76	13	3.9	14 U	39	4.5
PCB-105	0.50 U	0.10 U	0.10 U	1.4 U	0.72 U	2.3 U	5.6 U	0.76 U
PCB-110	0.65	0.12	0.74	17	3.8	14 U	36	4.8
PCB-114	0.09 U	0.09 U	0.09 U	0.13 U	0.13 U	0.51	0.51	0.09 U
PCB-118	0.63	0.16 U	0.57	7.4	2.1	8.8	23	3.1
PCB-119	0.12 U	0.12 U	0.35 U	0.72 U	0.72 U	2.5 U	1.6 U	0.5 U
PCB-123	0.30 U	0.30 U	0.30 U	0.43 U	0.43 U	0.30 U	0.91 U	0.30 U
PCB-126	0.12 U	0.12 U	0.12 U	0.18 U	0.18 U	0.28 U	0.48 U	0.12 U
PCB-128	0.17 U	0.17 U	0.19	1.7	0.59	2.1	4	0.83
PCB-132	0.50 U	0.08 U	0.50 U	3.7	1.7	4.2	8.3	2
PCB-138	0.81	0.23 U	0.90	9.3	4.3	15	28	6
PCB-141	0.09 U	0.09 U	0.09 U	0.88	0.26	1.3	2	0.5
PCB-149	0.70	0.14 U	0.63	13	4.1	16	27	5.8
PCB-151	0.24	0.10 U	0.23 U	5.9	1.9	7.3	11	2.7
PCB-153	0.82	0.24	0.84	13	4.7	18	25	6.3
PCB-156	0.31 U	0.31 U	0.31 U	2.5 U	2.1 U	2.1 U	3.4	1.7 U
PCB-157	0.12 U	0.12 U	0.12 U	0.72 U	0.34	0.58	1.6 U	0.28 U
PCB-158	0.19 U	0.19 U	0.23 U	0.93 U	0.72 U	0.87 U	2.2 U	0.58
PCB-166	0.40	0.19	0.61 U	9.9	3.2	11	16	4.5
PCB-167	0.10 U	0.10 U	0.19 U	1.3	0.72 U	0.80	1	0.50 U
PCB-168	0.26 U	0.26 U	0.26 U	0.37 U	0.38 U	0.26 U	0.79 U	0.26 U
PCB-169	0.36 U	0.36 U	0.36 U	0.52 U	0.52 U	0.36 U	1.1 U	0.36 U
PCB-170	0.20 U	0.20 U	0.20 U	2.1	0.58	2.5	3.5	0.83
PCB-174	0.15 U	0.15 U	0.15 U	2.5	0.8 U	3.2	4.4	1.2
PCB-177	0.18 U	0.18 U	0.18 U	2.3	0.86	3.1	3.7	1.1
PCB-180	0.084 U	0.08 U	0.19	1.3	0.51	1.6	2.3	0.64
PCB-183	0.14 U	0.14 U	0.14 U	1.7	0.51	1.7	2.4	0.62
PCB-184	0.083 U	0.08 U	0.08 U	0.12 U	0.12 U	0.083 U	0.26 U	0.083 U
PCB-187	0.42 U	0.20 U	0.62	11 U	3.1 U	12 U	17 U	4.6 U
PCB-189	0.10 U	0.10 U	0.10 U	0.15 U	0.15 U	0.10 U	0.34 U	0.10 U
PCB-194	0.11 U	0.11 U	0.11 U	0.16 U	0.16 U	0.57 U	0.73	0.5 U
PCB-195	0.21 U	0.21 U	0.21 U	0.86	0.3 U	0.51	0.64 U	0.21 U
PCB-201	0.077 U	0.08 U	0.08 U	0.72 U	0.72 U	0.57 U	1.6 U	0.5 U
PCB-203	0.29 U	0.29 U	0.29 U	1.2	0.42 U	1.1	1.5	0.39
PCB-206	0.14 U	0.14 U	0.14 U	0.26	0.2 U	0.34	0.7	0.19
PCB-209	0.11 U	0.11 U	0.11 U	0.16 U	0.16 U	0.16	0.34 U	0.11 U

Please refer to Notes at the end of this table.

Table 34 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase I*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
SVOCs in µg/kg as Wet Wt.								
N-Nitrosodimethylamine	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
Aniline	230 U	230 U	230 U	230 U	230 U	230 U	2,300 U	230 U
Bis(2-chloroethyl) Ether	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	87 U	8.7 U
Phenol	17 U	22	17 U	110	42	29	170 U	25
2-Chlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	110 U	11 U
1,3-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	110 U	11 U
1,4-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	110 U	11 U
1,2-Dichlorobenzene	12 U	12 U	12 U	12 U	12 U	12 U	120 U	12 U
Benzyl Alcohol	92	520	2800	960	780	610	960	900
Bis(2-chloroisopropyl) Ether	11 U	11 U	11 U	11 U	11 U	11 U	110 U	11 U
2-Methylphenol	53 U	53 U	75	83	53 U	53 U	530 U	53 U
Hexachloroethane	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
N-Nitrosodi-n-propylamine	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	82 U	8.2 U
4-Methylphenol	790	29	89	66	26	15 U	150 U	15 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U
Isophorone	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	58 U	5.8 U
2-Nitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	150 U	15 U
Bis(2-chloroethoxy)methane	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U
2,4-Dimethylphenol	13 U	13 U	13 U	13 U	13 U	13 U	130 U	13 U
2,4-Dichlorophenol	12 U	12 U	12 U	12 U	12 U	12 U	120 U	12 U
Benzoic Acid	670	190 U	190 U	190 U	190 U	190 U	190 U	190 U
1,2,4-Trichlorobenzene	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	99 U	9.9 U
4-Chloroaniline	5.9 U	5.9 U	18	24	5.9 U	5.9 U	59 U	5.9 U
Hexachlorobutadiene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
4-Chloro-3-methylphenol	72 U	72 U	72 U	72 U	72 U	72 U	720 U	72 U
Hexachlorocyclopentadiene	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	50,000 U	5,000 U
2,4,6-Trichlorophenol	9.2	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	88 U	8.8 U
2,4,5-Trichlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	110 U	11 U
2-Chloronaphthalene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	59 U	5.9 U
2-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	260 U	26 U
Dimethyl Phthalate	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	51 U	5.1 U
2,6-Dinitrotoluene	7 U	7 U	7 U	7 U	7 U	7 U	70 U	7 U
3-Nitroaniline	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	89 U	8.9 U
2,4-Dinitrophenol	23 U	23 U	23 U	23 U	23 U	23 U	230 U	23 U
4-Nitrophenol	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	75 U	7.5 U
2,4-Dinitrotoluene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
2,3,5,6-Trichlorophenol	42 U	42 U	42 U	42 U	42 U	42 U	420 U	42 U
2,3,4,5-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	550 U	55 U
2,3,4,6-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	550 U	55 U
Diethyl Phthalate	9.4 U	9.4 U	11	9.4 U	9.4 U	9.4 U	94 U	9.4 U
4-Chlorophenyl Phenyl Ether	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	45 U	4.5 U
4-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	260 U	26 U
2-Methyl-4,6-dinitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	150 U	15 U
N-Nitrosodiphenylamine	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	95 U	9.5 U
1,2-Diphenylhydrazine	40 U	40 U	40 U	40 U	40 U	40 U	400 U	40 U
4-Bromophenyl Phenyl Ether	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	55 U	5.5 U
Hexachlorobenzene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	59 U	5.9 U
Pentachlorophenol (900,000 TTL)	31 U	31 U	78	31 U	31 U	31 U	310 U	31 U
Carbazole	33 U	33 U	33 U	33 U	33 U	33 U	330 U	33 U
Di-n-butyl Phthalate	16 U	16 U	33	16 U	16 U	23	160 U	36
Butyl Benzyl Pthalate	14 U	14 U	14 U	14 U	14 U	14 U	140 U	14 U
3,3'-Dichlorobenzidine	780 U	780 U	780 U	780 U	780 U	780 U	7,800 U	780 U
Bis(2ethylhexyl) Phthalate	53 U	53	66	53 U	74	100	530 U	83
Di-n-octyl Phthalate	13 U	13 U	30 U	13 U	13 U	13 U	130 U	13 U
PAHs in µg/kg as Wet Wt.								
Napthalene	3.4	1.3	0.72	3.1	1.5	1.9	2.8	1.6
2-Methylnapthalene	2.1	0.66	0.15 U	1.8	0.87	1.1	57	0.74
Acenaphthylene	0.19	0.15	0.24	3.5	0.33	1.1	3.9	0.42
Acenapthene	0.61	0.53	0.53	68	2.6	8.3	31	2.4
Dibenzofuran	0.63	0.42	0.34	5.1	0.66	1.3	7.2	0.56
Fluorene	1	0.70	0.72	29	3.3	6.9	28	2.6
Phenanthrene	8.2	2	2.6	200	13	30	120	11
Athracene	0.41	0.26	0.65	19	1.9	7.3	19	2.3
Fluoranthene (8,400,000 TTL)	14	1.9	4.8	530	27	98	150	25
Pyrene	12	1.4	4.5	610	27	110	180	27
Benz(a)anthracene	4.6	0.35	1.1	150	8.8	34	53	9.3
Chrysene	10	1.2	4.4	260	19	66	94	20
Benzo(b)fluoranthene	2.2	0.47	2.7	110	10	29	32	9
Benzo(k)fluoranthene	2.8	0.13 U	1.5	94	5.9	20	19	4.6
Benzo(a)pyrene	1.7	0.12 U	0.82	70	3.3	15	17	3.6
Indeno(1,2,3-cd)pyrene	0.58	0.30	0.71	30	2.1	6.6	6.3	2
Dibenz(a,h)anthracene	0.11 U	0.11 U	0.14	5.1	0.47	1.7	2.2	0.53
Benzo(g,h,i)perylene	0.88	0.43	1.6	40	4.2	11	12	4.5

Notes:

Phase I test was initiated June 8 and ended July 6, 2005.

TTL = Target Tissue Level (identified in parenthesis) as per EPA DMMP Issue Paper dated June 16, 2003

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 35 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase I

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
Conventionals as Wet Wt.								
Sample Weight in grams	268.61	114.33	136.47	124.39	117.67	121.84	126.42	114.98
Total Lipids in %	1.4	1.2	1.1	1.2	1.3	1.1	1.3	1.3
Total Solids in %	9.5	8.3	7.8	9.6	9.8	9.4	10	9.4
Metals in mg/kg as Wet Wt.								
Antimony	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.009	0.008 U
Arsenic (10.1 TTL)	5.11	4.96	5.02	4.89	4.63	4.76	4.55	4
Cadmium	0.558	0.516	0.513	0.598	0.537	0.604	0.562	0.489
Chromium	1.1	0.8	1.2	1	0.9	1.1	1	0.9
Copper	42.9	38.9	40.9	44.5	46.2	45.8	42.8	37.7
Lead	0.64	0.53	0.46	0.47	0.42	0.47	0.7	0.39
Mercury (1.0 TTL)	0.07	0.09	0.145	0.079	0.086	0.085	0.078	0.081
Nickel (20,000 TTL)	0.99	0.87	0.89	1.07	0.92	0.96	1.11	0.86
Silver (200 TTL)	0.083	0.07	0.081	0.094	0.081	0.082	0.088	0.072
Zinc	150	130	136	119	116	112	113	111
Butyltins in µg/kg as Wet Wt.								
Tetra-n-butyltin	0.067 U	0.07 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
Tributyltin (TBT) (600 TTL)	0.027 U	0.19	0.091	8.3	11	7.7	1.5	0.68
Dibutyltin	0.13	0.83	0.54	1.5	1.5	1.1	0.78	0.85
n-Butyltin	0.17	0.29	0.19	1.2	0.77	0.54	0.44	0.29
Pesticides in µg/kg as Wet Wt.								
4,4'-DDD	0.44	1 U	0.69	1.6	0.77	3.6	1.2	0.85
4,4'-DDE	0.91	0.87	1.2	1.2	1.2	1.6	1.4	1.2
4,4'-DDT	1.2	1.3	1.9	1.5	1.3	1.3	1.7	1.3
Total DDT (5,000 TTL)	2.55	2.17	3.79	4.30	3.27	6.50	4.30	3.35
alpha-BHC	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Hexachlorobenzene (180,000 TTL)	5.9 U	5.9 U	1 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
beta-BHC	0.31 U	0.31 U	0.62 U	0.31 U	0.31 U	0.46 U	0.31 U	0.31 U
gamma-BHC (Lindane)	0.17 U	0.17 U	0.17 U	0.67 U	0.17 U	0.21	0.17 U	0.17 U
delta-BHC	0.55	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
Heptachlor	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
Aldrin	1 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Heptachlor Epoxide	1 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	1 U	0.34 U
gamma-Chlordane	2.1	1.7	1.7	1.7	1.8	1.8	2	1.9
Endosulfan I	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
alpha-Chlordane	1.7	1.5	1.2	1.5	1.7	1.5	1.8	1.6
Dieldrin	0.37 U	0.42 U	0.55	1 U	0.51 U	0.41 U	0.51 U	0.43 U
Endrin	0.085 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.12 U	0.09 U
Endosulfan II	1 U	0.24 U	0.48 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Endrin Aldehyde	0.28 U	0.54 U	1 U	0.60 U	0.58 U	0.55 U	0.53 U	0.58 U
Endosulfan Sulfate	0.19 U	0.19 U	0.73	0.22 U	0.42	0.24 U	0.24 U	0.30 U
Endrin Ketone	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Methoxychlor	0.46	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	1 U
Toxaphene	21 U	18 U	42 U	22 U	20 U	18 U	19 U	18 U
Oxychlordane	0.54	0.39 U	0.89 U	0.64 U	0.54 U	0.39 U	0.50	0.56 U
2,4'-DDE	1 U	1 U	1.2 U	1.1 U	0.93 U	1.1 U	0.88 U	1.1 U
cis-Nonachlor	2	1.7	0.96 U	2.2 U	1.9	1.7 U	2	1.7
2,4'-DDD	1 U	0.32 U	0.32 U	1.5 U	0.45 U	1.9	0.89 U	1 U
trans-Nonachlor	2.3	1.8	1.7	1.9	1.9	1.8	1.9	2
2,4'-DDT	1.4 U	1.2 U	2.1	1.6 U	1.4 U	1.6 U	1.7 U	1.3 U
Mirex	0.28	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Hexachloroethane	8.5 U	8.5 U	1.3	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
Hexachlorobutadiene	8.5 U	8.5 U	0.31 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
PCBs in µg/kg as Wet Wt.								
Aroclor 1016	4.3 U	4.3 U	6.6 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
Aroclor 1221	2.4 U	2.4 U	20 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
Aroclor 1232	3 U	3 U	9.8 U	3 U	3 U	3 U	3 U	3 U
Aroclor 1242	7.4	17	6.8 U	16	15	17	22	17
Aroclor 1248	2.6 U	2.6 U	5.8 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Aroclor 1254	12 U	8.5 U	11 U	12 U	9.7 U	15 U	22 U	12 U
Aroclor 1260	3.1 U	3.1 U	8.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Total PCBs (750 TTL)	7.4	17	20 U	16	15	17	22	17
Aroclor 1262	1.6 U	1.6 U	2.5 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Aroclor 1268	1.3 U	1.3 U	1.5 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U

Please refer to Notes at the end of this table.

Table 35 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase I

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
PCB Congeners in µg/kg as Wet Wt.								
PCB-1	0.37 U	0.37 U	1.2 U	0.37 U	0.50 U	0.37 U	1 U	1 U
PCB-5	0.15 U	2.7 U	0.50 U	0.65 U	2.2 U	0.15 U	0.15 U	0.15 U
PCB-8	0.62	3.3 U	2	3	3.1	3	2.6	3.1
PCB-18	0.35	1.5	1	1.4	2.8	1.5	1.6	1.4
PCB-28	0.24	1.5	0.73	0.97	1	1.3	1.6	1
PCB-31	0.28	0.86	0.73	0.66 U	0.77	0.79	0.87	0.78
PCB-33	0.79 U	1.1	0.77 U	0.59 U	1.2	0.66	1.5	1.4
PCB-37	0.20 U	0.37	0.14 U	0.14 U	0.14 U	0.14 U	0.69	0.40
PCB-44	0.55	0.66	0.69	0.71	0.73	0.84	1.3	0.69
PCB-49	0.19 U	0.31	0.31	0.37	0.32	0.46	0.94	0.35
PCB-52	0.56	0.73	0.22 U	0.58	0.62	0.83	1.9	0.83
PCB-56	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-60	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.66 U	0.50 U
PCB-66	0.18	0.27	0.50 U	0.43 U	0.26	0.34	0.80	0.36
PCB-70	0.48	0.44	0.47	0.32 U	0.52	0.60	1.1	0.51
PCB-74	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.36	0.16 U
PCB-77	0.50 U	0.11 U	0.11 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
PCB-81	0.17 U	0.17 U	0.17 U	1.1 U	1.2 U	1.1 U	1.7 U	1 U
PCB-87	0.74 U	0.66 U	0.97 U	1.1 U	1	1.3 U	1.2 U	1.1 U
PCB-90	0.12 U	0.12 U	0.66 U	0.67 U	0.12 U	0.12 U	0.12 U	0.85 U
PCB-95	0.42	0.47	0.44	0.55	0.51	0.68	1.6	0.54
PCB-97	0.50 U	0.50 U	0.57 U	0.50 U	0.50 U	0.50 U	0.62 U	0.50 U
PCB-99	0.39	0.33	0.36 U	0.34 U	0.44	0.42	0.7	0.47
PCB-101	0.88	1.1	1.9	1.3	0.94	1.2	2.1	0.91 U
PCB-105	0.30	0.24	0.10 U	0.50 U	0.34	0.50 U	0.45 U	0.34 U
PCB-110	0.82 U	0.74 U	1.2	1	0.95	0.88 U	1.8 U	0.85 U
PCB-114	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB-118	1.3	1.1	1.6	1.1 U	1.2	1.2	1.7	1.1
PCB-119	1.10 U	1.1 U	0.97 U	1.1 U	1.5 U	1.1 U	1.3 U	1.3 U
PCB-123	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.61 U	0.51 U
PCB-126	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-128	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
PCB-132	0.50 U	0.50 U	0.69 U	0.35 U	0.50 U	0.50 U	0.43 U	0.50 U
PCB-138	1.4	1.2	1.8	0.69 U	1.3	1.3	1.7	1.2
PCB-141	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB-149	0.57	0.49	0.69 U	0.68	0.58	0.69	1.20	0.61
PCB-151	0.24	0.19	0.099 U	0.099 U	0.25	0.23	0.38	0.24
PCB-153	2.3	2.2	2.6	2.4 U	2.5	2.5	2.9	2.3
PCB-156	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
PCB-157	0.12 U	0.12 U	0.13 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-158	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-166	0.28 U	0.24 U	0.36 U	0.26 U	0.28 U	0.29 U	0.38 U	0.27 U
PCB-167	0.26	0.23	0.10 U	0.11 U	0.10 U	0.10 U	0.19	0.16
PCB-168	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
PCB-169	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
PCB-170	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-174	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
PCB-177	0.18 U	0.18 U	0.21	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
PCB-180	0.38	0.36	0.44	0.43 U	0.43	0.46	0.49	0.39
PCB-183	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
PCB-184	0.083 U	0.08 U	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U
PCB-187	0.29 U	0.25 U	0.52	0.27 U	0.29 U	0.30 U	0.40 U	0.28 U
PCB-189	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
PCB-194	0.11 U	0.11 U	0.68 U	0.53 U	0.11 U	0.11 U	0.11 U	0.11 U
PCB-195	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
PCB-201	0.077 U	0.08 U	0.083 U	0.077 U	0.077 U	0.077 U	0.077 U	0.077 U
PCB-203	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
PCB-206	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
PCB-209	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U

Please refer to Notes at the end of this table.

Table 35 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase I

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-28	WR-VC-29	WR-VC-72	WR-VC-108	WR-VC-118
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 6 to 8	WRM 6 to 8	WRM 10 to 12	WRM 10 to 12
SVOCs in µg/kg as Wet Wt.								
N-Nitrosodimethylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Aniline	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
Bis(2-chloroethyl) Ether	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U
Phenol	17 U	17 U	33	17 U	17 U	17 U	17 U	17 U
2-Chlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,3-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,4-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichlorobenzene	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzyl Alcohol	78	23	13	23	29	51	25	29
Bis(2-chloroisopropyl) Ether	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Methylphenol	53 U	53 U	53 U	53 U	53 U	53 U	53 U	53 U
Hexachloroethane	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
N-Nitrosodi-n-propylamine	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
4-Methylphenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Nitrobenzene	10 U	10 U	19	10 U	10 U	10 U	10 U	10 U
Isophorone	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
2-Nitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Bis(2-chloroethoxy)methane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	13 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U
2,4-Dichlorophenol	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzoic Acid	1400	1,200	1,400	3,800	1,200	2,400	2,000	2,600
1,2,4-Trichlorobenzene	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U
4-Chloroaniline	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
Hexachlorobutadiene			8.5 U					
4-Chloro-3-methylphenol	72 U	72 U	72 U	72 U	72 U	72 U	72 U	72 U
Hexachlorocyclopentadiene	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U
2,4,6-Trichlorophenol	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
2,4,5-Trichlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Chloronaphthalene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
2-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
Dimethyl Phthalate	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U
2,6-Dinitrotoluene	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
3-Nitroaniline	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U
2,4-Dinitrophenol	23 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
4-Nitrophenol	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
2,4-Dinitrotoluene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
2,3,5,6-Trichlorophenol	42 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U
2,3,4,5-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
2,3,4,6-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
Diethyl Phthalate	19	16	19	15	17	14	18	17
4-Chlorophenyl Phenyl Ether	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
4-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
2-Methyl-4,6-dinitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
N-Nitrosodiphenylamine	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
1,2-Diphenylhydrazine	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
4-Bromophenyl Phenyl Ether	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Hexachlorobenzene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	59 U	5.9 U
Pentachlorophenol (900,000 TTL)	31 U	31 U	46	31 U	31 U	31 U	31 U	31 U
Carbazole	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
Di-n-butyl Phthalate	16 U	32	23	33	30	27	49	36
Butyl Benzyl Pthalate	14 U	14 U	14 U	14 U	14 U	14 U	14 U	14 U
3,3'-Dichlorobenzidine	780 U	780 U	780 U	780 U	780 U	780 U	780 U	780 U
Bis(2ethylhexyl) Phthalate	110	180	85	260	260	280	340	200
Di-n-octyl Phthalate	13 U	13 U	23	13 U	13 U	13 U	13 U	13 U
PAHs in µg/kg as Wet Wt.								
Napthalene	2.5	2.4	0.96	2.1	2	1.7	2.4	2.1
2-Methylnapthalene	2.3	2.1	1.10	2	1.9	1.6	3.5	1.7
Acenaphthylene	0.18	0.17	0.34	0.18	0.15	0.17	0.4	0.17
Acenapthene	0.5	0.39	0.33	1.1	0.56	0.55	1.6	0.53
Dibenzofuran	0.99	0.67	0.55	0.79	0.8	0.67	1.2	0.65
Fluorene	1.8	1.2	0.92	2.6	1.7	1.5	4.4	1.3
Phenanthrene	13	11	8	22	15	13	27	12
Anthracene	0.99	0.72	0.74	2.2	1.3	1.2	4.1	0.91
Fluoranthene (8,400,000 TTL)	14	8.1	9.4	34	12	14	25	11
Pyrene	4.7	3.4	4.5	41	6.1	12	31	6.9
Benz(a)anthracene	0.84	0.27	0.51	2.2	0.43	0.85	2	0.73
Chrysene	2.8	1.5	2.6	5.8	2.4	3	5.7	2.5
Benzo(b)fluoranthene	0.44	0.15 U	0.36	0.95	0.21	0.52	0.8	0.26
Benzo(k)fluoranthene	0.13 U	0.13 U	0.16	0.41	0.13 U	0.13 U	0.26	0.13 U
Benzo(a)pyrene	0.33	0.31	0.26	0.74	0.44	0.58	0.64	0.47
Indeno(1,2,3-cd)pyrene	0.16 U	0.16 U	0.18	0.28	0.16 U	0.18	0.18	0.16 U
Dibenz(a,h)anthracene	0.11 U	0.11 U	0.13	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Benzo(g,h,i)perylene	0.17 U	0.17 U	0.22	0.39	0.17 U	0.27	0.28	0.17 U

Notes:

Phase I test was initiated June 8 and ended July 6, 2005.

TTL = Target Tissue Level (identified in parenthesis) as per EPA DMMP Issue Paper dated June 16, 2003

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 36 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase II*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
Conventionals as Wet Wt.								
Sample Weight in grams	286.98	120.47	114.45	98.83	99.31	66.92	98.67	89.88
Total Lipids in %	3.2	1.5	1.6	2	1.8	2.2	2.1	2
Total Solids in %	15.9	11.6	13.1	12.8	13.8	14.4	13.7	13.6
Metals in mg/kg as Wet Wt.								
Antimony	0.01	0.02	0.02	0.022	0.021	0.014	0.041	0.019
Arsenic (10.1 TTL)	2.22	6.63	11.6	4.05	5.5	2.75	3.47	3.95
Cadmium	0.362	0.26	0.26	0.366	0.327	0.515	0.403	0.397
Chromium	0.3 U	2	1.5	0.3 U	0.9	0.3 U	0.7	0.7
Copper	10.6	9.7	14.2	15.7	15.7	18.4	16	17.3
Lead	0.73	1.04	0.82	0.95	1.38	1.14	2.19	1.28
Mercury (1.0 TTL)	0.02	0.04	0.07	0.027	0.025	0.018	0.015	0.022
Nickel (20,000 TTL)	0.42	1.37	1.97	1.03	1.44	0.99	1.48	1.54
Silver (200 TTL)	0.013	0.03	0.03	0.037	0.038	0.049	0.057	0.063
Zinc	138	150.00	168.00	178	191	189	185	183
Butyltins in µg/kg as Wet Wt.								
Tetra-n-butyltin	0.067 U	0.07 U	0.07 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
Tributyltin (TBT) (600 TTL)	0.027 U	0.03 U	0.07 U	13	0.89	11	1.2	16
Dibutyltin	0.63	0.15	0.30	28	2.3	26	2.7	38
n-Butyltin	0.59	0.32	0.90	220	15	220	20	290
Pesticides in µg/kg as Wet Wt.								
4,4'-DDD	0.62	0.16 U	0.96	6.8	4.3	19	2.6	98
4,4'-DDE	3.7	3.4	6.1	16	13	15	11	38
4,4'-DDT	0.6	0.2 U	0.2 U	4.7	3.1	2.6	10	3.9
Total DDT (5,000 TTL)	4.92	3.40	7.06	27.5	20.4	36.6	23.6	139.9
alpha-BHC	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.54 U	0.32 U	0.32 U
Hexachlorobenzene (180,000 TTL)	5.9 U	0.33 U	0.78	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
beta-BHC	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.52 U	0.31 U	0.31 U
gamma-BHC (Lindane)	0.76 U	0.80 U	0.74 U	0.46 U	0.38 U	0.29 U	0.38 U	0.57 U
delta-BHC	1 U	0.21 U	0.21 U	0.21 U	0.21 U	0.35 U	1 U	1 U
Heptachlor	0.31 U	0.31 U	0.58 U	0.6 U	0.64 U	0.94 U	0.79 U	0.75 U
Aldrin	0.15 U	0.15 U	0.36	0.86	0.81 U	1.7 U	0.15 U	1 U
Heptachlor Epoxide	0.34 U	0.34 U	0.34 U	2	1.6	3	3.8	2.4
gamma-Chlordane	1.5	1 U	1 U	4.5	3.7	5.4	7	5.1
Endosulfan I	0.2	0.17 U	0.36	1 U	1 U	0.29 U	0.4 U	0.41 U
alpha-Chlordane	0.43	0.11 U	0.11 U	1.3	1.3	0.93 U	1.2 U	1.3 U
Dieldrin	0.33	0.15 U	0.22	1 U	0.075 U	1.7 U	0.47 U	1 U
Endrin	0.075 U	0.08 U	1 U	0.16	0.24	0.29	0.53	0.21 U
Endosulfan II	0.24 U	1 U	0.24 U	0.48 U	0.31 U	0.4 U	1.1	1.1
Endrin Aldehyde	0.26 U	0.33 U	0.25 U	0.17 U	0.17 U	1.7 U	1.5 U	1.5 U
Endosulfan Sulfate	0.47 U	1 U	0.19 U	1 U	0.8 U	0.32 U	0.86 U	0.96 U
Endrin Ketone	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	3.5 U	1.1 U	0.72 U
Methoxychlor	0.32 U	1.6 U	0.58 U	0.64 U	0.32 U	1.6 U	1.2 U	0.32 U
Toxaphene	24 U	32 U	25 U	40 U	39 U	110 U	83 U	52 U
Oxychlordane	0.39 U	2 U	0.39 U	0.39 U	0.39 U	0.65 U	0.39 U	0.78
2,4'-DDE	1 U	0.61 U	0.56	1 U	1 U	2 U	3.8 U	4.6
cis-Nonachlor	0.82 U	2 U	1 U	3.8 U	3.4 U	4.9 U	2.8 U	3.9 U
2,4'-DDD	0.76 U	0.32 U	0.32 U	5.1	3.2	9.3	7.9	23
trans-Nonachlor	1 U	0.19 U	0.29 U	0.7 U	1 U	0.32 U	1 U	1 U
2,4'-DDT	0.77	3.4	3.7	3.2	3.1	3.1	5.3	4
Mirex	0.24 U	0.24 U	0.24 U	0.24 U	1 U	0.92 U	0.24 U	0.24 U
Hexachloroethane	8.5 U	0.31 U	0.31 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
Hexachlorobutadiene	8.5 U	0.50 U	0.31 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
PCBs in µg/kg as Wet Wt.								
Aroclor 1016	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	7.2 U	4.3 U	4.3 U
Aroclor 1221	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	4 U	2.4 U	2.4 U
Aroclor 1232	3 U	3 U	3.0 U	3 U	3 U	5 U	3 U	3 U
Aroclor 1242	1.4 U	1.4 U	3.3 U	1.4 U	1.4 U	2.4 U	1.4 U	1.4 U
Aroclor 1248	2.6 U	2.6 U	2.9 U	2.6 U	2.6 U	4.4 U	2.6 U	2.6 U
Aroclor 1254	11	0.82 U	5.5 U	94	61	130	250	190
Aroclor 1260	3.1 U	3.1 U	5.3 U	3.1 U	3.1 U	5.2 U	3.1 U	3.1 U
Total PCBs (750 TTL)	11	4.3 U	5.5 U	94	61	130	250	190
Aroclor 1262	1.6 U	1.6 U	2.1 U	1.6 U	1.6 U	2.7 U	1.6 U	1.6 U
Aroclor 1268	1.3 U	1.3 U	1.9 U	1.3 U	1.3 U	2.2 U	1.3 U	1.3 U

Please refer to Notes at the end of this table.

Table 36 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase II*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
PCB Congeners in µg/kg as Wet Wt.								
PCB-1	0.88 U	0.51 U	0.81 U	1 U	1 U	0.62 U	0.37 U	0.37 U
PCB-5	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.25 U	0.15 U	0.15 U
PCB-8	0.57	0.13 U	0.13 U	0.34	0.25	0.48	0.44	0.5 U
PCB-18	0.24	0.11 U	0.11 U	0.47	1.2	1.4	2.6	1
PCB-28	0.3	0.12 U	0.12 U	1.1	0.98	2.7	2.4	2.5
PCB-31	0.27	0.12 U	0.12 U	0.65	0.62	1.6	1.6	1.6
PCB-33	0.5 U	0.07 U	0.5 U	0.071 U	0.071 U	0.84 U	0.5 U	0.5 U
PCB-37	0.14 U	0.14 U	0.14 U	0.9	0.44 U	3.6	1.3	0.53 U
PCB-44	0.28	0.11 U	0.14 U	1.9	1.4	2.7	4.1	3.8
PCB-49	0.28	0.14 U	0.21	2.4	1.8	3.9	7.1	4.5
PCB-52	0.47	0.08 U	0.23 U	2.9	2.4	5	8.5	5.5
PCB-56	0.19 U	0.19 U	0.19 U	0.68	0.49	1	1.5 U	0.8
PCB-60	0.25 U	0.1 U	0.4 U	0.5 U	0.5 U	1.4 U	2.3 U	0.7 U
PCB-66	0.21 U	0.09 U	0.31 U	2	1.3	4.2	0.094 U	3.7
PCB-70	0.35	0.10 U	0.24	2.3	1.6	4.2	4.4	4.8
PCB-74	0.16 U	0.16 U	0.16 U	0.87	0.68	1.7	2	2
PCB-77	0.11 U	0.11 U	0.11 U	0.5 U	0.5 U	0.84 U	0.5 U	0.5 U
PCB-81	0.17 U	0.17 U	0.17 U	6.7 U	4.2 U	8.1 U	0.94 U	9.5 U
PCB-87	3.2	0.11 U	4.4 U	25	18	23	16	49
PCB-90	0.12 U	0.12 U	0.25 U	0.12 U	0.87 U	7.5 U	3.5 U	7.4
PCB-95	0.58	0.13 U	0.48	4.4	3.3	5.7	13	6.7
PCB-97	0.5 U	0.10 U	0.5 U	1.5 U	0.77 U	2.2	2.8 U	2.3
PCB-99	0.45	0.09 U	0.57	3.2	2.1	4.5	7.7	3.9
PCB-101	0.72	0.09 U	0.76	6.1	4.2	9.1	15	7.8 U
PCB-105	0.5 U	0.1 U	0.1 U	0.76 U	1.2 U	3.2 U	0.1 U	1.2 U
PCB-110	0.65	0.09 U	0.74	6.8	3.7	11	12	8 U
PCB-114	0.09 U	0.09 U	0.09 U	0.14	0.09 U	0.15 U	0.15	0.09 U
PCB-118	0.63	0.16 U	0.57	3.8	2.2	4.9	7.8	5.2
PCB-119	0.12 U	0.12 U	0.35 U	0.5 U	0.5 U	0.84 U	3.1	1.4
PCB-123	0.3 U	0.30 U	0.3 U	0.3 U	0.3 U	0.5 U	0.3 U	0.3 U
PCB-126	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.2 U	0.12 U	0.12 U
PCB-128	0.17 U	0.17 U	0.19	0.95	0.56	1.4	1.7	1.2
PCB-132	0.5 U	0.08 U	0.5 U	2.7	1.6	2.6	4.9	2.7
PCB-138	0.81	0.23 U	0.9	7.7	5	9	17	9.9
PCB-141	0.09 U	0.09 U	0.09 U	0.39	0.21	0.56	0.84	0.66
PCB-149	0.7	0.14 U	0.63	7.6	5.1	9.7	20	10
PCB-151	0.24	0.10 U	0.23 U	3.5	2.5	4.2	11	4.6
PCB-153	0.82	0.14 U	0.84	8.4	5.7	9.8	20	11
PCB-156	0.31 U	0.31 U	0.31 U	1.5 U	1.6 U	1.1	0.31 U	1.6 U
PCB-157	0.12 U	0.12 U	0.12 U	0.27	0.21	0.33	0.65	0.32
PCB-158	0.19 U	0.19 U	0.23 U	0.59 U	0.43 U	0.76 U	1	0.62 U
PCB-166	0.4	0.15 U	0.61 U	6.4	4.4	7.8	17	7.7
PCB-167	0.1 U	0.10 U	0.19 U	0.53	0.5 U	0.17 U	0.37	0.62
PCB-168	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.44 U	0.26 U	0.26 U
PCB-169	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.6 U	0.36 U	0.36 U
PCB-170	0.2 U	0.2 U	0.2 U	1.2	0.76	1.4	2.8	1.6
PCB-174	0.15 U	0.15 U	0.15 U	1.4	0.76 U	1.6	3.5	2
PCB-177	0.18 U	0.31 U	0.18 U	1.3	0.94	2	4	2
PCB-180	0.084 U	0.15 U	0.19	0.57	0.35	0.65	1.2	0.79
PCB-183	0.14 U	0.14 U	0.14 U	1.6	0.63	1	2.6	1.1
PCB-184	0.083 U	0.08 U	0.08 U	0.083 U	0.083 U	0.14 U	0.083 U	0.083 U
PCB-187	0.42 U	0.20 U	0.62	6.5 U	4.3 U	7.8 U	18 U	8 U
PCB-189	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.24 U	0.37 U	0.1 U
PCB-194	0.11 U	0.11 U	0.11 U	0.5 U	0.5 U	0.32	0.68	0.5 U
PCB-195	0.21 U	0.21 U	0.21 U	0.32	0.21 U	0.35 U	0.56	0.24
PCB-201	0.077 U	0.08 U	0.08 U	0.5 U	0.5 U	0.84 U	0.64 U	0.5 U
PCB-203	0.29 U	0.29 U	0.29 U	0.66	0.5 U	0.88	1.3	0.73
PCB-206	0.14 U	0.14 U	0.14 U	0.29	0.14 U	0.39	0.38	0.25
PCB-209	0.11 U	0.11 U	0.11 U	0.17	0.11 U	0.19 U	0.17	0.11 U

Please refer to Notes at the end of this table.

Table 36 - Tissue Results from Bioaccumulation Testing for *Lumbriculus variegatus - Phase II*

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
SVOCs in µg/kg as Wet Wt.								
N-Nitrosodimethylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Aniline	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
Bis(2-chloroethyl) Ether	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U
Phenol	17 U	17 U	17 U	18	17	24	22	19
2-Chlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,3-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,4-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichlorobenzene	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzyl Alcohol	92	2,300	2,800	1,100	770	1,400	980	1,200
Bis(2-chloroisopropyl) Ether	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Methylphenol	53 U	71	75	53 U	53 U	53 U	53 U	53 U
Hexachloroethane	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
N-Nitrosodi-n-propylamine	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
4-Methylphenol	790	110	89	15 U	15 U	85	15 U	15 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
2-Nitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Bis(2-chloroethoxy)methane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	13 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U
2,4-Dichlorophenol	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzoic Acid	670	190 U	190 U	190 U	190 U	190 U	190 U	190 U
1,2,4-Trichlorobenzene	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U
4-Chloroaniline	5.9 U	5.9 U	18	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
Hexachlorobutadiene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	85 U	8.5 U
4-Chloro-3-methylphenol	72 U	72 U	72 U	72 U	72 U	72 U	72 U	72 U
Hexachlorocyclopentadiene	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U
2,4,6-Trichlorophenol	9.2	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
2,4,5-Trichlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Chloronaphthalene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
2-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
Dimethyl Phthalate	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U
2,6-Dinitrotoluene	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
3-Nitroaniline	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U
2,4-Dinitrophenol	23 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
4-Nitrophenol	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
2,4-Dinitrotoluene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
2,3,5,6-Trichlorophenol	42 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U
2,3,4,5-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
2,3,4,6-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
Diethyl Phthalate	9.4 U	9.8	11	9.4 U	9.4 U	9.4 U	9.4 U	9.4 U
4-Chlorophenyl Phenyl Ether	4.5 U	5.5	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
4-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
2-Methyl-4,6-dinitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
N-Nitrosodiphenylamine	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
1,2-Diphenylhydrazine	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
4-Bromophenyl Phenyl Ether	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Hexachlorobenzene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	59 U	5.9 U
Pentachlorophenol (900,000 TTL)	31 U	50	78	31 U	31 U	31 U	31 U	31 U
Carbazole	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
Di-n-butyl Phthalate	16 U	31	33	24	59	26	24	54
Butyl Benzyl Pthalate	14 U	14 U	14 U	14 U	14 U	14 U	14 U	14 U
3,3'-Dichlorobenzidine	780 U	780 U	780 U	780 U	780 U	780 U	780 U	780 U
Bis(2ethylhexyl) Phthalate	53 U	53 U	66	110	76	73	120	53 U
Di-n-octyl Phthalate	13 U	15 U	30 U	13 U	13 U	13 U	13 U	13 U
PAHs in µg/kg as Wet Wt.								
Napthalene	3.4	0.68	0.72	1.6	1.4	2.4	1.3	1.4
2-Methylnapthalene	2.1	0.15 U	0.15 U	1.1	0.71	1.2	0.61	0.99
Acenaphthylene	0.19	0.09 U	0.24	1.8	0.56	12	0.59	1.3
Acenapthene	0.61	0.47	0.53	21	1.7	460	2.1	9.5
Dibenzofuran	0.63	0.30	0.34	1.8	0.37	3.2	0.071 U	1.4
Fluorene	1	0.44	0.72	9.6	1.8	230	2.8	6.6
Phenanthrene	8.2	1.4	2.6	59	8.2	2,800	14	36
Anthracene	0.41	0.16	0.65	9.9	1.5	52	3	8.1
Fluoranthene (8,400,000 TTL)	14	1.3	4.8	100	19	3,400	31	110
Pyrene	12	0.88	4.5	110	20	3,800	34	130
Benz(a)anthracene	4.6	0.12 U	1.1	35	6.8	820	12	42
Chrysene	10	0.19 U	4.4	56	14	1,300	25	71
Benzo(b)fluoranthene	2.2	0.15 U	2.7	30	8.1	730	12	33
Benzo(k)fluoranthene	2.8	0.13 U	1.5	20	4.2	520	7.2	22
Benzo(a)pyrene	1.7	0.12 U	0.82	23	4	750	6.9	27
Indeno(1,2,3-cd)pyrene	0.58	0.16 U	0.71	7.6	2.1	320	3.2	7.9
Dibenz(a,h)anthracene	0.11 U	0.11 U	0.14	1.8	0.46	53	0.82	2.1
Benzo(g,h,i)perylene	0.88	0.37	1.6	11	4.1	380	6.5	13

Notes:

Phase II test was initiated on July 13 and ended August 10, 2005.

TTL = Target Tissue Level (identified in parenthesis) as per EPA DMMP Issue Paper dated June 16, 2003

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 37 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase II

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
Conventionals as Wet Wt.								
Sample Weight in grams	268.61	140.93	136.47	150.26	162.2	157.55	150.82	134.91
Total Lipids in %	1.4	1.1	1.1	0.93	0.95	0.98	0.92	0.91
Total Solids in %	9.5	7.5	7.8	7.7	8.1	8.1	8.4	7.6
Metals in mg/kg as Wet Wt.								
Antimony	0.008 U	0.01 U	0.01 U	0.008	0.008 U	0.008 U	0.008 U	0.008 U
Arsenic (10.1 TTL)	5.11	4.87	5.02	5.64	5.64	4.9	4.89	5.27
Cadmium	0.558	0.51	0.51	0.615	0.641	0.585	0.612	0.625
Chromium	1.1	0.9	1.2	1.3	2.3	1.2	1	1.3
Copper	42.9	38.3	40.9	49.1	51.9	47.8	44.4	44.6
Lead	0.64	0.52	0.46	0.51	0.5	0.46	0.55	0.48
Mercury (1.0 TTL)	0.07	0.13	0.14	0.11	0.112	0.09	0.096	0.11
Nickel (20,000 TTL)	0.99	0.69	0.89	1.11	1.54	0.93	0.95	1.2
Silver (200 TTL)	0.083	0.08	0.08	0.103	0.103	0.099	0.104	0.091
Zinc	150	137	136	132	129	133	124	139
Butyltins in µg/kg as Wet Wt.								
Tetra-n-butyltin	0.067 U	0.07 U	0.07 U	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
Tributyltin (TBT) (600 TTL)	0.027 U	0.06	0.09	1.5	0.45	3.4	0.59	6.5
Dibutyltin	0.13	0.46	0.54	0.74	0.47	0.62	0.41	1
n-Butyltin	0.17	0.06 U	0.19	0.17	0.11	0.59	0.11	0.38
Pesticides in µg/kg as Wet Wt.								
4,4'-DDD	0.44	0.71	0.69	0.87	0.7	1.8	0.71	4.7
4,4'-DDE	0.91	0.88	1.2	1.2	1.1	1.2	1.2	2.3
4,4'-DDT	1.2	1 U	1.9	1.4	1.5	1.4	1.7	1.5
Total DDT (5,000 TTL)	2.55	1.59	3.79	3.47	3.3	4.4	3.61	8.5
alpha-BHC	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
Hexachlorobenzene (180,000 TTL)	5.9 U	1 U	1 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
beta-BHC	0.31 U	0.51	0.62 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
gamma-BHC (Lindane)	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
delta-BHC	0.55	0.21 U	0.21 U	0.21 U	0.24 U	0.23	0.21 U	0.21 U
Heptachlor	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
Aldrin	1 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	1 U	0.15 U
Heptachlor Epoxide	1 U	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U	1 U	1 U
gamma-Chlordane	2.1	1.3	1.7	1.6	1.6	1.5	1.7	1.6
Endosulfan I	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
alpha-Chlordane	1.7	0.99	1.2	1.2	1.2	1.2	1.2	1.2
Dieldrin	0.37 U	0.51	0.55	0.44 U	1 U	0.3 U	0.44	0.44 U
Endrin	0.085 U	0.08 U	0.08 U	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U
Endosulfan II	1 U	0.24 U	0.48 U	0.24 U	1 U	0.24 U	1 U	0.24 U
Endrin Aldehyde	0.28 U	0.17 U	1 U	0.65 U	0.29 U	0.72 U	0.8 U	0.65 U
Endosulfan Sulfate	0.19 U	0.61	0.73	0.19 U	0.19 U	0.19 U	0.29 U	0.19 U
Endrin Ketone	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.48 U	0.41 U
Methoxychlor	0.46	0.32 U	0.32 U	0.32 U	0.38	0.32 U	0.32 U	0.32 U
Toxaphene	21 U	15 U	42 U	14 U	14 U	17 U	19 U	14 U
Oxychlordane	0.54	0.39 U	0.89 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
2,4'-DDE	1 U	1.3 U	1.2 U	1 U	1 U	0.8 U	1 U	0.98 U
cis-Nonachlor	2	1 U	0.96 U	2	1.9	1.9	1.2 U	2
2,4'-DDD	1 U	0.32 U	0.32 U	0.61 U	0.47 U	1.9 U	1.3 U	2 U
trans-Nonachlor	2.3	1.7	1.7	1.8	1.8	1.8	1.8	2
2,4'-DDT	1.4 U	1.9	2.1	1.5 U	1.5 U	1.5 U	1.8	1.7 U
Mirex	0.28	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Hexachloroethane	8.5 U	0.64	1.3	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
Hexachlorobutadiene	8.5 U	0.31 U	0.31 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
PCBs in µg/kg as Wet Wt.								
Aroclor 1016	4.3 U	7.6 U	6.6 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
Aroclor 1221	2.4 U	20 U	20 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
Aroclor 1232	3 U	10 U	9.8 U	3 U	3 U	3 U	3 U	3 U
Aroclor 1242	7.4	7 U	6.8 U	12	12	13	17	11
Aroclor 1248	2.6 U	6 U	5.8 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Aroclor 1254	12 U	10 U	11 U	13 U	13 U	16 U	16 U	20 U
Aroclor 1260	3.1 U	8.4 U	8.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
Total PCBs (750 TTL)	7.4	20 U	20 U	12	12	13	17	11
Aroclor 1262	1.6 U	3 U	2.5 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Aroclor 1268	1.3 U	1.4 U	1.5 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U

Please refer to Notes at the end of this table.

Table 37 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase II

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
PCB Congeners in µg/kg as Wet Wt.								
PCB-1	0.37 U	1.2 U	1.2 U	0.37 U	0.37 U	0.37 U	0.37 U	0.37 U
PCB-5	0.15 U	0.5 U	0.5 U	1.1 U	1.2 U	1.1 U	1.3 U	1.5 U
PCB-8	0.62	2.1	2	1.4 U	1.6 U	1.4 U	1.7 U	2 U
PCB-18	0.35	0.95	1	0.82	0.85	0.87	0.98	1.1
PCB-28	0.24	0.57 U	0.73	0.62	0.6	0.57	0.66	0.84
PCB-31	0.28	0.73	0.73	0.47	0.47	0.51	0.54	0.69
PCB-33	0.79 U	0.72 U	0.77 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-37	0.2 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
PCB-44	0.55	0.61	0.69	0.62	0.63	0.7	0.75	0.88
PCB-49	0.19 U	0.29	0.31	0.29	0.29	0.38	0.49	0.53
PCB-52	0.56	0.24 U	0.22 U	0.57	0.73	0.71	0.77	0.99
PCB-56	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-60	0.5 U	0.5 U	0.5 U	0.5 U	0.41 U	0.44 U	0.53 U	0.53 U
PCB-66	0.18	0.48 U	0.5 U	0.38	0.35	0.47	0.44	0.53
PCB-70	0.48	0.43	0.47	0.44	0.43	0.46	0.51	0.66
PCB-74	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.19	0.18	0.25
PCB-77	0.5 U	0.11 U	0.11 U	0.5 U	0.5 U	0.82 U	0.5 U	0.5 U
PCB-81	0.17 U	0.17 U	0.17 U	0.17 U	1.2 U	1.4 U	1.3 U	0.17 U
PCB-87	0.74 U	0.85 U	0.97 U	1.1 U	0.93 U	1.1 U	0.94 U	1.6 U
PCB-90	0.12 U	0.59 U	0.66 U	1.1 U	1 U	1 U	1.2 U	1.4 U
PCB-95	0.42	0.38	0.44	0.51	0.56	0.58	0.82	0.7
PCB-97	0.5 U	0.5 U	0.57 U	0.5 U	0.5 U	0.5 U	0.5 U	0.52 U
PCB-99	0.39	0.27 U	0.36 U	0.49	0.51	0.47	0.55	0.62
PCB-101	0.88	1.7	1.9	1.1 U	1.1 U	1.2 U	1.3 U	1.8
PCB-105	0.3	0.1 U	0.1 U	0.35 U	0.37	0.5 U	0.36	0.5 U
PCB-110	0.82 U	1.1	1.2	0.95 U	0.93 U	1.2 U	1.2 U	1.3 U
PCB-114	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB-118	1.3	1.5	1.6	1.5	1.5	1.6	1.6	1.7
PCB-119	1.1 U	0.87 U	0.97 U	0.79 U	0.79 U	0.84 U	0.12 U	0.82 U
PCB-123	0.3 U	0.3 U	0.30 U	0.62 U	0.62 U	0.3 U	0.46 U	0.52 U
PCB-126	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-128	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.2 U	0.17 U
PCB-132	0.5 U	0.64 U	0.69 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-138	1.4	1.7	1.8	1.6	1.6	1.6	1.7	1.7
PCB-141	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
PCB-149	0.57	0.63 U	0.69 U	0.69	0.65	1.1	0.87	0.92
PCB-151	0.24	0.1 U	0.1 U	0.22	0.22	0.21	0.3	0.27
PCB-153	2.3	2.4	2.6	2.5	2.5	2.7	2.8	2.7
PCB-156	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
PCB-157	0.12 U	0.13 U	0.13 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
PCB-158	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
PCB-166	0.28 U	0.34 U	0.36 U	0.32 U	0.31 U	0.35 U	0.37 U	0.36 U
PCB-167	0.26	0.10 U	0.1 U	0.14	0.29	0.25	0.1 U	0.27
PCB-168	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
PCB-169	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U	0.36 U
PCB-170	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-174	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
PCB-177	0.18 U	0.18 U	0.21	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
PCB-180	0.38	0.41	0.44	0.41 U	0.39	0.44	0.47	0.42
PCB-183	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
PCB-184	0.083 U	0.08 U	0.08 U	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U
PCB-187	0.29 U	0.35	0.52	0.33 U	0.32 U	0.36 U	0.39 U	0.37 U
PCB-189	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
PCB-194	0.11 U	0.11 U	0.68 U	0.59 U	0.11 U	0.59 U	0.11 U	0.61 U
PCB-195	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
PCB-201	0.077 U	0.08 U	0.08 U	0.077 U	0.077 U	0.077 U	0.25 U	0.077 U
PCB-203	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
PCB-206	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
PCB-209	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U

Please refer to Notes at the end of this table.

Table 37 - Tissue Results from Bioaccumulation Testing for *Corbicula fluminea* - Phase II

Sample ID	Day 0	Control	WR-PG-03-Ref	WR-VC-11	WR-VC-43	WR-VC-46	WR-VC-57	WR-VC-66
Willamette River Mile	--	--	--	WRM 3 to 6	WRM 8 to 10	WRM 3 to 6	WRM 10 to 12	WRM 6 to 8
SVOCs in µg/kg as Wet Wt.								
N-Nitrosodimethylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Aniline	230 U	230 U	230 U	230 U	230 U	230 U	230 U	230 U
Bis(2-chloroethyl) Ether	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U	8.7 U
Phenol	17 U	20	33	17 U	22	17 U	17 U	17 U
2-Chlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,3-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,4-Dichlorobenzene	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichlorobenzene	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzyl Alcohol	78	11	13	17	16	16	14	19
Bis(2-chloroisopropyl) Ether	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Methylphenol	53 U	53 U	53 U	53 U	53 U	53 U	53 U	53 U
Hexachloroethane	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
N-Nitrosodi-n-propylamine	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U	8.2 U
4-Methylphenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Nitrobenzene	10 U	20	19	31	10 U	10 U	10 U	10 U
Isophorone	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U	5.8 U
2-Nitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Bis(2-chloroethoxy)methane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dimethylphenol	13 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U
2,4-Dichlorophenol	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Benzoic Acid	1,400	1,100	1,400	980	1,100	990	1,300	1,100
1,2,4-Trichlorobenzene	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U	9.9 U
4-Chloroaniline	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
Hexachlorobutadiene		8.5 U	8.5 U					
4-Chloro-3-methylphenol	72 U	72 U	72 U	72 U	72 U	72 U	72 U	72 U
Hexachlorocyclopentadiene	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U	5,000 U
2,4,6-Trichlorophenol	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U	8.8 U
2,4,5-Trichlorophenol	11 U	11 U	11 U	11 U	11 U	11 U	11 U	11 U
2-Chloronaphthalene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U
2-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
Dimethyl Phthalate	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U
2,6-Dinitrotoluene	7 U	7 U	7 U	7 U	7 U	7 U	7 U	7 U
3-Nitroaniline	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U	8.9 U
2,4-Dinitrophenol	23 U	23 U	23 U	23 U	23 U	23 U	23 U	23 U
4-Nitrophenol	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
2,4-Dinitrotoluene	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U	8.5 U
2,3,5,6-Trichlorophenol	42 U	42 U	42 U	42 U	42 U	42 U	42 U	42 U
2,3,4,5-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
2,3,4,6-Trichlorophenol	55 U	55 U	55 U	55 U	55 U	55 U	55 U	55 U
Diethyl Phthalate	19	19	19	16	13	16	14	14
4-Chlorophenyl Phenyl Ether	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
4-Nitroaniline	26 U	26 U	26 U	26 U	26 U	26 U	26 U	26 U
2-Methyl-4,6-dinitrophenol	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
N-Nitrosodiphenylamine	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U	9.5 U
1,2-Diphenylhydrazine	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
4-Bromophenyl Phenyl Ether	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Hexachlorobenzene	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	5.9 U	59.0 U	5.9 U
Pentachlorophenol (900,000 TTL)	31 U	31 U	46	31 U	31 U	31 U	31 U	31 U
Carbazole	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
Di-n-butyl Phthalate	16 U	21	23	25	30	28	25	28
Butyl Benzyl Pthalate	14 U	14 U	14 U	14 U	14 U	14 U	14 U	14 U
3,3'-Dichlorobenzidine	780 U	780 U	780 U	780 U	780 U	780 U	780 U	780 U
Bis(2ethylhexyl) Phthalate	110	150	85	190	350	250	160	150
Di-n-octyl Phthalate	13 U	23	23	13 U	13 U	13 U	13 U	13 U
PAHs in µg/kg as Wet Wt.								
Napthalene	2.5	0.85	0.96	1.5	1.8	2.1	1.7	1.6
2-Methylnapthalene	2.3	1	1.1	1.1	1.4	1	1.1	1.2
Acenaphthylene	0.18	0.23	0.34	0.2	0.27	0.52	0.2	0.19
Acenapthene	0.5	0.32	0.33	0.81	0.5	11	0.5	0.71
Dibenzofuran	0.99	0.51	0.55	0.53	0.55	0.44	0.48	0.6
Fluorene	1.8	0.92	0.92	1.3	1.1	11	1.1	1.4
Phenanthrene	13	7	8	11	9.6	140	9.9	12
Anthracene	0.99	0.59	0.74	1.3	0.84	5.8	1	1.6
Fluoranthene (8,400,000 TTL)	14	8.1	9.4	16	12	270	14	23
Pyrene	4.7	3.5	4.5	12	6.8	290	8.5	22
Benz(a)anthracene	0.84	0.42	0.51	0.93	0.82	22	0.99	1.7
Chrysene	2.8	2.1	2.6	3.3	3.3	36	3.5	5.2
Benzo(b)fluoranthene	0.44	0.25	0.36	0.49	0.77	13	0.54	0.84
Benzo(k)fluoranthene	0.13 U	0.13 U	0.16	0.13 U	0.43	5.6	0.13 U	0.33
Benzo(a)pyrene	0.33	0.19	0.26	0.44	0.55	8.8	0.42	0.57
Indeno(1,2,3-cd)pyrene	0.16 U	0.16 U	0.18	0.17	0.51	3.5	0.16 U	0.26
Dibenz(a,h)anthracene	0.11 U	0.11 U	0.13	0.11 U	0.15	0.49	0.11 U	0.11 U
Benzo(g,h,i)perylene	0.17 U	0.17 U	0.22	0.19	0.49	5.5	0.22	0.31

Notes:

Phase II test was initiated on July 13 and ended August 10, 2005.

TTL = Target Tissue Level (identified in parenthesis) as per EPA DMMP Issue Paper dated June 16, 2003

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 38 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Metals

	Aluminum	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc
DMEF SL	**--**	**150**	**57**	**5.1**	**--**	**390**	**450**	**0.41**	**140**	**--**	**6.1**	**410**
DMEF BT	**--**	**--**	**507.1**	**--**	**--**	**--**	**--**	**1.5**	**370**	**--**	**6.1**	**--**
DMEF ML	**--**	**200**	**700**	**14**	**--**	**1,300**	**1,200**	**2.3**	**370**	**--**	**8.4**	**3,800**
Reference Locations												
WR-PG-03-REF	35,000	0.07 j-N	2.84	0.169	25.8	28.8	8.68	0.039	22.7	0.13	0.095	66
WRM 3 to 6												
WR-VC-11	23,300	0.12 j-N	2.77	0.264	17.8	32.3	18	0.093	16.7	0.09	0.229	69.4
WR-VC-28	23,500	0.18 j-N	3.69	0.301	23.4	38.8	21.2	0.087	19.3	0.1 u	0.409	100
WR-VC-46	19,500	0.17 j-N	3.97	0.373	18	29.8	30.3	0.149	18.3	0.05	0.213	110
WRM 6 to 8												
WR-VC-29	26,900	0.19 j-N	3.42	0.263	23.1	53.2	17.1	0.056	20.9	0.09 u-B	0.22	87.6
WR-VC-66	25,600	0.18 j-N	3.32	0.361	23.3	41.1	25.5	0.102	20.5	0.08 u-B	0.374	97.2
WR-VC-72	20,000	0.15 j-N	3.72	0.354	26	41.6	27.2	0.087	21.1	0.06 u-B	0.36	102
WRM 8 to 10												
WR-VC-43	30,600	0.1 j-N	3.29	0.239	24.5	35.3	14.6	0.058 j	23.6	0.12	0.147	74.1
WRM 10 to 12												
WR-VC-57	28,000	0.06 j-BN	4.01	0.412	27.5	37	37.8	0.089	22.9	0.1	0.276	101
WR-VC-108	28,800	0.94 j-N	6.83	0.479	42.1	172	122	0.321	25.6	0.12	0.833	254
WR-VC-118	28,800	0.1 j-N	4.17	0.337	28.7	36.5	25.8	0.093	24.4	0.11	0.345	110

Notes:

Concentrations in mg/kg.

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Columbia Analytical Services (CAS) Qualifiers:

B = The result is an estimated concentration that is less than the MRL, but greater than or equal to the MDL.

N = The matrix spike sample recovery was not within control limits.

Tetra Tech EC Qualifiers:

u = The result should be considered not detected at the indicated detection limit; j = The result should be considered an estimated value.

Table 39 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Butyltins

	Tertra-n-butyltin		Tri-n-butyltin		Di-n-butyltin		n-Butyltin	
	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg	PW in µg/L	Dry Wt. in µg/kg
DMEF SL	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF BT	**--**	**--**	**0.15**	**--**	**--**	**--**	**--**	**--**
DMEF ML	--	--	--	--	--	--	--	--
WR-PG-03-REF	0.0015 U	0.15 U	0.0012	0.72	0.0013 u-J	0.74	0.0017 U	0.24
WRM 3 to 6								
WR-VC-11	0.0015 U	--	*0.24*	--	0.014	--	0.0029	--
WR-VC-28	0.0015 U	--	*0.31*	--	0.02	--	0.0032	--
WR-VC-46	0.0018 U	--	0.065	--	0.0037	--	0.0087	--
WRM 6 to 8								
WR-VC-29	0.0015 U	--	*0.58*	--	0.021	--	0.0023	--
WR-VC-66	0.0015 U	--	*0.38*	--	0.014	--	0.0017 U	--
WR-VC-72	0.0015 U	--	*0.31*	--	0.011	--	0.0017 U	--
WRM 8 to 10								
WR-VC-43	0.0015 U	--	0.0032	--	0.00091 U	--	0.0017 U	--
WRM 10 to 12								
WR-VC-57	0.0015 U	--	0.019	--	0.0034	--	0.0017 U	--
WR-VC-108	0.0015 U	--	0.09	--	0.0075	--	0.0072	--
WR-VC-118	0.0023 U	--	0.008	--	0.0012 U	--	0.0025 U	--

Notes:

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

PW = Porewater; WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL; italics indicates an exceedance of DMEF-BT.

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 40 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Total DDT

	4,4'-DDE	4,4'-DDD	4,4'-DDT	Total DDT
DMEF SL	**--**	**--**	**--**	**6.9**
DMEF BT	**--**	**--**	**--**	**50**
DMEF ML	**--**	**--**	**--**	**69**
WR-PG-03-REF	0.86	0.16 U	0.57	1.43
WRM 3 to 6				
WR-VC-11	4	3.5	2	9.5
WR-VC-28	12	14	1,200	***1,226***
WR-VC-46	1.1 U	15	3 U	15
WRM 6 to 8				
WR-VC-29	2.9	1.7	1.4	6
WR-VC-66	13	21	35	***69***
WR-VC-72	8.8	18	13	39.8
WRM 8 to 10				
WR-VC-43	2.6	1.2	0.17 U	3.8
WRM 10 to 12				
WR-VC-57	3.6	1.1	4.7 U	4.7
WR-VC-108	3.4 U	13	140	***153***
WR-VC-118	4.9	2.7	3.3	10.9

Notes:

Concentrations in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level; BT = Bioaccumulation Trigger; and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedance of DMEF-SL; italics indicates an exceedance of DMEF-BT; and bold indicates an exceedance of DMEF-ML.

Total DDT = The sum of 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 41 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Total PCBs

	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
DMEF SL	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**130**
DMEF ML	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**3,100**
WR-PG-03-REF	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
WRM 3 to 6								
WR-VC-11	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	18	15	33
WR-VC-28	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	19 U	18 U	19 U
WR-VC-46	2 U	2 U	2 U	2 U	2 U	16	20	36
WRM 6 to 8								
WR-VC-29	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	9.4	9.7	19
WR-VC-66	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	29	24	53
WR-VC-72	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	58	35	93
WRM 8 to 10								
WR-VC-43	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	16 U	13	13
WRM 10 to 12								
WR-VC-57	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	48	78	126
WR-VC-108	24 U	24 U	24 U	24 U	24 U	2,400	24 U	2,400
WR-VC-118	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	44	39	83

Notes:

Concentrations in µg/kg

DMEF SL = Dredge Material Evaluation Framework Screening Level and ML = Maximum Level; -- = Not available

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

Shading indicates an exceedence of DMEF-SL.

Total PCBs = The sum of Aroclors 1016 through 1260

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 42 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Total PCBs - TOC Normalized

DMEF BT	Aroclor 1016 --	Aroclor 1221 --	Aroclor 1232 --	Aroclor 1242 --	Aroclor 1248 --	Aroclor 1254 --	Aroclor 1260 --	Total PCBs 38
WR-PG-03-REF	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
WRM 3 to 6								
WR-VC-11	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.82	0.68	1.5
WR-VC-28	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.79 U	0.75 U	0.79 U
WR-VC-46	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.98	1.23	2.2
WRM 6 to 8								
WR-VC-29	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.4	0.41	0.8
WR-VC-66	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	1.39	1.15	2.5
WR-VC-72	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.69	1.62	4.3
WRM 8 to 10								
WR-VC-43	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.85 U	0.69	1.4
WRM 10 to 12								
WR-VC-57	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	2.65	4.31	7
WR-VC-108	1.26 U	1.26 U	1.26 U	1.26 U	1.26 U	126	1.26 U	126
WR-VC-118	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	2.24	1.99	4.2

Notes:

Concentrations in mg/kg (Total Organic Carbon Normalized)

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

DMEF BT = Dredge Material Evaluation Framework Bioaccumulation Trigger; -- = Not Available.

Shading indicates an exceedence of DMEF-BT.

Total PCBs = The sum of Aroclors 1016 through 1260

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

Table 43 - Bioaccumulation Testing Locations Sediment Sampling Analytical Results - Select SVOCs

	Hexachlorobenzene	Pentachlorophenol	Fluoranthene	Pyrene	Total LPAHs	Total HPAHs
DMEF SL	**22**	**400**	**1,700**	**2,600**	**5,200**	**12,000**
DMEF BT	**168**	**504**	**4,600**	**11,980**	**--**	**--**
DMEF ML	**230**	**690**	**30,000**	**16,000**	**29,000**	**69,000**
WR-PG-03-REF	0.43 U	0.98 U	2.7	2.7	5	17
WRM 3 to 6						
WR-VC-11	0.39 U	1.4	440	370	324	2,771
WR-VC-28	0.43 U	0.99 U	380	400	485	2,361
WR-VC-46	0.57	0.71 U	*13,000*	*15,000*	12,030	63,520
WRM 6 to 8						
WR-VC-29	0.48 U	0.91 U	45	41	49	249
WR-VC-66	0.41 U	11 U	61	64	63	413
WR-VC-72	0.74	0.91 U	49	50	66	289
WRM 8 to 10						
WR-VC-43	0.38 U	0.83 U	25	23	22	130
WRM 10 to 12						
WR-VC-57	3.9 U	9.1 U	27	27	26	171
WR-VC-108	3.8 U	1.8	140	130	166	757
WR-VC-118	0.36 U	1.5	57	53	74	283

Notes:

Concentrations in µg/kg

WRM = Willamette River Mile; PG = Power Grab (surface sample); VC = Vibracore (subsurface sample)

DMEF BT = Dredge Material Evaluation Framework Bioaccumulation Trigger; -- = Not Available.

Shading indicates an exceedence of DMEF-SL; italics indicates an exceedance of DMEF-BT.

Columbia Analytical Services (CAS) Qualifiers:

U = The compound was analyzed for, but was not detected at or above the indicated detection limit.

APPENDIX A

CORE LOGS

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 20 Date 5/5/05 Deployment Time: 1559

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 36.6 Feet LOCATION: N 713323.53 E 2617955.55

~~Predicted~~ Tide : 4.8 CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL R-3 equiv

TUBE LENGTH: 15.6 Feet

Samplers RF, DH, BF

Tube Type: ~~CASTAL~~ Liner Type: CAB

Core Penetration: 15.0 (ft below mudline) Recovered Core length: 12.8 Percent Compaction: 15% / 85%

Compacted Core sections: in dredge prism: [illegible] to 9.4 2½ ft below: 9.4 to 11.1

Expanded Core sections: in dredge prism: -31 (0) to -42 (11) 2½ ft below: -42 (11) to -44 (13)

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, OLIVE BROWN Silt	
1		DENSITY INCR W/ DEPTH	
2		~@ 4' DENSE, DRY Silt	
3			
4			
5			
6			
7			
8			
9			
10			

-31 -32 -33 -34 -35 -36 -37 -38 -39 -40 -41

(OVER)

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 119 Date 5/7/05 Deployment Time: 1152

Core Attempt #3 Station Description: Core #2

DEPTH TO MUDLINE: 36.9 (+5.7) Feet LOCATION: N 690769.06 (-29.8) E 741386.29

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., DH, ICK

TUBE LENGTH: 15.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 15.0 (ft below mudline) Recovered Core length: 12.9 Percent Compaction: 15% / 85%

Compacted Core sections: in dredge prism: 0 to 10.2 1-ft below: 10.2 to 11.9

Expanded Core sections: in dredge prism: 30 to 42 1 ft below: 42 to 44

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests	
0			wet soft olive brown silt		Chem + bioassay sampled	30
1					plus bioaccumulation	31
2						32
3			increasing firmness increasing clay			33
4			clayey silt			34
5						35
6						36
7						37
8			thin sand lense			38
9						39
10						40

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 120 Date 5/7/05 Deployment Time: 1234

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: 35.5 (+5.7) Feet LOCATION: N 690326.81 E 764752.14

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ Mudline Elevation: (-35.5) 29.8 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv.

TUBE LENGTH: 15.0 Feet

Samplers R.F, DH,

Tube Type: Alum. Liner Type: CA13

Core Penetration: 17.5 (ft below mudline) Recovered Core length: 12.8 Percent Compaction: 127% / 88%

Compacted Core sections: in dredge prism: 0 to 10.8 1-ft below: 10.8 to 12.5

Expanded Core sections: in dredge prism: -29.8 to ~~12~~ -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft olive brown sandy silt	
1 (1.3=1)			
2 (2.6=2)			
3 (3.4=3, 3)			
4 (4.5=4)		Clayey silt with sand to the bottom	
5 (5.6=5)			
6			
7 (7.9=7)			
8			
9			
10			

-30 -31 -32 -33 -34 -35 -36 -37 -38 -39 -40

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 128 Date 5/9/05 Deployment Time: 1218

Core Attempt 1 Station Description: Core #1 accepted

DEPTH TO MUDLINE: ~~42.0~~ 44.7 Feet mudline LOCATION: N 688928.26 E 7643323.99

~~Predicted~~ Tide : 7.0 CRD ~~Water Surface~~ Elevation: -34.7 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers kk, RF, DH

TUBE LENGTH: 15 Feet Tube Type: AF Liner Type: CAB

Core Penetration: 11 (ft below mudline) Recovered Core length: 8.1 Percent Compaction: 26

Compacted Core sections: in dredge prism: 0 to 5.4 1-ft below: 5.4 to 6.8

Expanded Core sections: in dredge prism: -34.7 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet ~~sand~~ gray brown sand with silt	
		damp gray brown sand - dense	
1			
2			
3		sandy silt olive brown moist firm	
4			
5		silty sand	
6			
7			
8			
9			
10			

34.7
35
36
37
38
39
40
41
42
43
44
44.7

Z

#1

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 126 Date 5/09/05 Deployment Time: 1139

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: 40.2 Feet, LOCATION: N 689165.77 E 7643015.89

~~Predicted~~ Tide : 7.0 CRD ~~Water Surface~~ Mudline Elevation: -33.2 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PJ equip.

TUBE LENGTH: 15 Feet

Samplers DH, RF, KK

Tube Type: Al Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 5.9 Percent Compaction: 46

Compacted Core sections: in dredge prism: 0 to 4.7 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: -33.2 to -42 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Silty sand	Samples for bioaccum only	33.2
1				34.2
2		Sand - gray brown moist firm medium sand		35.2
3				36.2
4			dredge prism	37.2
5				38.2
6				39.2
7				40.2
8				41.2
9				42.2
10				43.2

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 124 Date 5/7/05 Deployment Time: 1258

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: 37.3 Feet LOCATION: N 689525.84 E 764261.74

~~Predicted~~ Tide: +5.7 CRD ~~Water Surface~~ mudline Elevation: -31.6 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., D.H., K.K.

TUBE LENGTH: 15.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 12.5 (ft below mudline) Recovered Core length: 9.1 Percent Compaction: 27% / 73%

Compacted Core sections: in dredge prism: 0 to 7.6 1-ft below: 7.6 to 9.0

Expanded Core sections: in dredge prism: -31.6 to 42 1 ft below: 42 to 44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown silt with sand		31.6
1				32.6
2				33.6
3		4" thick sand layer		34.6
4				35.6
5		silty sand layer		36.6
6		mostly silt, some fine sand		37.6
7				38.6
8		Clayey silt with sand		39.6
9				40.6
10		clayey silt		41.6

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – C-126 Date 5/09/05 Deployment Time: 1200

Core Attempt 2 Station Description: Core accepted

DEPTH TO MUDLINE: 40.7 Feet LOCATION: N 689197.31 E 764 3007.67

~~Predicted~~ Tide : 7 CRD ~~Water Surface~~ Mudline Elevation: -33.7 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PJ equip Samplers RF, KK, DH

TUBE LENGTH: 13 Feet Tube Type: Al Liner Type: CAD

Core Penetration: 11.0 (ft below mudline) Recovered Core length: 8.7 Percent Compaction: 21

Compacted Core sections: in dredge prism: 0 to 6.6 1-ft below: 6.6 to 8.1

Expanded Core sections: in dredge prism: -33.7 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft olive brown silty sand	
1			
2		turns to gray brown sand firm	
3			
4		turns to firm moist clayey silt	
5			
6			
7			
8		sandy ~~clay~~ silt	
9		clayey silt with sand	
10			

33.7
-34
-35
-36
-37
-38
-39
-40
-41
-42
-43
-44

Z
OM

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-130 Date 5/13/05 Deployment Time: 1000

Core Attempt 2 Station Description: #1 accepted @ C-130

DEPTH TO MUDLINE: 40.4 Feet LOCATION: N 688502.51 E 7643710.71

~~Predicted~~ Tide : 8.2 ~~Water Surface~~ Mudline Elevation: -32.2 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PJ equiv Samplers KK, JR, DH

TUBE LENGTH: 17 Feet Tube Type: AL Liner Type: CAD

Core Penetration: 12.0 (ft below mudline) Recovered Core length: 9.2 Percent Recovery: 76.7

Compacted Core sections: in dredge prism: 0 to 7.5 1-ft below: 7.5 to 9.0

Expanded Core sections: in dredge prism: -32.2 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		moist firm gray brown medium sand	with wood debris (bark pieces + chips)
1			wood pieces/chips scattered throughout core.
2		sandy silt layer	
3			
4			
5			
6			
7			
8		sandy silt (6.4-7.3) (8.3-9.5)	
9			
10		gray sand (7.3-8) (9.5-10.4)	

32.2
33.2
34.2
35
36
37
38
39
40
41
42

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 130 Date 5/13/05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10		gray sand	42.2
		clayey sand silt (~~10.4~~ 8-8.4) (10.4 -10.9) olive brown	
11		olive brown clayey silt (8.4 – 8.8) (10.9 – 11.4)	43.2 Z
		sandy clayey silt (8.8 - 9)(11.4 – 11.7)	
12	EOC	material from 9 – 9.2 not present)	44.2
13			
14			
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 126 Date 5-10-05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10		Sand with silt	44
11 EOC			44.7
12			
13			
14			
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 124 Date 5-9-05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10		clayey silt with sand + wood debris	
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

42.6
42.6
43.6
44.6

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – Date

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10			-43.2
11	EOC		-44.2
12			
13			
14			
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 128 Date 5-10-05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10		silty sand	44.7
			45
11	EOC		45.7
12			
13			
14			
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 120 Date 5-9-05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
10		moist firm olive brown clayey silt with sand	40
11 113=10			41
12 12.4=11			42
13 13.5=12			43
14			44
	EOC		44.3
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 118 Date 5-7-05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
10		wood debris		41
		4" thick sand layer		42
11				
		clayey silt with sand		43
12				
				44
13		wood debris at bottom		
14	Ecl			45
15				
16				
17				
18				
19				
20				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR – VC – 20 Date 5/5/05

STATION DESCRIPTION:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
9.1 — 10		9.5' SAND LAYER	42
11		9.6' SANDY silt	43 Z
11.1 — 12			44
13			
14			
15			
16			
17			
18			
19			
20			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 03 Date 9/27/05 Deployment Time: 1447

Core Attempt 1-5 (cores 1-4) Station Description:

DEPTH TO MUDLINE: 43.7 Feet LOCATION: N 721215.20 E 7616325.54

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: CRD ~~MLLW~~ (4 cores collected)

TYPE OF CORE VIBRACORE

MODEL P-3 egm. Samplers P.F. D.H. K.K.

TUBE LENGTH: 3.7 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 3.7 (ft below mudline) Recovered Core length: 3.0 Percent ~~Compaction~~ Recovery: 81%

Compacted Core sections: in dredge prism: 0 to 1.5 1-ft below: 1.5 to bottom

Expanded Core sections: in dredge prism: 0 to 2 1 ft below: 2 to 3.7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		soft, wet, olive brown. fine sandy silt more sand in top foot. some roots found	0=-40
1		density increases with depth	41
2			42
3		some odor near bottom - slight sulphur smell.	43
3.7 EOC			43.7
4			44
5			
6			
7			
8			
9			
10			

2

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 04 Date 4/27/05 Deployment Time: 1638

Core Attempt # 2 Station Description: Core #1

DEPTH TO MUDLINE: 45.9 Feet LOCATION: N 720648.69 E 7615765.46

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ Mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 1-3 equiv. Samplers RF, D.H, KK

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA3

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 5.2 Percent ~~Compaction~~ Recov: 74 %

Compacted Core sections: in dredge prism: 0 to 3 1-ft below: 3 to 4.5

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		soft, moist olive brown sandy silt		38
1		Slight sulphur smell		39
2				40
3		trans to silty sand slight petroleum smell		41
4		fines with depth		42
5				43
6		firm ~~silty and~~ clayey silt		44
7	EOC			45
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 04 Date 4/27/05 Deployment Time: 1654

Core Attempt # 3 Station Description: Core #2

DEPTH TO MUDLINE: 49.90 Feet LOCATION: N 726654.21 E 761575.41

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equivalent Samplers R.F. D.H. K.K.

TUBE LENGTH: 10.0 Feet Tube Type: CAB Liner Type: CAB

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 5.6 Percent ~~Compaction~~ Recov: 62%

Compacted Core sections: in dredge prism: 0 to 2.5 1-ft below: 2.5 to 3.7

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Same as Core #1	
1			
2			
3			
4			
5			
6			
7			
8			
9	EOC		
10			

38
39
40
41
42
43
44
45
46
47

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 05 Date 4/28/05 Deployment Time: 1358

Core Attempt # 1 Station Description: Cores # 1 – 4

DEPTH TO MUDLINE: 45.7 Feet LOCATION: N 711716.26 E 761275.63

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equivalent Samplers EK, OH, RF

TUBE LENGTH: 5 Feet Tube Type: ~~CAB~~ Alum. Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.0 Percent ~~Compaction~~ Recovery: ~~60~~ 60%

Compacted Core sections: in dredge prism: 0 to 1.2 1-ft below: 1.2 to 2.4

Expanded Core sections: in dredge prism: 0 to 2 1 ft below: 2 to 4

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		~~Soft~~ wet ~~olive~~ brown sandy silt		40
1				41
2		slight sulphur smell		42
		fines with depth		
3				43
		changing to		
4		firm moist grey brown silty sand		44
		Sand - fine sand plug in core catcher		
5 EOC				45
6				
7				
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 06 Date 4/28/05 Deployment Time: 1533

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 45.2 Feet LOCATION: N 716570.44 E 761661.66

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 Gravity Samplers KK, DH, RP

TUBE LENGTH: 10.0 Feet Tube Type: Clear Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 5.8 Percent ~~Compaction~~ Recovery: 58%

Compacted Core sections: in dredge prism: 0 to 2.3 1-ft below: 2.3 to 3.5

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			Same as Core #1		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 06 Date 4/28/05 Deployment Time: 1512

Core Attempt # 1 Station Description:

DEPTH TO MUDLINE: 45.3 Feet LOCATION: N 716522.58 E 7616629.15

~~Predicted~~ Tide : CRD ~~Water Surface~~ mdw Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 8-3 Mount Samplers KK, DA, RF

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 5.5 Percent ~~Compaction~~ Recovery: 55%

Compacted Core sections: in dredge prism: 0 to 2.2 1-ft below: 2.2 to 3.3

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Very soft, wet, olive brown sandy silt with clay	-38
1		firms with depth	-39
		sand increased with depth and clay increased with depth	-40
2			
3			-41
4			-42
5			-43
6		Firm olive brown clayey sandy silt	-44
7			-45
8			-46
9			-47
10		grey sand below firm	-48

EOC

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 06 Date 4/28/05 Deployment Time: 1602

Core Attempt #3 Station Description:

DEPTH TO MUDLINE: 44.4 Feet LOCATION: N 716522.03 E 761646.3

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 vibrat Samplers RF, DH, KK

TUBE LENGTH: 10.0 Feet Tube Type: Alu Liner Type: CAB

Core Penetration: 10.1 (ft below mudline) Recovered Core length: 5.1 Percent Compaction:

Compacted Core sections: in dredge prism: to 1-ft below: to

Expanded Core sections: in dredge prism: to 1 ft below: to

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Not used.	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – ~~08~~ 09 Date 4/30/05 Deployment Time: 0916

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 41.80 Feet LOCATION: N 716059.09 E 7618012.51

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.E. D.H. K.K.

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 5.5 Percent ~~Compaction~~ Recovery: 69%

Compacted Core sections: in dredge prism: 0 to 3.4 ~~1~~ 2-ft below: 3.4 to 4.8

Expanded Core sections: in dredge prism: 0 to 5 ~~1~~ 2-ft below: 5 to 7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		SOFT, WET, olive BROWN, SANDY silt		37
1		DENSITY INCR w/ DEPTH		38
2				39
3				40
4				41
3.4' – 5				42
6		SANDY silt BECOMES SILTY SAND		43 Z
4.8' – 7				44
8				
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 08 Date 4/28/05 Deployment Time: 1616

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 41.10 Feet LOCATION: N 76041.64 E 761739.55

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL V-3 ebmt Samplers D.H.K.K. RF

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 5.8 Percent ~~Compaction~~ Recovery: 58 %

Compacted Core sections: in dredge prism: 0 to 3.5 1-ft below: 3.4 to 4.6

Expanded Core sections: in dredge prism: 0 to 6 1 ft below: 6 to 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		very soft ~~wet~~ olive brown silt with sand	
1			
2		firm clayey silt with sand	
3			
4			
5			
6			
7			
8		wood chip layer	
9		clayey silt with some wood chips	
10	EOC		

-36
37
38
39
40
41
42
43
44
45
46

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 09 Date 4/30/05 Deployment Time: 0931

Core Attempt # 1 Station Description:

DEPTH TO MUDLINE: 39.70 Feet LOCATION: N 714 395 84 E 761884 5.74

~~Predicted~~ Tide : cro ~~Water Surface~~ Mudline Elevation: ~~MLLWCRO~~

TYPE OF CORE VIBRACORE

MODEL P-3 equipt

TUBE LENGTH: 10.0 Feet

Samplers R.F. D.H. K.K

Tube Type: Alum. Liner Type: CAB

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 5.3 Percent ~~Compaction~~ Recovery: 66%

Compacted Core sections: in dredge prism: 0 to 3.5 2/1-ft below: 3.5 to 4.7

Expanded Core sections: in dredge prism: 0 to 6 2/1 ft below: 6 to 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, OLIVE BROWN SANDY SILT	
1		DENSITY INCR W/ DEPTH	
2			
3			
4			
5			
3.5' – 6		SILTY SAND	
7			
4.7' – 8			
9			
10			

-36
37
38
39
40
41
42
43
44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 10 Date 4/29/05 Deployment Time: 1013

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 42.4 Feet LOCATION: N 715485.99 E 761696.83

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F. D.H. H.K

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CA13

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 5.6 silt Percent ~~Compaction~~ Rec: ~~51%~~ silt 62%

Compacted Core sections: in dredge prism: 0 to 3.7 1-ft below: 3.7 to ~~4.7~~ silt 5.0

Expanded Core sections: in dredge prism: 0 to 6 1 ft below: 6 to 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Very soft wet olive brown sandy silt		36
1				37
		firms with depth		
2		sandy silt with clay		38
3				39
4				40
5		firm clayey silt		41
6				42
		clayey silt		
7				43 Z
8				44
9	EOL			45
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 10 Date 4/29/05 Deployment Time: 1044

Core Attempt #4 Station Description:

DEPTH TO MUDLINE: 38.4 Feet LOCATION: N 715462.73 E 761696.97

~~Predicted~~ Tide : 0 CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F D.H. K.K.

TUBE LENGTH: 10.0 Feet Tube Type: Alu Liner Type: CA13

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 4.6 Percent ~~Compaction~~ Recovery: 51%

Compacted Core sections: in dredge prism: 0 to 3.1 1-ft below: 3.1 to 4.1

Expanded Core sections: in dredge prism: 0 to 6 1 ft below: 6 to 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		same as other core	36
1			37
2			38
3			39
4			40
5			41
6			42
7			43 Z
8			44
9			45
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 11 Date 4/30/05 Deployment Time: 1008

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 37.50 Feet LOCATION: N 713723.23 E 7619125.89

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL V-3 equivalent
TUBE LENGTH: 10.0 Feet

Samplers R.F, H.H. RK
Tube Type: Alum. Liner Type: CA13

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 6.3 Percent ~~Compaction~~ RECOVERY: 63

Compacted Core sections: in dredge prism: 0 to 5.0 2½-ft below: 5.0 to 6.3

Expanded Core sections: in dredge prism: 0 to 8 2½ ft below: 8 to 10

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		SOFT, WET, OLIVE BROWN SANDY SILT		34
1		DENSITY INCR W/ DEPTH		35
		WOOD DEBRIS @ ~2' TO 2.5'		
2				36
3				37
4				38
5				39
6				40
7				41
5.0' 8		SANDY SILT MED DENSE		42
9				43
6.3' 10				44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 12 Date 4/29/05 Deployment Time: 1100

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 43.7 Feet LOCATION: N 714977.93 E 7617186.17

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment

TUBE LENGTH: 10.0 Feet

Samplers RF D.H, K.K

Tube Type: Alum Liner Type: CAB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.0 Percent ~~Compaction~~ Recovery: 57%

Compacted Core sections: in dredge prism: 0 to 2.3 1-ft below: 2.3 to 3.4

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		same as core #2	- 38
1			39
2			1.1 40
3			41
4			2.3 42
5			43 Z
6			3.4 44
7	EOC		45
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – ~~20~~ 12 Date 4/29/05 Deployment Time: 1121

Core Attempt #7 Station Description:

DEPTH TO MUDLINE: 43.60 Feet LOCATION: N 714985.44 E 761718.81

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL 1-3 equipment
TUBE LENGTH: 10.0 Feet

Samplers D.F. D.H. K.K.
Tube Type: Alum Liner Type: LAB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.5 Percent ~~Compaction~~ Recovery: 64%

Compacted Core sections: in dredge prism: 0 to 2.6 1-ft below: 2.6 to 3.9

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft wet olive brown clayey sandy silt		-38
1				-39
		firm clayey silt with sand	1.3	-40
2				
3		slight odor of petroleum		-41
4		firm silty sand layer	2.6	-42
		clayey silt		-43
5				
			3.9	-44
6				
7	EOC			-45
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 13 Date 5/2/05 Deployment Time: 1806

Core Attempt #3 Station Description:

DEPTH TO MUDLINE: 47.1 Feet LOCATION: N 712684.29 E 761960085

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL P-3 equipment
TUBE LENGTH: 10.0 Feet

Samplers R.F. D.H. & B.F
Tube Type: Alum. Liner Type: CAB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.5 Percent ~~Compaction~~ RECOVERY 64%

Compacted Core sections: in dredge prism: 0 to 3.2 2~~1~~-ft below: 3.2 to 4.5

Expanded Core sections: in dredge prism: -37 / 0 to -42 / 5 2~~1~~ ft below: -42 / 5 to -44 / 7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Soft, wet, olive brown sandsilt	No core liner used
1		Density incr w/ depth 2@1'	
2			
3			
4			
5			
6			
7			
8			
9			
10			

3.2

4.5

-37
-38
39
40
41
42
43
44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 14 Date 4/29/05 Deployment Time: 1240

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: ~~30.0 ft~~ 43.9 Feet LOCATION: N 714658.62 E 7617350.42

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3

TUBE LENGTH: 10.0 Feet

Samplers R.F, D.H, L.L

Tube Type: Alum. Liner Type: CAB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.5 Percent ~~Compaction~~ Recover: 64 %

Compacted Core sections: in dredge prism: 0 to 2.6 1-ft below: 2.6 to 3.9

Expanded Core sections: in dredge prism: 0 to 4 1 ft below: 4 to 6

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Very soft wet olive brown silt with sand		38
1		firms with depth		39
		sand lense		40
2		slight sulphur odor		
3				41
4				42
		sand lense		
5		wood chips		43
6		increasing clay		44
		clayey silt		
7	EOC			45
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 14 Date 7/29/05 Deployment Time: 1254

Core Attempt # 2 Station Description:

DEPTH TO MUDLINE: 42.00 Feet LOCATION: N 714654.74 E 761737.6

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 7-segment

TUBE LENGTH: 160 Feet

Samplers R.E. D.H., K.K.

Tube Type: Alum. Liner Type: CA

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.5 Percent Compaction:

Compacted Core sections: in dredge prism: to 1-ft below: to

Expanded Core sections: in dredge prism: to 1 ft below: to

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			Same as attempt #1		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 15 Date 7/30/05 Deployment Time: 1115

Core Attempt II Station Description:

DEPTH TO MUDLINE: 44.20 Feet LOCATION: N 709368.16 E 7621426.82

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip

TUBE LENGTH: 10.0 Feet

Samplers RP, KK, DH.

Tube Type: Alum Liner Type: SAB

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 5.0 Percent Compaction:

Compacted Core sections: in dredge prism: 0 to 3.3 2 ft below: 3.3 to 4.4

Expanded Core sections: in dredge prism: 0 to 6 2 ft below: 6 to 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft wet, olive brown sandy silt		36
1		Density incr w/ depth at ~1.8'		37
2				38
3				39
4				40
5				41
3.3' 6		Distinct silt to sand layer		42
7		sand		43 Z
4.4' 8				44
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 16 Date 4-29-05 Deployment Time: 1307

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 40.48 Feet LOCATION: N 714078.71 E 7617625.11

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL P3 equiv
TUBE LENGTH: 10.0 Feet

Samplers RF KK DH
Tube Type: A1 Liner Type: CAB

Core Penetration: 10 (ft below mudline) Recovered Core length: 5.7 Percent ~~Compaction~~ Recov: 57%

Compacted Core sections: in dredge prism: 0 to 4.6 1-ft below: 4.6 to 5.7

Expanded Core sections: in dredge prism: 9 to 8 1 ft below: 8 to 10

NOTES: 2 cores collected

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft wet olive brown sandy silt with some gravel		34
1				35
2			1.1	36
3				37
4			2.3	38
5				39
6		Silty sand	3.4	40
7				41
8		Sand - grey	4.6	42
9				43
10			5.7	44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 16 Date 4/20/05 Deployment Time: 1323

Core Attempt #7 Station Description:

DEPTH TO MUDLINE: 40.1 Feet LOCATION: N 714 083.96 E 761767.79

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL Dr. Equipt Samplers PE, DH, KK

TUBE LENGTH: 15' Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 4.9 Percent Compaction:

Compacted Core sections: in dredge prism: to 1-ft below: to

Expanded Core sections: in dredge prism: to 1 ft below: to

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Not Used	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-17 Date 5/16/05 Deployment Time: 1012

Core Attempt 8 Station Description: Core #4 accepted @ C-17

DEPTH TO MUDLINE: 45.9 Feet LOCATION: N 710241.43 E 7620929.1

~~Predicted~~ Tide : 6.5 CRD Water Surface Elevation: -39.4 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PJ Cyclic Samplers KK DH

TUBE LENGTH: 5.0 Feet Tube Type: AL Liner Type: ~~CAB~~ soft

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.0 Percent Recovery: 60 %

Compacted Core sections: in dredge prism: 0 to 1.6 1-ft below: 1.6 to 2.8

Expanded Core sections: in dredge prism: -39.4 to -42 1 ft below: -42 to -44

NOTES: 4 cores composited for surface only. Z from this core.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft wet olive brown sandy silt		-39.4
1				-40.4
2				-41.4
3		2" sand layer - gray (1.5-1.7) sandy silt (1.7-1.9) silty sand (1.9-2.1)		-42.4
4		Clayey sandy silt (2.1-2.6) sand (2.6-3)		-43.4
5	QOC			-44.4
6			2nd core sandy silt Pen 5, Rec 2.9 -39.4 → -42.9	
7			clayey sandy silt -42.9 → -44.4	
8			3rd core Pen 5 Rec 2.5 sandy silt -39.4 → -42	
9			clayey sandy silt -42 - -43 sand -43 → -44	
10				

Z

Extra core log added due to different substrate.

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 17 Date 5-16/05 Deployment Time: > 1012

Core Attempt _____ Station Description: _____

DEPTH TO MUDLINE: _____ Feet LOCATION: N _____ E _____

~~Predicted~~ Tide : _____ CRD Water Surface Elevation: -39.4 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PS Equiv Samplers _____

TUBE LENGTH: 5 Feet Tube Type: A1 Liner Type: CAB

Core Penetration: 5 (ft below mudline) Recovered Core length: 2.5 Percent Compaction: 50

Compacted Core sections: in dredge prism: 0 to 1.3 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: -39.4 to -42 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wood debris in sandy silt (2-1.1)	Wood debris mostly on surface.	-39.4
1			Total Sulfides + TPH collected from this core.	-40.4
2		gravel and cobble		-41.4
3				-42.4
4				-43.4
5	COC			-44.4
6				
7				
8				
9				
10				

Surface

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 18 Date 4/29/05 Deployment Time: 1350

Core Attempt # 2 Station Description:

DEPTH TO MUDLINE: 38.2 Feet LOCATION: N 713762.85 E 761772.92

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL Rigmaster

TUBE LENGTH: 10.0 Feet

Samplers RF DH, KK

Tube Type: plan Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 6.1 Percent ~~Compaction~~ Recovery: 61%

Compacted Core sections: in dredge prism: 0 to 4.9 1-ft below: 4.9 to 6.1

Expanded Core sections: in dredge prism: 0 to 8 1 ft below: 8 to 10

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			SOFT, WET, OLIVE BROWN SANDY SILT		
1			DENSITY INCRE w/ DEPTH		
2					
3					
4					
5					
6					
7					
8					
9					
10			SILTY SAND		

4.9' 6.1'

34 35 36 37 38 39 40 41 42 43 44 7

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 19 Date 4/29/05 Deployment Time: 1621

Core Attempt #3 Station Description: Core #2 at C-19

DEPTH TO MUDLINE: 46.4 Feet LOCATION: N 709733.63 E 762123.84

~~Predicted~~ Tide : CRD ~~Water Surface~~ mulline Elevation: ~~MLLW~~ CRD 4 CORES collected

TYPE OF CORE VIBRACORE

MODEL P-3 equip

TUBE LENGTH: 5.0 Feet

Samplers R.F. D.H.

Tube Type: Alum Liner Type: LAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.0 Percent ~~Compaction~~ Recovery: 60%

Compacted Core sections: in dredge prism: 0 to 1.2 1-ft below: 1.2 to 2.4

Expanded Core sections: in dredge prism: 0 to 2 1 ft below: 2 to 5

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			SOFT, WET, olive BROWN FINE SANDY SILT		
1			DENSITY INCR W/ DEPTH		
1.2 2					
3					
EOC 2.4 4					
5			PROCESSED 5/2/05 815		
6					
7					
8					
9					
10					

-40

-41

-42

-43 Z

-44

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 21 Date 4/30/05 Deployment Time: 1132

Core Attempt # 2 Station Description:

DEPTH TO MUDLINE: 43.90 Feet LOCATION: N 709378.14 E 762426.53

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL P-3 equivalent Samplers RF, D.H., KK
TUBE LENGTH: ~~10~~ 5.2 Feet Tube Type: Alum. Liner Type: CA-13

Core Penetration: 4.0 (ft below mudline) Recovered Core length: 2.7 Percent ~~Compaction:~~ Recovery 68

Compacted Core sections: in dredge prism: 0 to [illegible] 21-ft below: [illegible] to [illegible]

Expanded Core sections: in dredge prism: 0 to 1 21-ft below: 1 to 3

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Soft, WET, olive BROWN, SANDY Silt w/ WOOD DEBRIS	-41
0.7' 1		DENSE INCR w/ DEPT @ 1'	-42
2			-43 Z
2.0' 3			-44
4		NO SAMPLE COLLECTED	
5		DUE TO Volume REQUIREMENT	
6		~~[illegible]~~	
7		* CORING NOTES MULTIPLE ATTEMPTS w/ REFUSAL DUE TO POOR RECOVERY. WOOD DEBRIS OBSERVED IN REFUSED CORES	
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 22 Date 4/21/05 Deployment Time: 1407

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 38.4 Feet LOCATION: N 712757.47 E 7618206.55

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment

TUBE LENGTH: 10.0 Feet

Samplers RF, DH, KK

Tube Type: Liner Type:

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 5.8 Percent ~~Compaction~~ Recovery: 58%

Compacted Core sections: in dredge prism: 0 to 4.6 1-ft below: 4.6 to 5.8

Expanded Core sections: in dredge prism: 0 to 8 2ft below: 8 to 10

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, OLIVE BROWN SANDY SILT	SOFT
1		DENSITY INCR W/ DEPTH	
2			BECOMES DENSE
3			
4			
5			
6			
7			
8			
9			
10			

4.6'

5.8'

34 35 36 37 38 39 40 41 42 43 44

7

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-23 Date 5/16/05 Deployment Time: 1131

Core Attempt 5 Station Description: #3 Core accepted @ C-23

DEPTH TO MUDLINE: 45.8 Feet LOCATION: N 708997.60 E 7621686.35

~~Predicted~~ Tide : 6.5 CRD ~~Water Surface~~ Mudline Elevation: -39.3 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PJ equiv. Samplers KK, DH

TUBE LENGTH: 5 Feet Tube Type: AL Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.6 Percent Recovery: 72

Compacted Core sections: in dredge prism: 0 to 1.9 1-ft below: 1.9 to ~~3.4~~ 3.2

Expanded Core sections: in dredge prism: -39.3 to -42 1 ft below: -42 to ~~-44~~ -43.7 JH

NOTES: 3 cores composited for surface only

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft olive brown sandy silt (0-0.9) contains some wood debris	
1		~~gf~~ firm moist gray medium to coarse sand with silt in places ~~to bottom~~	
2			
3			
4		sandy silt with wood debris (back)	
5	EOC	Material - Sand - lost in core catcher	
6			
7			
8			
9			
10			

39.3
40.3
41.3
42.3
43.3
44.3

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 24 Date 4-29-05 Deployment Time: 1440

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 37.5 Feet LOCATION: N 712377.37 E 761839.47

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL P3 equiV
TUBE LENGTH: 10.0 Feet

Samplers RF DH, KK
Tube Type: A1 Liner Type: CAB

Core Penetration: 10 (ft below mudline) Recovered Core length: 5.3 Percent ~~Compaction~~ Recovery: 53%

Compacted Core sections: in dredge prism: 0 to 3.7 1-ft below: 3.7 to 4.8

Expanded Core sections: in dredge prism: 0 to 7 1 ft below: 7 to 9

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft wet olive brown sandy silt		35
1		firms with depth		36
2				37
3		increasing clay	1.4	38
4				39
5				40
6				41
7		firm olive brown moist Clayey silt	3.7	42
8				43
9			4.8	44
10				45

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TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 24 Date 4/29/05 Deployment Time: 1500

Core Attempt # 3 Station Description:

DEPTH TO MUDLINE: 39.2 Feet LOCATION: N 712378.23 E 7618417.66

~~Predicted~~ Tide : CRD ~~Water Surface~~ mulline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers RF, D.H., KK

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 4.8 Percent Compaction:

Compacted Core sections: in dredge prism: to 1-ft below: to

Expanded Core sections: in dredge prism: to 1 ft below: to

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1		Not used	
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 25 Date 5/2/05 Deployment Time: 1150

Core Attempt #6 Station Description: cobble in core catch

DEPTH TO MUDLINE: 38.4 Feet LOCATION: N 708491.74 E 7622107.97

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 eject Samplers R.F, D.A, B.P

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: ca B

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 0.8 Percent Compaction:

Compacted Core sections: in dredge prism: to 1-ft below: to

Expanded Core sections: in dredge prism: to 1 ft below: to

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1		coarse gravel & wood chips retrieved	
2			
3			
4		Core Rejected	
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 25 Date 5/2/05 Deployment Time: 1114

Core Attempt # 3 Station Description: Relocated due to refusal at design location

DEPTH TO MUDLINE: 44.4 Feet LOCATION: N 708491.61 E 7622094.07

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 segmt Samplers RF, DH, B.F

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CA13

Core Penetration: 5.4 (ft below mudline) Recovered Core length: 2.6 Percent Compaction: 46

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 26 Date 5/02/05 Deployment Time: 1600

Core Attempt # 3 Station Description:

DEPTH TO MUDLINE: 40.4 Feet LOCATION: N 711950.27 E 761867349

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F, D.H, B.F.

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 6.3 Percent ~~Compaction~~ Recovery: 63.0%

Compacted Core sections: in dredge prism: 0 to 3.2 ~~2~~-ft below: 3.2 to 4.4

Expanded Core sections: in dredge prism: -37 to -42 ~~2~~ ft below: -42 to -44

0 5 5 7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		SOFT, WET, olive BROWN SANDY SILT		-37
		3-5" SILTY SAND LENSE		
1		5" → END ~~SANDY SAND~~ SANDY Silt		-38
2		DENSITY INCR w/ DEPTH		-39
3				-40
4				-41
3.2' 5		SANDY Silt		-42
6				-43 } Z
4.4' 7				-44
8				
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 26 Date 5/02/05 Deployment Time: 1537

Core Attempt # 1 Station Description:

DEPTH TO MUDLINE: 36.7 Feet LOCATION: N 711946.78 E 7618649.40

~~Predicted~~ Tide : ~~[illegible]~~ CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F D.H. B F

TUBE LENGTH: 16.0 Feet Tube Type: Alum. Liner Type: CA/3

Core Penetration: 9.0 (ft below mudline) Recovered Core length: 5.2 Percent ~~Compaction~~ RECOVERY: 63 %

Compacted Core sections: in dredge prism: 0 to 3.2 ~~2ft~~-ft below: 3.2 to 4.4

Expanded Core sections: in dredge prism: -37 to -42 ~~2ft~~ ft below: -42 to -44

0 5 5 7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

3.2

4.4

-37
-38
-39
-40
-41
-42
-43
-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 77 Date 5/2/05 Deployment Time: 1212

Core Attempt # 2 Station Description: Core #1

DEPTH TO MUDLINE: 46.1 Feet LOCATION: N 708 069.55 E 762 2534.03

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mdlw Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers KF. D.H.

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CAV

Core Penetration: 8.00 (ft below mudline) Recovered Core length: 1.7 Percent Compaction: 2

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1			
2			
3		Rejected	
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 27 Date 5/2/05 Deployment Time: 1314

Core Attempt # 5 Station Description: Refusal / poor Recovery

DEPTH TO MUDLINE: 49.10 Feet LOCATION: N 708117.86 E 7622466.28

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip Samplers RF, D.H., BF

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 1.0 Percent Compaction: _____

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 28 Date 5/2/05 Deployment Time: 618

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 41.8 Feet LOCATION: N 711517.06 E 7618880.39

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipt Samplers R.F. D.H, B.F.

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CA13

Core Penetration: 8.5 (ft below mudline) Recovered Core length: 5.6 Percent ~~Compaction:~~ RECOVERY 66 %

Compacted Core sections: in dredge prism: 0 to 3.3 ~~2.1~~-ft below: 3.3 to 4.6

Expanded Core sections: in dredge prism: -37 to -42 2.1 ft below: -42 to -44
0 5 5 7

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests	
0			SOFT, WET, OLIVE BROWN SLIGHTY SANDY SILT			-37
1						-38
			DENSITY INCR W/DEPTH			
2						-39
3						-40
4						-41
3.3' 5						-42
			SLIGHT SANDY SILT			
6						-43 Z
4.6' 7						-44
8						
9						
10						

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 29 Date 5/5/05 Deployment Time: 1453

Core Attempt #5 Station Description: Core # 1

DEPTH TO MUDLINE: 38.80 (+4.5) Feet LOCATION: N 70/911.75 (-34.3) E 763022 9.41

~~Predicted~~ Tide : 34 CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F. D.H. B.F

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA13

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 6.8 Percent Compaction: 32% / 68%

Compacted Core sections: in dredge prism: 0 to 5.4 ~~2~~ ft below: 5.4 to 6.8

Expanded Core sections: in dredge prism: -34 to -42 ~~2~~ ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		SOFT, WET, olive BROWN, Silt		-34
1		DENSITY INCR w/ DEPTH ~@2'		-35
2				-36
3				-37
4				-38
5				-39
6				-40
7				-41
5.4' 8		DENSE Silt		-42
9				-43 Z
6.8' 10				-44

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 30 Date 5/7/05 Deployment Time: 817

Core Attempt # 1 Station Description: Core # 1

DEPTH TO MUDLINE: 44.30 Feet Mudline LOCATION: N 711027.24 (-37.7) E 761914855

~~Predicted~~ Tide : 6.6 CRD ~~Water Surface~~ Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F. O.H. D.H

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA3

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 6.8 Percent Compaction: 15% / 85%

Compacted Core sections: in dredge prism: 0 to 3.7 1-ft below: 3.7 to 5.4

Expanded Core sections: in dredge prism: -37.7 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown silt with sand		-37.7
1				-38.7
2		increasing firmness with depth		-39.7
3				-40.7
4				-41.7
5		increasing clay moist clayey silt		-42.7
6				-43.7
7		silty and clay – firm moist		-44.7
8 EOC				-45.7
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-31 Date 5/10/05 Deployment Time: 1455

Core Attempt 4 Station Description: core #1 @ C-31

DEPTH TO MUDLINE: 44.3 Feet LOCATION: N 701734.74 E 763072.47

~~Predicted~~ Tide : (7.0) CRD ~~Water Surface~~ Mudline Elevation: -37.3 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PI equiv. Samplers JK, kk, DH

TUBE LENGTH: 10 Feet Tube Type: PL Liner Type: ~~CAB~~ no liner

Core Penetration: 7.0 (ft below mudline) Recovered Core length: ~~4.9~~ 5.4 Percent ~~Compaction~~ Recovery: ~~70.0~~ 84%

Compacted Core sections: in dredge prism: 0 to ~~3.5~~ 4.0 1-ft below: ~~3.3~~ 4.0 to ~~4.7~~ 5.6

Expanded Core sections: in dredge prism: -37.3 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt		~~33.7~~ 37.3
1				~~34.7~~ 38.3
2				~~35.7~~ 39.3
3				~~36.7~~ 40.3
		clayey sandy silt		
4				~~37.7~~ 41.3
5		clayey silt with sand		~~38.7~~ 42.3
6				~~39.7~~ 43.3
7	90 C			~~40.7~~ 44.3
8				
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-31 Date 5/10/05 Deployment Time: 1512

Core Attempt 5 Station Description: Core #2 accepted

DEPTH TO MUDLINE: 43.4 Feet LOCATION: N 701777.31 E 7630735.41

~~Predicted~~ Tide : 7.0 CRD ~~Water Surface~~ mudline Elevation: -36.4 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers hk, Jk, DH

TUBE LENGTH: 10 Feet Tube Type: AL Liner Type: none

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 3.9 Percent ~~Compaction~~ Recov: 55.7

Compacted Core sections: in dredge prism: 0 to 3.1 1-ft below: ~~to~~

Expanded Core sections: in dredge prism: -36.4 to -42 1 ft below: ~~to~~

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0					used for additional top material only for bioassay + chem material
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

36.4
37.4
38.4
39.4
40.4
41.4
42.4

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 32 Date 5/2/05 Deployment Time: 1635

Core Attempt # 1 Station Description:

DEPTH TO MUDLINE: 42.60 Feet LOCATION: N 710622.52 E 7619369.94

~~MLE~~ ~~Predicted Tide~~ : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F. D.H. B.F.

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: ~~10~~ 8.0 (ft below mudline) Recovered Core length: 5.8 Percent Compaction: 73%

Compacted Core sections: in dredge prism: 0 to 3.6 2~~1~~-ft below: 3.6 to 5.1

Expanded Core sections: in dredge prism: -37 to -42 2~~1~~ft below: -42 to -44
0 5 5 7

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Soft, wet, olive brown slightly sandy silt		-37
1				-38
2		Density incr w/ depth ~ @ 2.5'		-39
3				-40
4				-41
3.6' 5		Incr sand @ 4.2'		-42
6				-43 Z
5.1' 7				-44
8				
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-33 Date 5/16/05 Deployment Time: 1522

Core Attempt 3 Station Description: #1 core accepted @ C-33

DEPTH TO MUDLINE: 44.0 Feet LOCATION: N 696348.60 E 7636774.18

~~Predicted~~ Tide : 6.5 CRD Water Surface Elevation: -37.5 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PI equip

TUBE LENGTH: 10 Feet

Samplers KK

Tube Type: AL Liner Type: CAT

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 6.0 Percent Recovery: 75

Compacted Core sections: in dredge prism: 0 to ~~2~~ 3.4 1-ft below: 3.4 ~~3~~ to ~~3.5~~ 4.9

Expanded Core sections: in dredge prism: -37.5 to -42 1 ft below: -42 to -45

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		firm moist grey sand with silt lenses at (0.7) and (1.7)	
1		~~Medium to coarse sand to (4.2) (5.6)~~	
2		silt lense	
3			
4			
5			
6		some wood debris	
7		dark brown sandy silt ~~to bottom~~	
8	EOC		
9			
10			

37.5
38.5
39.5
40.5
41.5
42.5
43.5
44.5
45.5

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 34 Date 5/2/05 Deployment Time: 1717

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 41.3 Feet LOCATION: N 710259.17 E 769630.65

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers RP. D.H. B.F

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA13

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 5.1 Percent Compaction: 64%

Compacted Core sections: in dredge prism: 0 to ~~[illegible]~~ 3.8 2-ft below: ~~[illegible]~~ 3.8 to ~~[illegible]~~ 5.1

Expanded Core sections: in dredge prism: 36 to 42 2-ft below: -42 to -44

0 6 6 8

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Soft, WET, olive BROWN SLIGHTLY SANDY silt	
1			
2		~3.4 DENSITY INCR w/ DEPTH	
3			
4			
5			
6		SILTY SAND	
7		4.4 SAND	
8			
9			
10			

3.8'

5.1'

6.4'

10'

36 37 38 39 40 41 42 43 44 45 46 47

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 35 Date 5/3/05 Deployment Time: 12/24

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: ~~42.3~~ (4.5) Feet LOCATION: N 696047.97 (-37.8) E 7637211.48

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ Mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers RH, DH, BF

TUBE LENGTH: 5.0 Feet Tube Type: Alum Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 4.2 Percent Compaction: 84%

Compacted Core sections: in dredge prism: 0 to 2.5 1-ft below: 2.5 to 4.2

Expanded Core sections: in dredge prism: -39 (0) to -42 (3) 1 ft below: -42 (3) to -44 (5)

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			SOFT, WET, OLIVE BROWN SANDY SILT		
1					
2			DENSITY INCR w/ DEPTH ~@1.5' 2.2'–2.5' SILTY SAND		
2.5' 3			2.5' ↓ SANDY SILT		
4			WOODY DEBRIS		
4.2' 5					
6					
7					
8					
9					
10					

-39
-40
-41
-42
-43
-44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 35 Date 5/3/05 Deployment Time: 1439

Core Attempt #2 Station Description: Core #2

DEPTH TO MUDLINE: 43.7 (-7.5) Feet LOCATION: N 695996.93 E 7637220.72

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: (-39.2) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers RF. D. H. BF

TUBE LENGTH: 5.0 Feet Tube Type: Alm Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.5 Percent Compaction: 70%

Compacted Core sections: in dredge prism: 0 to 2.1 1-ft below: 2.1 to 3.5

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 36 Date 4/28/05 Deployment Time: 1806

Core Attempt #1 Station Description:

DEPTH TO MUDLINE: 46.0 Feet LOCATION: N 70982619 E 7619598

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip

TUBE LENGTH: 5.0 Feet

Samplers RF, DH, KK

Tube Type: Plain Liner Type: CA13

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.0 Percent ~~Compaction~~ Recov: 60%

Compacted Core sections: in dredge prism: 0 to 1.8 1-ft below: 1.8 to 3.0

Expanded Core sections: in dredge prism: 0 to 3 1 ft below: 3 to 5

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		soft wet olive brown sandy silt	-39
1			40
2		firm with depth	41
3		Sand lense with slight petroleum odor sand levels increase gradually	42
4		bark pieces found in bottom foot firm moist grey silty sand	43
5	EOC		44
6			
7			
8			
9			
10			

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 36 Date 9/28/05 Deployment Time: 1320

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 46.50 Feet LOCATION: N 709838.78 E 761997.52

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 2-3 cut Samplers JE, DH, KK

TUBE LENGTH: 5.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 4.0 (ft below mudline) Recovered Core length: 2.6 Percent ~~Compaction~~ Recovery: 65%

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Same as Core #1	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

39
40
41
42
43
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 37 Date 5/4/05 Deployment Time:

Core Attempt #2 Station Description: Core #1,2,3,4

DEPTH TO MUDLINE: 44.30 (41.5) Feet LOCATION: N 695802.96 E 7637645.36

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: (-40.3) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., D.H., B.F

TUBE LENGTH: 5.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.4 Percent ~~Compaction~~ RECOVERY: 68%

Compacted Core sections: in dredge prism: 0 to 1.4 2~~1~~-ft below: 1.4 to 2.7

Expanded Core sections: in dredge prism: -40 (0) to -42 (2) 2~~1~~ ft below: -42 (2) to -44 (4)

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			TOP 3" SOFT, WET, OLIVE BROWN SANDY SILT		-40
			3"		
1			SILTY SAND		-41
			11"		
1.4' — 2			11" TO BOTTOM = SAND BLACK/GREY		-42
					-43 } Z
3					
2.7' — 4					-44
5			OTHER CORE ATTEMPTS PEN - RECOV		
			#1 5' - 1.6' = 32%		
6			#3 5' - 3.1' = 62%		
			#4 4.5' - 2' = 44%		
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 38 Date 4/28/05 Deployment Time: 1743 / 1748

Core Attempt 1 2 2 Station Description: See log book & digital data

DEPTH TO MUDLINE: 9.25 Feet LOCATION: N _____ E _____

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers D. H. S.F. K K

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA3

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 0.0 Percent Compaction: _____

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Refusal encountered at 2.0 feet. Sediment may have plugged core barrel during penetration

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-39 Date 5/10/05 Deployment Time: 1541

Core Attempt 1 Station Description: Core #1 accepted @ C-39

DEPTH TO MUDLINE: 46.9 Feet LOCATION: N 695564.61 E 7638090.53

~~Predicted~~ Tide : 7.0 CRD ~~Water Surface~~ mudline Elevation: -39.9 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 13 equiv. Samplers KL, JR, DH

TUBE LENGTH: 5 Feet Tube Type: AL Liner Type: CAD

Core Penetration: 5 (ft below mudline) Recovered Core length: 3 Percent Compaction: 40

Compacted Core sections: in dredge prism: 0 to 1.3 1-ft below: 1.3 to 2.5

Expanded Core sections: in dredge prism: 39.9 to -42 1 ft below: -42 to -44

NOTES: 4 cores collected Recovery 3.0 3.1, 2.6, 2.1 - Composited

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft olive brown sandy silt	
1			
2			
3			
4			
5	EOC		
6			
7			
8			
9			
10			

-39.9
-41
-42
-43
-44
-44.9

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 40 Date 9/28/05 Deployment Time: 1707, 1712, 1727

Core Attempt 1 – 3 Station Description: Refer to Log book / digital data

DEPTH TO MUDLINE: ~44.6 Feet LOCATION: N refer to digital E data

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 vibrat

TUBE LENGTH: 10.0 Feet

Samplers D.H., R.P., K.K.

Tube Type: Alum. Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 0.0-2.2 Percent Compaction: _____

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

refusal encountered all core unacceptable
tube damage prevented core

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-411 Date 5/13/05 Deployment Time: 1355

Core Attempt 4 Station Description: Core #4 @ C-411

DEPTH TO MUDLINE: 46.9 Feet LOCATION: N 695339.67 E 763858.08

~~Predicted~~ Tide : 8.0 CRD Water Surface Elevation: -38.9 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3equip.

TUBE LENGTH: 5 Feet

Samplers KK, JK, DH

Tube Type: AL Liner Type: CAD

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.5 Percent Recovery: 70

Compacted Core sections: in dredge prism: 0 to 2.2 1-ft below: 2.2 to 3.5

Expanded Core sections: in dredge prism: -38.9 to -42 1 ft below: -42 to -43.9

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft gray brown sandy silt	
1		clayey sandy silt	
2			
3			
4		silty sand	
5	EOC		
6			
7			
8			
9			
10			

-38.9
-39.9
-40.9
41
-42
-43
-43.9
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-41 Date 5/10/05 Deployment Time: 1620

Core Attempt 1 Station Description: Core #1 accepted

DEPTH TO MUDLINE: 49.1 Feet LOCATION: N 695390.24 E 7638448.93

~~Predicted~~ Tide : 7 CRD ~~Water Surface~~ Mudline Elevation: -42.1 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers kk, JK, DH

TUBE LENGTH: 5 Feet Tube Type: Al Liner Type: CAB

Core Penetration: 5 (ft below mudline) Recovered Core length: 3.1 Percent Compaction: 38

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES: 4 cores collected

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Not ~~also~~ within dredge cut. Not sampled.	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 42 Date 5/7/05 Deployment Time: 1011

Core Attempt #1 Station Description: Core # 1

DEPTH TO MUDLINE: 42.0 (6.00) Feet LOCATION: N 708659.83 (-36.0) E 7620868.39

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F. D.H. KK

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.4 Percent Compaction: 37% / 63%

Compacted Core sections: in dredge prism: 0 to 3.8 1-ft below: 3.8 to ~~5.0~~ 4.4

Expanded Core sections: in dredge prism: -36 to -42 1 ft below: -42 to ~~-44~~ -43

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Sand with wood debris (some) wet, olive brown	-36
1			-37
2			-38
2.38		Silt with sand + clay to bottom	
3			-39
		1 cobble	(7)
4			-40
			(7) -41
5		some cobbles	
6		Clayey silt with sand	-42 } Z
7 EOC			-43 } Z
8			last ft not penetrated
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-43 Date 5/09/05 Deployment Time: 1053

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: 42.1 Feet LOCATION: N 695060.39 E 7638962.86

~~Predicted~~ Tide : 7 CRD ~~Water Surface~~ mudline Elevation: -35.1 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers RF, kk, DH

TUBE LENGTH: 15 Feet Tube Type: Al Liner Type: CAB

Core Penetration: 9.5 (ft below mudline) Recovered Core length: 7.41 Percent Compaction: 22.1

Compacted Core sections: in dredge prism: 0 to 5.4 1-ft below: 5.4 to 6.9

Expanded Core sections: in dredge prism: -35 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt		-35.1
1				-36
2		firmness increasing with depth		-37
3				-38
4		moist clayey sandy silt - olive brown		-39
5				-40
6				-41
7				-42
8				-43
9		clayey silt with sand		-44.1
10	EOC			-44.6

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-45 Date 5/13/05 Deployment Time: 1257

Core Attempt 1 Station Description: #1 accepted @ C-45

DEPTH TO MUDLINE: 45.2 Feet LOCATION: N 694735.99 E 763925.97

~~Predicted~~ Tide : 8.0 CRD Water Surface Elevation: -37.2 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers KK, JK, DH

TUBE LENGTH: 10 Feet Tube Type: AL Liner Type: CAB

Core Penetration: 7.5 (ft below mudline) Recovered Core length: 6.4 Percent Recovery: 85.3

Compacted Core sections: in dredge prism: 0 to 4.1 1-ft below: 4.1 to 5.8

Expanded Core sections: in dredge prism: -37.2 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft gray brown sandy silt		-37.2
		firms with depth		
1				-38.2
		clayey sandy silt		
2				-39.2
3				-40.2
4				-41.2
5				-42.2
6				-43.2
7		sand layer		-44.2
	EOC			-44.7
8				~~-45.2~~
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 46 Date 5/7/05 Deployment Time: 0903

Core Attempt # 4 Station Description: Core # 1

DEPTH TO MUDLINE: 40.30 (+6.6) Feet LOCATION: N 707818.78 (-33.7) E 762537.76

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MSL~~ W CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., D.H., K.K.

TUBE LENGTH: 15.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 7.6 Percent ~~Compaction~~ Recovery: 95%

Compacted Core sections: in dredge prism: 0 to 7.9 1-ft below: ~~to~~ Not enough Penetration

Expanded Core sections: in dredge prism: 33.7 to 41.7 1 ft below: to

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft olive brown silt	all top sample.
1			
2		sandy silt lense with some wood debris – silt Rock at kink in core tube.	
3		silty sand to end	
4			
5			
6			
7	EOC		
8			
9			
10			

33.7
34.7
35.7
36.7
37.7
38.7
39.7
40.7

NO Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-47 Date 5/12/05 Deployment Time: 1421

Core Attempt 3 Station Description: #3 core accepted @ C-47

DEPTH TO MUDLINE: 48.3 Feet LOCATION: N 693690.47 E 7639966.92

~~Predicted~~ Tide : 8.7 CRD Water Surface Elevation: -39.6 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL PI equiv.
TUBE LENGTH: 5 Feet

Samplers KK, JK, DH
Tube Type: AL Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.9 Percent Recovery: 78%

Compacted Core sections: in dredge prism: 0 to 1.9 1-ft below: 1.9 to 3.4

Expanded Core sections: in dredge prism: -39.6 to -42 1 ft below: -42 to -44

NOTES: 3 cores composited for surface only. Z from core #3 only.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt		39.6
		- wet firm olive brown silty sand		
1				40.6
2				41.6
		olive brown clayey sandy silt (2.2-3.1) (2.8-3.1) (-42.4 - 43.6)		
3				42.6
4		gray sand layer (3.1-3.4) (4-4.4) (-43.6 - 44)		43.6
		silty sand, brown, firm, moist		
5	EOC			44.6
6				
7				
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 48 Date 5/2/05 Deployment Time: 1502

Core Attempt #4 Station Description:

DEPTH TO MUDLINE: 48.2 Feet LOCATION: N 707628.25 E 7621803.90

~~Predicted~~ Tide : 4.6 cm ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F., D.H., B.F.

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 4.9 (ft below mudline) Recovered Core length: 2.6 Percent ~~Compaction~~ RECOVERY: 53.1

Compacted Core sections: in dredge prism: 0 to 1.6 2'-ft below: 1.6 to 2.7

Expanded Core sections: in dredge prism: -39 (0) to -42 (4) 2'ft below: -42 (4) to -44 (6)

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		RETEST SAMPLE	
1		DEPTH TO MUDLINE	
2		@ -43.6 CRD	
3 (1.6')		BELOW DREDGE DEPTH	
4			
5 (2.7')			
6			
7			
8			
9			
10			

-39
-40
-41
-42
-43
-44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-49 Date 5/12/05 Deployment Time: 1233

Core Attempt 2 Station Description: #1 core accepted @ C-49

DEPTH TO MUDLINE: 44.7 Feet LOCATION: N 693350.66 E 7640424.41

~~Predicted~~ Tide : 8.7 CRD Water Surface Elevation: (-36.0) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv.

TUBE LENGTH: 10 Feet

Samplers KK, JK, DH

Tube Type: A1 Liner Type: CAB

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 5.4 Percent Recovery: 67.5

Compacted Core sections: in dredge prism: 0 to 4.1 1-ft below: 4.1 to 5.4

Expanded Core sections: in dredge prism: -36 to -49 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft Olive brown Clayey sandy silt	-36
1		firms with depth.	-37
2			-38
3			-39
4			-40
5			-41
6			-42
7		some light brown sand in core catcher.	-43 Z
8	EOC		-44
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 50 Date 5/4/05 Deployment Time: 1031

Core Attempt #4 Station Description: Core #2

DEPTH TO MUDLINE: 44.50 (44.6) Feet LOCATION: N 705695.55 E 7624130.01

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: (-39.9) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip. Samplers R. F. D. H, B. F

TUBE LENGTH: 5.0 Feet Tube Type: Alum Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.7 Percent Compaction: 74%

Compacted Core sections: in dredge prism: 0 to 2.2 ~~21~~ 3-ft below: 2.2 to 3.7

Expanded Core sections: in dredge prism: -39 (0) to -42 (3) ~~21~~ 3 ft below: -42 (3) to -44 (5)

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, OLIVE BROWN SILT	
1		SHEEN	
2		STRONG PETRO ODOR	
3		BLACK (PRODUCT)	
4		2.2 to BOTTOM SILTY SAND	
5			
6			
7			
8			
9			
10			

PHOTO C-50 1335 1337 1339

2.2

3.7

-39

-40

-41

-42

-43

-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 50 Date 5/4/05 Deployment Time: 1014

Core Attempt #3 Station Description: Core #1

DEPTH TO MUDLINE: 45.8 (4.6) Feet LOCATION: N 705703.77 E 7624146.44

~~Predicted~~ Tide : CRD ~~Water Surface~~ mudline Elevation: (-41.2) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-7 gun Samplers R.K, D.H, B.P

TUBE LENGTH: 50 Feet Tube Type: Alm Liner Type: CAB

Core Penetration: 4.0 (ft below mudline) Recovered Core length: 2.0 Percent Compaction: 50%

Compacted Core sections: in dredge prism: 0 to 1.5 1-ft below: 1.5 to 2.5

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SEE SHEET w/ CORE ATTEMP #4 for DESCRIPTION	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-~~VC~~-51 Date 5/13/05 Deployment Time: 1142

Core Attempt 5 Station Description: #4 accepted @ C-51

DEPTH TO MUDLINE: 48.2 Feet LOCATION: N 692909.48 E 7640706.29

~~Predicted~~ Tide : 8.2 CRD Water Surface Elevation: -40 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv. Samplers kk, Jk, DH

TUBE LENGTH: 5 Feet Tube Type: AL Liner Type: CAP

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 4.0 Percent Recovery: 80

Compacted Core sections: in dredge prism: 0 to 1.6 1-ft below: 1.6 to 3.2

Expanded Core sections: in dredge prism: -40 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt		-40
1				-41
2		firm gray brown silty sand (1.8-2.2) (2.3-2.8)		-42
3		clayey sandy silt (-43.8) (4.8) (-44.8)		-43
4	~~EOC~~ 4ft	~~Sand~~		-44
5	EOC	gray sand at bottom		-45
6				
7				
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 52 Date 5/4/05 Deployment Time: 1054

Core Attempt # 2 Station Description: Core # 2

DEPTH TO MUDLINE: 46.2 (4.6) Feet LOCATION: N 705495.32 (-41.6) E 762510.54

~~Predicted~~ Tide : [redacted] CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers KF, DH,

TUBE LENGTH: 5.0 Feet Tube Type: ~~CAB~~ Alum Liner Type: CA13

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.3 Percent Compaction: 66.0

Compacted Core sections: in dredge prism: 0 to 2.0 1-ft below: 2.0 to 3.3

Expanded Core sections: in dredge prism: ~~39~~ 0 to ~~-42~~ 3 1 ft below: ~~-42~~ 3 to ~~-44~~ 5

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, OLIVE BROWN SILT TO 8"	
1		@ 8" BECOMES DENSE SANDY SILT	SHEEN PETRO ODOR BLACK PRODUCT
2		1'9" BECOMES SAND TO THE BOTTOM	
3			
4			
5			
6			
7			
8			
9			
10			

20 –

3.3 –

-39

-40

-41

-42

-43

-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 52 Date 5/4/05 Deployment Time: 1046

Core Attempt #1 Station Description: Core #1

DEPTH TO MUDLINE: 45.4 (4.6) Feet LOCATION: N 705472.30 E 7624512.67

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: (-40.8) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.T., D.H., BF

TUBE LENGTH: 5.0 Feet Tube Type: Alu. Liner Type: CAB

Core Penetration: 4.5 (ft below mudline) Recovered Core length: 2.8 Percent Compaction: _____

Compacted Core sections: in dredge prism: 0 to 1.9 1-ft below: 1.9 to 3.1

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0			SEE SHEET w/ ATTEMPT # 2 FOR DESCRIPTION		
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-53 Date 5/13/05 Deployment Time: 0854

Core Attempt 2 Station Description: #2 accepted @ C-53

DEPTH TO MUDLINE: 48.2 Feet LOCATION: N 692431.28 E 7641011.03

~~Predicted~~ Tide : 8.2 CRD Water Surface Elevation: -40 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv.

TUBE LENGTH: 5.0 Feet

Samplers KK, JK, DH

Tube Type: AL Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.4 Percent Recovery: 68

Compacted Core sections: in dredge prism: 0 to 1.4 1-ft below: 1.4 to 2.7

Expanded Core sections: in dredge prism: -40 to -42 1 ft below: -42 to -44

NOTES: 4 cores - surface composited on 4 cores. Z from this core.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft dark brown sandy silt	
1		sand - gray silt sand layer 1.0-1.2 (1.4-1.8)	
		sandy silt (1.2 → 1.5) (1.8-2.2)	
2		silty sand (1.5-~~2.2~~ 1.7) (2.2-2.5)	
		1.7-2.2 clayey sandy silt (2.5-3.2)	
		2.2-2.3 silty sand (3.2-3.4)	
3		clayey sandy silt 2.3-3.1 (3.4-4.5)	
4		3.1-3.4 gray sand (4.5-5)	
5	EOC		
6			
7			
8			
9			
10			

-40
-41
-42
-43
-44
-45

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 54 Date 5/4/05 Deployment Time: 1124

Core Attempt # 2 Station Description: Core Accepted as Core #2

DEPTH TO MUDLINE: 42.5 (4.6) Feet LOCATION: N 705243.27 E 762488.66

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: (-37.9) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., D.H. B.F.

TUBE LENGTH: 5.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 3.1 Percent Compaction: 62.%

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: 1.9 to 3.1

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET OLIVE BROWN TO 10" SANDY SILT	
1		10" BECOMES SILTY SAND	SHEEN PETRO ODOR NO PRODUCT OBSERVED
2		2.5' BECOMES SAND (BLACK/GREY)	
1.9' 3			APPEARS LESS CONTAMINATED THAN C-50 & C-52
4			
3.1' 5			
6			
7			
8			
9			
10			

-39
-40
-41
-42
-43
-44
Z

1605

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 54 Date 5/4/03 Deployment Time: 1113

Core Attempt #1 Station Description: Core Accepted as Core #1

DEPTH TO MUDLINE: 45.10 (4.6) Feet LOCATION: N 705254.48 E 7624887.94

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: (-40.5) ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL 7-3 equiv. Samplers RF, D.H, BF

TUBE LENGTH: 5.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 2.2 Percent Compaction: 44%

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: 1.3 to 2.2

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0			
1		SEE CORE ATTEMPT #2 SHEET FOR DESCRIPTION	
2			
3			
4			
5			
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-55 Date 5/12/05 Deployment Time: 1141

Core Attempt 4 Station Description: #1 core accepted @ C-55

DEPTH TO MUDLINE: 44.03 Feet LOCATION: N 692268.88 E 764184.41

~~Predicted~~ Tide : 8.8 CRD Water Surface Elevation: -35.5 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PI equiv. Samplers RK Jr, DH

TUBE LENGTH: 10 Feet Tube Type: BL Liner Type: CA

Core Penetration: 8.0 (ft below mudline) Recovered Core length: ~~4.09~~ 3.9 Percent Recovery: ~~63~~ 49 %

Compacted Core sections: in dredge prism: 0 to ~~4.0~~ 3.2 1-ft below: ~~4.0~~ 3.2 to ~~5.2~~ 3.9

Expanded Core sections: in dredge prism: -35.5 to -42 1 ft below: -42 to ~~-44~~ -43.5

NOTES: Minimal material available for bioassay.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wood debris on surface (twigs) wet soft brownish gray silty sand	
1		wood debris (twigs) in top	
2			
3			
4			
5		wood debris (twigs)	
6			
7			
8	EOC		
9			
10			

35.5
36.5
-37
38
39
40
41
42
43
-43.5
44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 56 Date 5/3/05 Deployment Time: 1109

Core Attempt #2 Station Description:

DEPTH TO MUDLINE: 39.7 Feet LOCATION: N 704999.1 E 7625300.78

~~Predicted~~ Tide : 3.8 CRD ~~Water Surface~~ Mudline Elevation: -35.3 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equivalent Samplers R.F. D.H. K.K.

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA3

Core Penetration: 8.0 (ft below mudline) Recovered Core length: 5.2 Percent ~~Compaction:~~ RECOVERY 65%

Compacted Core sections: in dredge prism: 0 to 3.9 1-ft below: 3.9 to 5.2

Expanded Core sections: in dredge prism: -36 (0) to -42 (6) 1 ft below: -42 (6) to -44 (8)

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0			SOFT, WET, OLIVE BROWN SANDY SILT WOOD DEBRIS ON TOP @ ~4"		-36
1				SLIGHT PETRO ODOR @ 1-2'	-37
2			DENSITY INCR W/ DEPTH @ ~2'		-38
3			WOOD DEBRIS @ 3'		-39
4					-40
5					-41
3.9' — 6					-42
7					-43 } Z
5.2' — 8					-44
9					
10					

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-57 Date 5/12/05 Deployment Time: 1025

Core Attempt 1 Station Description: #1 accepted

DEPTH TO MUDLINE: 43.4 Feet LOCATION: N 691685.30 E 7641694.99

~~Predicted~~ Tide : 8.8 CRD Water Surface Elevation: -34.6 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PI equip Samplers KK, JK, DH

TUBE LENGTH: 10 Feet Tube Type: AL Liner Type: CAB

Core Penetration: 10.0 (ft below mudline) Recovered Core length: 7.0 Percent Recovery: 70

Compacted Core sections: in dredge prism: 0 to 5.2 1-ft below: 5.2 to 6.6

Expanded Core sections: in dredge prism: -34.6 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt some small pea gravel. firms with depth		34.6
1				35.6
2				36.6
3				37.6
4				38.6
5				39.6
6				40.6
7				41.6
8		2" Sand layer - gray clayey silt		42.6
9				43.6
10				44.6

EOC

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-58 Date 5/16/05 Deployment Time: 1246

Core Attempt 1 Station Description: #1 Core accepted @ C-58

DEPTH TO MUDLINE: 44.3 Feet LOCATION: N 704692.6 E 7625796.61

~~Predicted~~ Tide : 6.8 CRD Water Surface Elevation: -37.5 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv Samplers KK, DH

TUBE LENGTH: 10 Feet Tube Type: AL Liner Type: GAB

Core Penetration: 6.5 (ft below mudline) Recovered Core length: 4.7 Percent Recovery: 72

Compacted Core sections: in dredge prism: 0 to 3.3 1-ft below: 3.3 to 4.7

Expanded Core sections: in dredge prism: -37.5 to -42 1 ft below: -42 to -44

NOTES: 2 cores composited for surface sample only.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		Soft wet sandy silt clayey olive brown	
1		gray sand medium to coarse to bottom	
2			
3			
4			
5			
6	EOC		
7			Note wood chips in silty sand in 2nd core. pen 4 Rec 2.7 used for surface volume -37.5 → -41.5
8			
9			
10			

-37.5
-38
-39
-40
-41
-42
-43
-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 58 Date 5/3/08 Deployment Time: 1152

Core Attempt # 4 Station Description:

DEPTH TO MUDLINE: 44.90 Feet LOCATION: N 704719.12 E 7625757.30

~~Predicted~~ Tide : ~4.0 CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equal Samplers RF DH, KK

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CA13

Core Penetration: 4.2 (ft below mudline) Recovered Core length: 2.7 Percent Compaction: 64%

Compacted Core sections: in dredge prism: _____ to _____ 1-ft below: _____ to _____

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		REJECTED	
1		NOT ENOUGH	
1.3' 2		VOLUME	
3		~~SAND~~ ~0.5' of silt on top	
2.6' 4		of SAND layer	
5			
6			
7			
8			
9			
10			

-40
-41
-42
-43 } Z
-44

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC - 59 Date 5/12/05 Deployment Time:

Core Attempt Station Description:

DEPTH TO MUDLINE: 47.8 Feet LOCATION: N E

~~Predicted~~ Tide : 8.7 CRD Water Surface Elevation: -39.1 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE
MODEL P3 Equip
TUBE LENGTH: 5 Feet

Samplers KK, DH, JA
Tube Type: A1 Liner Type: CAB

Core Penetration: 5 (ft below mudline) Recovered Core length: 3.1 Percent Recovery: 62%

Compacted Core sections: in dredge prism: 0 to 1.8 1-ft below: to

Expanded Core sections: in dredge prism: -39.1 to -42 1 ft below: to

NOTES: additional core for surface volume only. added log due to difference in material

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		wet soft brown-gray sandy silt (0-.4) (0-.6)	-39.1
		gray silty sand (0.4-1) (0.6-1.6)	-40 Surface
1		gray sandy silt (1-1.3) (1.6-2)	-41
2		silty sand (1.3-1.5) (2-2.4)	
		clayey sandy silt (1.5-2.5) (2.4-4)	-42
3			-43
4		gray silty sand (2.5-2.8) (4-4.5)	
		yellow brown silty sand (2.8-3.1) (4.5-5)	-44 -44.1
5	COC	material in core catcher - gray brown sandy silt to gray sand to gray and light brown mottled clay with red iron deposits.	
6			
7			
8			
9			
10			

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-59 Date 5/12/05 Deployment Time: 1312

Core Attempt 2 Station Description: #2 core accepted @ C-59

DEPTH TO MUDLINE: 47.8 Feet LOCATION: N 691245.98 E 7641972.89

~~Predicted~~ Tide : 8.7 CRD Water Surface Elevation: -39.1 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL PZ equiv. Samplers KK, JK, DH

TUBE LENGTH: 5 Feet Tube Type: AL Liner Type: CA13

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 4.41 Percent Recovery: 88%

Compacted Core sections: in dredge prism: 0 to 2.6 1-ft below: 2.6 to 4.3

Expanded Core sections: in dredge prism: -39.1 to -42 1 ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		Thin surface layer of yellow brown wet silt	(0-0.1) This ran down the sides of core, coming out side	39.1
		wet firm gray silty sand with clay		
1		Gray sandy silt (.9-2) (1-2.2)		40
				41
2		clayey sandy silt (2-2.5) (2.2)-2.8)		
		Silty sand layer (2.5-2.6) (2.8-3.1)		42
3		gray clayey sandy silt (2.6-3.1) (3-3.5)		
4		~~yellow brown medium sand~~ 3.1-3.5 (3.5-4)		43
		yellow coarse sand (3.5-3.8) (4.-4.3)		
		Small gravel (3.8-4) (4.3-4.5)		44
5		cobble (4-4.4) (4.5-5)	No cobble included in sample.	44.1
6				
7				
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 60 Date 5/3/05 Deployment Time: 1226

Core Attempt # 3 Station Description: Core #1

DEPTH TO MUDLINE: 39.2 Feet LOCATION: N 704523.19 E 7626181.27

~~Predicted~~ Tide : CRD ~~Water Surface~~ Mudline Elevation: ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F. D.H. K.K.

TUBE LENGTH: 50 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 5.0 (ft below mudline) Recovered Core length: 2.9 Percent Compaction: 58%

Compacted Core sections: in dredge prism: 0 to 1.7 ~~3X~~-ft below: 1.7 to 2.9

Expanded Core sections: in dredge prism: 0 to 3 ~~2X~~ft below: 3 to 5

-39 -42 -42 -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		1" SILT LAYER OVER SAND (GREY)	
1		DENSE THROUGHOUT CORE	
2			
3			
4			
5			
6			
7			
8			
9			
10			

1.7'

2.9'

-39

-40

-41

-42

-43

-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 60 Date 5/3/05 Deployment Time: 1344

Core Attempt # 6 Station Description: Core # 2

DEPTH TO MUDLINE: 43.10 Feet LOCATION: N 704555.6 E 7626173.91

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ mudline Elevation: ~~fr MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip Samplers RF DH, KK

TUBE LENGTH: 5.0 Feet Tube Type: Alum. Liner Type: CA13

Core Penetration: 2.5 (ft below mudline) Recovered Core length: 1.7 Percent ~~Compaction~~ Recovery: 68%

Compacted Core sections: in dredge prism: 0 to ~~1.7~~ 1.7 ~~end~~ 2½-ft below: ~~1.7~~ 2.0 to ~~2.5~~ 2.5

Expanded Core sections: in dredge prism: 0 to 3 2½ ft below: 3 to 5

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		CORE FOR VOLUME REQUIREMENT ONLY NO "Z" SAMPLE	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

-39
-40
-41
-42
-43
-44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-61 Date 5/12/05 Deployment Time: 1002

Core Attempt 3 Station Description: #3 core @ location

DEPTH TO MUDLINE: 48.8 Feet LOCATION: N 690848.89 E 7642269.40

~~Predicted~~ Tide : 8.8 CRD ~~Water Surface~~ Mudline Elevation: -40 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv Samplers KK, JK, DH

TUBE LENGTH: 5 Feet Tube Type: AL Liner Type: CAB

Core Penetration: 4.0 (ft below mudline) Recovered Core length: 3.3 Percent Recovery: 82.5

Compacted Core sections: in dredge prism: 0 to 1.7 1-ft below: 1.7 to 3.3

Expanded Core sections: in dredge prism: -40 to -42 1 ft below: -42 to -44

NOTES: 4 cores composited for surface. 2 taken from this core only.

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt firmness increased with depth		-40
1				-41
2		Silty sand - ~~light~~ brown		-42
		silty sand - light brown (cobble + gravel w. thin sand)		
3		gray gravelly sand (2.5-2.7) (3-3.3)	(-43-43.3)	-43
		mottled gray and light brown sand with pea gravel	(2.8-3.3)(3.3-4)	(-43.3-44)
4	EOC			-44
5				
6				
7				
8				
9				
10				

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC-62 Date 5/16/05 Deployment Time: 1355

Core Attempt 3 Station Description: ~~#~~ #1 core accepted @ C-62

DEPTH TO MUDLINE: 45.4 Feet LOCATION: N 703973.89 E 7626769.5

~~Predicted~~ Tide : 6.5 ebb ~~Water Surface~~ mudline Elevation: -38.9 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equip Samplers KH, DH

TUBE LENGTH: 7 Feet Tube Type: AL Liner Type: COB

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 5.4 Percent Recovery: 77%

Compacted Core sections: in dredge prism: 0 to 2.4 1-ft below: 2.4 to 3.4

Expanded Core sections: in dredge prism: -38.9 to -42 1 ft below: -42 to -44

NOTES: 2 cores composited for surface sample only

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft olive brown sandy silt		38.9
		~~3" clay layer~~		
		~~soft wet sandy silt 1.6 to 4.9~~		
1		3" clay glob		39.9
2		soft wet sandy silt (1.6-4.9) = (2.4-5.3)	wood pieces 1.9 2.3 2.6	40.9
3				41.9
4				42.9
5				43.9
6		clayey silt		44.9
7	EOC			45.9
8				
9				
10				

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 62 Date 5/16/05 Deployment Time: 1410

Core Attempt 4 Station Description: #2 core @ C-62

DEPTH TO MUDLINE: 44.4 Feet LOCATION: N 703960.16 E 7626746.8

~~Predicted~~ Tide : 6.5 CRD ~~Water Surface~~ mudline Elevation: -37.9 ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P3 equiv

TUBE LENGTH: 7.0 Feet

Samplers KK, DH

Tube Type: AL Liner Type: CAD

Core Penetration: 7.0 (ft below mudline) Recovered Core length: 4.7 Percent Recovery: 67

Compacted Core sections: in dredge prism: 0 to 2.8 1-ft below: 2.8 to 4.1

Expanded Core sections: in dredge prism: -37.7 to -42 1 ft below: -42 to -44

NOTES: 2 cores composited for surface sample only

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests	
0		wet soft sandy silt		-37.9
1				-38.9
2				-39.9
3				-40.9
4		wood bark 2" sand layer silt		-41.9
5		fine sand with some wood debris silt sand		-42.9
6		silt sand		-43.9
7	EOC	silt		-44.9
8				
9				
10				

Surface

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 62 Date 5/3/05 Deployment Time: 1345

Core Attempt # 3 Station Description: Core #1

DEPTH TO MUDLINE: 43.9 Feet mudline LOCATION: N 704151.62 E 7626663.48

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equipment Samplers R.F. D.H. & KK

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CAB

Core Penetration: 4.0 (ft below mudline) Recovered Core length: 3.1 Percent ~~Compaction~~ Recovery: 78%

Compacted Core sections: in dredge prism: 0 to 1.6 1-ft below: 1.6 to 3.1

Expanded Core sections: in dredge prism: -40 to -42 2X ft below: -42 to -44

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		REJECTED ~~[illegible]~~ NOT ENOUGH VOLUME	
1			
1.6 — 2			
3		1ST CORE WAS SILTY SAND (GREY)	
3.1 — 4		2ND CORE WAS SAND (BROWN) – POOR RECOVERY	
5			
6			
7			
8			
9			
10			

-40
-41
-42
-43
-44
Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 64 Date 5/3/05 Deployment Time: 1458

Core Attempt #3 Station Description: Core #3

DEPTH TO MUDLINE: 43.8 Feet LOCATION: N 703768.25 E 762696.995

~~Predicted~~ Tide : _____ CRD ~~Water Surface~~ Mudline Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equiv. Samplers R.F., K.K., D.H

TUBE LENGTH: 10.0 Feet Tube Type: Alum. Liner Type: CA13

Core Penetration: 6.0 (ft below mudline) Recovered Core length: 3.8 Percent Compaction: 63%

Compacted Core sections: in dredge prism: 0 to 1.9 ~~21~~ ft below: 1.9 to 3.2

Expanded Core sections: in dredge prism: -39 to -42 (0 to 3) ~~21~~ ft below: -42 to -44 (3 to 5)

NOTES:

Depth	Core	Description(soil type, color, MC, odor etc)	Other notes, Insitu tests
0		SOFT, WET, olive BROWN silt	
1			
2		DENSITY INCR w/ DEPTH	
3		2.3' SANDY silt	
4		2.9' BECOMES SAND	
5			
6			
7			
8			
9			
10			

1.9'

3.2'

-39

-40

-41

-42

-43

-44

Z

TtEC
CORE LOGGING FORM

Project Portland DMMP

SAMPLING STATION: WR-VC – 64 Date 5/3/05 Deployment Time: 1510

Core Attempt #4 Station Description: Core #4

DEPTH TO MUDLINE: 41.70 Feet LOCATION: N 703752.83 E 7672695.87

~~Predicted~~ Tide : _____ CRD Water Surface Elevation: _____ ~~MLLW~~ CRD

TYPE OF CORE VIBRACORE

MODEL P-3 equip. Samplers R.F. D.H. K.K

TUBE LENGTH: 10.0 Feet Tube Type: Alum Liner Type: CA13

Core Penetration: 6.0 (ft below mudline) Recovered Core length: 4.3 Percent ~~Compaction~~ RECOVERY: 72%

Compacted Core sections: in dredge prism: 0 to 2.2 1-ft below: 2.2 to 3.6

Expanded Core sections: in dredge prism: _____ to _____ 1 ft below: _____ to _____

NOTES:

Depth	Core		Description(soil type, color, MC, odor etc)		Other notes, Insitu tests
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

APPENDIX B

CHEMICAL DATA REVIEW REPORT

Lower Willamette River

Federal Navigation Channel, Oregon

CHEMICAL DATA REVIEW REPORT FOR THE DREDGE MATERIAL MANAGEMENT PLAN SEDIMENT CHARACTERIZATION OF THE FEDERAL NAVIGATION CHANNEL LOWER WILLAMETTE RIVER

November 2005

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Acronyms & Abbreviations

AOC	Administrative Order on Consent
ASTM	American Standard Testing Materials
CAS-Kelso	Columbia Analytical Services—Kelso, Washington
CAS-Houston	Columbia Analytical Services—Houston, Texas
DMMP	Dredge Material Management Plan
EPA	U.S. Environmental Protection Agency
IR	Infrared
LCS/LCSD	laboratory control sample and laboratory control sample duplicate
MDL	method detection limit
MS/MSD	matrix spike and matrix spike duplicate
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PSEP	Puget Sound Estuary Program
QAPP	Quality Assurance Project Plan
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SR#	Service Request Number
SVOC	semivolatile organic compound
Tetra Tech	Tetra Tech EC, Inc.
TOC	total organic carbon
TPH	total petroleum hydrocarbon
VOC	volatile organic compound

1. INTRODUCTION

Tetra Tech EC, Inc. (Tetra Tech) provided support to the U.S. Army Corps of Engineers, Portland, Oregon, district, for the Lower Willamette River Dredge Material Management Plan (DMMP) Sediment Characterization. Sampling was conducted from April 28, 2005 through May 27, 2005, resulting in a significant number of environmental samples submitted for chemical analysis. A total of 72 core sediment samples, 79 grab sediment samples, 7 grab sediment field duplicates, and 3 reference grab sediment samples were analyzed. This report presents the formal quality assurance review of the resulting data sets.

Sediment samples were sent to Columbia Analytical Services, Inc. located in Kelso, Washington (CAS-Kelso) for analysis. All analyses were performed at CAS-Kelso, with the exception of dioxin/furan analyses, which were performed at an affiliate Columbia Analytical Services laboratory located in Houston, Texas (CAS-Houston). Analyses were performed following specifications listed in the applicable U.S. Environmental Protection Agency (EPA), Puget Sound Estuary Program (PSEP), American Standard Testing Materials (ASTM), Washington Department of Ecology (for Northwest total petroleum hydrocarbon), and Krone (for organotin) methods.

2. DATA REVIEW

TtEC has completed a QA1 data review on the 18 data packages that were generated by the laboratory for this project. Each data package is identified with a unique Service Request Number (SR#). Data packages for the following SR#s were evaluated:

K2503158	K2503348	K2503429	K2503440
K2503244	K2503366	K2503436	K2503444
K2503269	K2503393	K2503438	K2503446
K2503308	K2503405	K2503439	K0502929
K2503321	K2503424		

Analytical data were evaluated for compliance with project requirements specified in the project's Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP), (Hart Crowser 2004) and criteria specified in the analytical methods. Applicable data validation guidelines are described in the *EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (EPA 1999), *EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994), *EPA Analytical Operations/Data Quality Center (AOC) National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (EPA 2002), *Data Quality Evaluation for Proposed Dredged Material Disposal Projects (QA-1)* (PTI 1989a), and *Data Validation Guidance Manual for Selected Sediment Variables (QA-2)* (PTI 1989b).

The data provided by the laboratories contained data qualifiers or flags, which are notations to impart qualitative information about the associated data. Laboratory data qualifiers vary among different facilities; for this reason, a list of flags used by CAS-Kelso and CAS-Houston laboratory is presented in Section 4. During the QA1 review, validation qualifiers were also assigned to laboratory data as applicable. Data validation definitions used for the review also are provided in Section 4. To distinguish between laboratory and validation qualifiers, validation qualifiers were applied using lowercase letters (e.g., "j" rather than "J").

A summary showing major parameters that were reviewed is provided in Table 2-1. As discussed in the following sections, items evaluated include the following: sample receipt conditions, extraction and analysis holding times, method blanks, surrogate and labeled compound recovery, laboratory control sample and laboratory control sample duplicate (LCS/LCSD) recovery, matrix spike and matrix spike duplicate (MS/MSD) recovery, relative percent difference (RPD) for LCS/LCSD, MS/MSD and laboratory replicates, field duplicate agreement, and multiple results.

2.1 SAMPLE RECEIPT CONDITIONS

Shipments of coolers were picked up at the site by CAS-Kelso's courier service. These shipments were evaluated for compliance with temperature guidelines. No temperatures exceeded the requirement of 4° ± 2°C, with the exceptions discussed below.

Service Request # K2503405: One of the two coolers had a temperature reading of 8.5°C. Three temperature blanks were measured for that cooler, with readings of 0.9°C, 5.6°C, and 6.0°C. Another technique, taking temperatures while using an infrared (IR) gun on sample bottles, yielded temperatures of 0.3C, 5.6°C, and the higher 8.5°C. Clearly appropriate steps were taken by the sampling crew to chill the samples.

Table 2-1. Parameters and Analytical Methods

Parameter	Analytical Method
Ammonia as Nitrogen	EPA 350.1M
Bulk TBT*	Krone
Dioxin/Furans*	EPA 1613
Grain Size	ASTM D422M
Herbicides*	EPA SW-846 8151A
Metals	EPA SW-846 6010B, 6020, 7471A, 7742
Polycyclic Aromatic Hydrocarbons (PAHs)	EPA SW-846 8270C SIM
Polychlorinated biphenyls (PCB) Aroclors	EPA SW-846 8082
PCB and Chlorinated Phenols	EPA SW-846 8151M
Pesticides	EPA SW-846 8081A
Porewater TBT	Krone
Semivolatile Organic Compounds (SVOCs)	EPA SW-846 8270C
Total Organic Carbon (TOC)	PSEP
Total Petroleum Hydrocarbons (TPHs) – Diesel Extended Range	NWTPH-Dx
TPHs – Gasoline Extended Range	NWTPH-Gx
Total Solids	EPA 160.3M and PSEP
Total Sulfide	EPA SW-846 9030M
Total Volatile Solids	EPA 160.4M
Volatile Organic Compounds (VOCs)*	EPA SW-846 8260B

* Analysis was not performed on every sample; it was performed only on selected samples, as indicated on the Chain-of-Custody forms.

Service Request # K2503444: The coolers containing sample jars for chemical analyses had acceptable temperatures ranging from 0.3°C to 5.5°C. Bags containing aliquots for archived bioassays were received at temperatures ranging from 6.1°C to 12.2°C; evaluation of bioassay data is not included in this review.

Service Request # K2503446: The laboratory indicated four samples (WR-PG-01, WR-PG-02, WR-PG-03, and WR-PG-04) for chemical analyses were received at temperatures of 14.3°C to 15.0°C. Temperatures of jars for other samples were chilled, at 1.3°C to 2.6°C. Because analysis of VOCs by Method 8260B was not requested for samples arriving at elevated temperatures, no qualifiers were assigned on the basis of temperature exceedance.

A few other minor sample receipt anomalies were noted by the laboratory. These include the following: 1) One sample (WR-VC-09) in Service Request # K2503244 was received at the laboratory, but was inadvertently not indicated on the Chain-of-Custody form. The sampler verbally confirmed with the laboratory that the sample should be analyzed. 2) Minor discrepancies between sample identifications on the Chain-of-Custody forms vs. the sample labels (or unreadable sample labels) were observed. These were resolved by the laboratory by using the time of collection written on the sample labels or sample identifications written on the lids of the containers. 3) There were some instances in which the number of sample containers listed on the Chain-of-Custody forms did not exactly match the number received. 4) For Service Request # K2503444, no 2-ounce jars for NWTPH-Gx analysis were received for WR-PG-12; this analysis was not performed.

One additional item was noted during data validation. For Service Request #K2503436, three samples were identified on the Chain-of-Custody form as WR-PG-01 Ref, WR-PG-02 Ref, and WR-PG-03 Ref. These samples were logged in by the laboratory with an extra dash in the identifications:

WR-PG-01-Ref, WR-PG-02-Ref, and WR-PG-03-Ref. Because the laboratory data packages specify the latter names, these names (with the extra dash) will be used in this report.

2.2 HOLDING TIMES

Most sample preparations and analyses were performed within applicable holding times. Parameters with holding time exceedances are summarized in Table 2-2. As per applicable qualification guidelines, positive results and detection limits associated with analyses on Table 2-2 were qualified as estimated (j/uj) to indicate reported results may represent minimum values. Qualified data are summarized in Section 5.

Table 2-2. Extractions and Analyses Performed Outside of Holding Time

Parameter	Samples	Holding Time Criterion (at 4°C)	Holding Time Exceedance
Ammonia	5 sediment samples in SR# K2503244, 3 sediment samples in SR# K2503424, 5 sediment samples in SR# K2503429, 15 sediments in SR# K2503440, and 26 sediments in SR# K2503444	Preparation within 7 days for sediment	1-3 days
Total Organic Carbon	11 sediment samples in SR# K2503158, 3 sediment samples in SR# K2503424, 5 sediment samples in SR# K2503429, and 26 sediments in SR# K2503444	Analysis within 14 days for sediment	1-4 days
TPHs – Gasoline Extended Range	6 sediment samples in SR# K2503269, and 5 sediment samples in SR# K2503308	Analysis within 14 days for sediment	2-3 days
Mercury	2 sediment sample re-analyses in SR# K0502929	Analysis within 28 days for sediment	53 days*

* = Re-analysis for two sediment samples in SR# K0502929 was performed 53 days out of holding time at the request of Tetra Tech due to discrepant results for the original analysis for this field duplicate set.

2.3 BLANKS

The laboratories analyzed method blanks at a frequency of one per batch of samples; each batch consisted of no greater than 20 samples of a particular matrix. Positive results detected in method blanks are summarized in Table 2-3. As demonstrated on this table, most target analytes that were detected in method blanks were present at concentrations above the method detection limit (MDL) and below the reporting limit. (These are the results that are B-flagged for inorganics or J-flagged for organics by the laboratory.) When target analytes were detected in blanks, whether at concentrations above or below the reporting limits, associated samples were evaluated during the data review. Following validation guidelines, positive results for samples that were within five times the amount detected in the associated method blank (or ten times for common laboratory contaminants such as phthalates) are qualified as not detected (u). Factors such as on-column concentration, initial and final sample size, and dilution factor are considered when applying qualifiers. When applying qualifiers for method blank contamination, sample results qualified as not detected (u) that are less than the reporting limit, are elevated to the reporting limit. Qualified data are summarized in Section 5.

Table 2-3. Method Blank Detections

SR#	Analytical Method	Target Analyte	Reported Result	Associated Samples
K2503158 and K2503244	6020	Chromium Silver	0.09 mg/kg B 0.002 mg/kg B	All sediment samples in SR# K2503158 and K2503244
K2503158	NWTPH-Dx	Residual-Range Organics	3.7 mg/kg J	All sediment samples in SR# K2503158
K2503158	NWTPH-Gx	Gasoline-Range Organics Gasoline-Range Organics	3.0 mg/kg J 3.6 mg/kg J	
K2503158 and K2503244	8270C	N-Nitrosodiphenylamine Bis(2-ethylhexyl) phthalate	2.5 µg/kg J 3.0 µg/kg J	All sediment samples in SR# K2503158 and K2503244
K2503244 and K2503269	NWTPH-Dx	Residual-Range Organics	18 mg/kg J	All sediment samples in SR# K2503244 and K2503269
K2503244	NWTPH-Gx	Gasoline-Range Organics	3.6 mg/kg J	All sediment samples in SR# K2503244
K2503269, K2503308, and K2503321	7742	Selenium	0.02 mg/kg B	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503269, K2503308, and K2503321	6020	Silver	0.002 mg/kg B	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503269	NWTPH-Gx	Gasoline-Range Organics	2.6 mg/kg J	All sediment samples in SR# K2503269
K2503269, K2503308, and K2503321	8270C	Di-n-butyl Phthalate	3.8 µg/kg J	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503269, K2503308, and K2503321	8270C SIM	Naphthalene	1.6 µg/kg	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503308	NWTPH-Gx	Gasoline-Range Organics	1.0 mg/kg J	All sediment samples in SR# K2503308
K2503321	NWTPH-Gx	Gasoline-Range Organics	1.6 mg/kg J	All sediment samples in SR# K2503321
K2503348 and K2503393	6020	Silver	0.004 mg/kg B	All sediment samples in SR# K2503348 and K2503393
K2503348	NWTPH-Gx	Gasoline-Range Organics	3.9 mg/kg J	All sediment samples in SR# K2503348
K2503348 and K2503366	8270C	Di-n-butyl Phthalate Bis(2-ethylhexyl) phthalate	4.3 µg/kg J 40 µg/kg	All sediment samples in SR# K2503348 and K2503366
K2503366	NWTPH-Gx	Gasoline-Range Organics	2.6 mg/kg J	All sediment samples in SR# K2503366
K2503348 and K2503366	8270C SIM	Naphthalene	0.69 µg/kg J	All sediment samples in SR# K2503348 and K2503366
K2503393	NWTPH-Gx	Gasoline-Range Organics	2.9 mg/kg J	All sediment samples in SR# K2503393
K2503393, K2503405, and K2503424	8270C	Phenol Bis(2-ethylhexyl) phthalate	3.4 µg/kg J 3.5 µg/kg J	All sediment samples in SR# K2503393, K2503405, and K2503424
K2503393, K2503405, and K2503424	8270C SIM	Naphthalene	1.4 µg/kg	All sediment samples in SR# K2503393, K2503405, and K2503424
K2503405	6020	Copper Silver Zinc	0.26 mg/kg 0.005 mg/kg B 1.4 mg/kg	All sediment samples in SR# K2503405

Table 2-3. Method Blank Detections (continued)

SR#	Analytical Method	Target Analyte	Reported Result	Associated Samples
K2503405	NWTPH-Gx	Gasoline-Range Organics	1.0 mg/kg J	All sediment samples in SR# K2503405
K2503424	6020	Copper Silver Zinc	0.13 mg/kg 0.005 mg/kg B 0.7 mg/kg	All sediment samples in SR# K2503424
K2503424, K2503429, and K2503436	NWTPH-Dx	Residual-Range Organics	6.3 mg/kg J	All sediment samples in SR# K2503424, K2503429, and K2503436
K2503424 and K2503429	NWTPH-Gx	Gasoline-Range Organics	2.6 mg/kg J	All sediment samples in SR# K2503424 and K2503429
K2503429	6020	Cadmium Selenium	0.015 mg/kg B 0.05 mg/kg B	All sediment samples in SR# K2503429
K2503429	8270C	N-Nitrosodiphenylamine Di-n-butyl phthalate Bis(2-ethylhexyl) phthalate	2.7 µg/kg J 3.5 µg/kg J 11 µg/kg	All sediment samples in SR# K2503429
K2503429	8270C SIM	Naphthalene	1.3 µg/kg	All sediment samples in SR# K2503429
K2503436 and K2503438	6020 7742 6020	Chromium Selenium Silver	0.05 mg/kg B 0.02 mg/kg B 0.006 mg/kg B	All sediment samples in SR# K2503436 and K2503438
K2503436	NWTPH-Gx	Gasoline-Range Organics	2.5 mg/kg J	All sediment samples in SR# K2503436
K2503436, K2503438, and K2503439	Krone	Di-n-butyltin	0.0018 µg/L J	All porewater samples in SR# K2503436 and K2503438; 2 porewater samples in SR# K2503439
K2503436, K2503439, and K2503440	8260B	Acetone Carbon disulfide Methylene chloride Styrene Isopropylbenzene	12 µg/kg 0.21 µg/kg J 2.9 µg/kg J 0.090 µg/kg J 0.050 ug/kg J	All sediment samples in SR# K2503436, 3 sediment samples in SR# K2503439, 8 sediment samples in SR# K2503440
K2503436 and K2503438	8270C	Phenol Di-n-butyl phthalate Bis(2-ethylhexyl) phthalate	5.8 µg/kg J 3.4 µg/kg J 2.5 µg/kg J	All sediment samples in SR# K2503436 and K2503438
K2503436 and K2503438	8270C SIM	Naphthalene	1.5 µg/kg	All sediment samples in SR# K2503436 and K2503438
K2503436	1613	1,2,3,4,6,7,8-HpCDD OCDD 1,2,3,4,6,7,8-HpCDF OCDF Total Hepta-Dioxins	0.273 ng/kg J 2.942 ng/kg J 0.184 ng/kg J 0.219 ng/kg J 0.273 ng/kg	All sediment samples in SR# K2503436
K2503438	NWTPH-Dx	Residual-Range Organics	5.0 mg/kg J	All sediment samples in SR# K2503438
K2503438	NWTPH-Gx	Gasoline-Range Organics	2.5 mg/kg J and 1.9 mg/kg J	All sediment samples in SR# K2503438
K2503439	6010B	Aluminum	8.2 mg/kg B	11 sediment samples in SR# K2503439

Table 2-3. Method Blank Detections (continued)

SR#	Analytical Method	Target Analyte	Reported Result	Associated Samples
K2503439	6020	Cadmium Chromium Copper Nickel Silver	0.010 mg/kg B 0.05 mg/kg B 0.12 mg/kg 0.12 mg/kg B 0.17 mg/kg B	11 sediment samples in SR# K2503439
K2503439	7742	Selenium	0.03 mg/kg B	11 sediment samples in SR# K2503439
K2503439	6010B	Aluminum	6.8 mg/kg B	11 sediment samples in SR# K2503439
K2503439	6020	Chromium Copper Lead Silver Zinc	0.04 mg/kg B 0.18 mg/kg 0.03 mg/kg B*N 0.002 mg/kg B 0.3 mg/kg B	11 sediment samples in SR# K2503439
K2503439	7742	Selenium	0.02 mg/kg B	11 sediment samples in SR# K2503439
K2503439	NWTPH-Dx	Residual-Range Organics	12 mg/kg J	20 sediment samples in SR# K2503439
K2503439 and K2503440	NWTPH-Dx	Residual-Range Organics	7.8 mg/kg J	2 sediment samples in SR# K2503439 and all sediment samples in SR# K2503440
K2503439	NWTPH-Gx	Gasoline-Range Organics	1.9 mg/kg J	12 sediment samples in SR# K2503439
K2503439	NWTPH-Gx	Gasoline-Range Organics	2.4 mg/kg J	8 sediment samples in SR# K2503439
K2503439 and K2503440	NWTPH-Gx	Gasoline-Range Organics	2.0 mg/kg J	2 sediment samples in SR# K2503439 and 10 sediment samples in SR# K2503439
K2503439	8270C	Di-n-butyl phthalate Bis(2-ethylhexyl) phthalate	5.4 µg/kg 2.1 µg/kg J	20 sediment samples in SR# K2503439
K2503439 and K2503440	8270C	Phenol Bis(2-ethylhexyl) phthalate	4.6 µg/kg J 3.9 µg/kg J	2 sediment samples in SR# K2503439 and all sediment samples in SR# K2503440
K2503439	8270C SIM	Naphthalene	0.70 µg/kg J	20 sediment samples in SR# K2503439
K2503439 and K2503440	8270C SIM	Naphthalene	0.77 µg/kg J	2 sediment samples in SR# K2503439 and all sediment samples in SR# K2503440
K2503440	6020	Copper Silver Zinc	0.06 mg/kg B 0.004 mg/kg B 0.2 mg/kg B	All sediment samples in SR# K2503440
K2503440	7742	Selenium	0.02 mg/kg B	All sediment samples in SR# K2503440
K2503440	NWTPH-Gx	Gasoline-Range Organics	2.1 mg/kg J	5 sediment samples in SR# K2503440
K2503440	Krone	Di-n-butyltin n-Butyltin	0.016 µg/L J 0.0027 µg/L J	All porewater samples in SR# K2503440

Table 2-3. Method Blank Detections (continued)

SR#	Analytical Method	Target Analyte	Reported Result	Associated Samples
K2503440, K2503444, and K2503446	8260B	Acetone Carbon Disulfide Methylene Chloride Benzene Chlorobenzene m, p-Xylenes Styrene	8.1 µg/kg J 0.18 µg/kg J 1.8 µg/kg J 0.10 µg/kg J 0.070 µg/kg J 0.15 µg/kg J 0.10 µg/kg J	2 sediment samples in SR# K2503440, 2 sediment samples in SR# K2503444, and 3 sediment samples in SR# K2503446
K2503440	1613	1,2,3,4,6,7,8-HpCDD OCDD OCDF Total Hepta-Dioxins	0.116 ng/kg JK 0.708 ng/kg J 0.317 ng/kg J 0.217 ng/kg	4 sediment samples in SR# K2503440
K2503440 and K2503444	1613	OCDD OCDF	0.442 ng/kg J 0.341 ng/kg J	4 sediment samples in SR# K2503440 and 1 sediment sample in SR# K2503444
K2503440	1613	OCDD	1.270 ng/kg J	1 sediment sample in SR# K2503440
K2503444	6020 7742	Chromium Selenium	0.04 mg/kg B 0.03 mg/kg B	20 sediment samples in SR# K2503444
K2503444 and K2503446	6010B 6020 7742 6020	Aluminum Chromium Selenium Silver	6.8 mg/kg B 0.05 mg/kg B 0.04 mg/kg B 0.003 mg/kg B	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	Krone	Di-n-butyltin n-Butyltin	0.013 µg/L J 0.0022 µg/L J	19 porewater samples in SR# K2503444
K2503444 and K2503446	Krone	Di-n-butyltin n-Butyltin	0.018 µg/L J 0.0047 µg/L J	6 porewater samples in SR# K2503444 and all porewater samples in SR# K2503446
K2503444 and K2503446	NWTPH-Dx	Residual-Range Organics	7.7 mg/kg J	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	NWTPH-Gx	Gasoline-Range Organics	2.1 mg/kg J	3 sediment samples in SR# K2503444
K2503444	NWTPH-Gx	Gasoline-Range Organics	1.8 mg/kg J	10 sediment samples in SR# K2503444
K2503444	NWTPH-Gx	Gasoline-Range Organics	1.8 mg/kg J	9 sediment samples in SR# K2503444
K2503444	NWTPH-Gx	Gasoline-Range Organics	1.2 mg/kg J	3 sediment samples in SR# K2503444
K2503444	8270C	Phenol Bis(2-ethylhexyl) phthalate	2.8 µg/kg J 2.2 µg/kg J	20 sediment samples in SR# K2503444
K2503444 and K2503446	8270C	Phenol Di-n-butyl phthalate Bis(2-ethylhexyl) phthalate	3.5 µg/kg 4.5 µg/kg J 2.2 µg/kg J	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	8270C SIM	Naphthalene	1.3 µg/kg J	20 sediment samples in SR# K2503444
K2503444 and K2503446	8270C SIM	Naphthalene	1.1 µg/kg J	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503446	NWTPH-Gx	Gasoline-Range Organics	1.9 mg/kg J	All sediment samples in SR# K2503446

2.4 SURROGATE AND LABELED COMPOUND RECOVERIES

For dioxins and furans analyzed by Method 1613, labeled compounds were added during sample preparation as per method requirements. For all other organic parameters, surrogates were added to each sample. Surrogate and labeled compound recoveries were typically within control limits. Surrogates and labeled compound recoveries that were not within control limits are summarized in Table 2-4. Excluded from Table 2-4 are cases when samples were too diluted to yield meaningful recoveries.

Table 2-4. Surrogate and Labeled Compound Outliers

SR#	Analytical Method	Sample ID or QC Sample ID	Surrogate or Labeled Compound	Recovery (%)	Control Limit (%)
K2503269	NWTPH-Gx	WR-VC-64	4-Bromofluorobenzene	47	50-150
K2503308	NWTPH-Dx	WR-VC-50	o-Terphenyl	173	50-150
		WR-VC-50DUP	o-Terphenyl	176	50-150
K2503308	NWTPH-Gx	WR-VC-35	4-Bromofluorobenzene	45	50-150
K2503348	NWTPH-Gx	WR-VC-118	4-Bromofluorobenzene	47	50-150
		WR-VC-46	4-Bromofluorobenzene	49	50-150
K2503366	NWTPH-Gx	WR-VC-39	4-Bromofluorobenzene	49	50-150
K2503429	8081A	WR-VC-58	TCMX	143	38-125
K2503438	NWTPH-Dx	WR-PG-114	n-Triacontane	255	50-150
K2503438	NWTPH-Gx	WR-PG-114	4-Bromofluorobenzene	45	50-150
		WR-PG-120	4-Bromofluorobenzene	45	50-150
K2503439	NWTPH-Gx	WR-PG-104	4-Bromofluorobenzene	49	50-150
		WR-PG-100	4-Bromofluorobenzene	49	50-150
		WR-PG-94	4-Bromofluorobenzene	47	50-150
		WR-PG-92	4-Bromofluorobenzene	44	50-150
		WR-PG-88	4-Bromofluorobenzene	44	50-150
K2503440	NWTPH-Gx	WR-PG-78	4-Bromofluorobenzene	48	50-150
K2503440	1613	WR-PG-68	$^{13}C_{12}$-OCDD	16	17-157
K2503444	NWTPH-Gx	WR-PG-48	4-Bromofluorobenzene	44	50-150
		WR-PG-139Dup	4-Bromofluorobenzene	43	50-150
		WR-PG-34	4-Bromofluorobenzene	44	50-150
		WR-PG-30	4-Bromofluorobenzene	43	50-150
		WR-PG-18	4-Bromofluorobenzene	45	50-150
		WR-PG-14	4-Bromofluorobenzene	38	50-150
		WR-PG-06	4-Bromofluorobenzene	41	50-150
		WR-PG-140Dup	4-Bromofluorobenzene	36	50-150
		WR-PG-09	4-Bromofluorobenzene	44	50-150
		WR-PG-11	4-Bromofluorobenzene	36	50-150
		WR-PG-13	4-Bromofluorobenzene	38	50-150
		WR-PG-13 Lab Dup	4-Bromofluorobenzene	36	50-150
K2503444 and K2503446	8270C	LCSD	2-Fluorophenol	99	11-87
K2503446	NWTPH-Gx	WR-PG-01	4-Bromofluorobenzene	37	50-150
		WR-PG-02	4-Bromofluorobenzene	34	50-150
		WR-PG-141dup	4-Bromofluorobenzene	28	50-150
		WR-PG-03	4-Bromofluorobenzene	41	50-150
		WR-PG-04	4-Bromofluorobenzene	36	50-150
		WR-PG-50	4-Bromofluorobenzene	45	50-150
		WR-PG-52	4-Bromofluorobenzene	42	50-150
		WR-PG-54	4-Bromofluorobenzene	36	50-150
		WR-PG-02 Lab Dup	4-Bromofluorobenzene	47	50-150

Qualification on the basis of surrogate and labeled compound recovery was performed according to the following applicable guidelines: 1) For labeled compound outliers (applicable to dioxin/furan analysis by Method 1613), reported results for associated detected target analytes and detection limits for not-detected compounds are qualified as estimated (j/uj). Potential high or low bias is not clear because dioxin/furan results are calculated using labeled compound recoveries. 2) For samples with surrogate recoveries that are greater than upper control limits, reported results for detected target analytes may be biased high and are qualified as estimated (j). 3) For samples with surrogate recoveries that are less than lower control limits but greater than 10 percent, reported results for detected target analytes and detection limits for not-detected compounds may be biased low and are qualified as estimated (j/uj). 4) Qualifiers are applied to only those target analytes associated with a particular surrogate compound or labeled standard. 5) For SVOCs, two acid surrogates or two base/neutral surrogates must be out before qualifiers are applied. 6) No qualifiers are assigned to laboratory QC samples (e.g., method blanks, laboratory control samples, and matrix spikes). Qualified data are summarized in Section 5.

2.5 LABORATORY CONTROL SAMPLES

The vast majority of recoveries and RPD values for spiked target analytes in LCS and LCSD, when analyzed, were within laboratory control limits. In the case of metals, the LCS was a standard reference material within control limits specified by the vendor. A summary of LCS and LCSD recoveries that fell outside control limits is presented in Table 2-5. Likewise, Table 2-6 shows RPD values for LCS and LCSD analyses that were outside laboratory control limits.

Table 2-5. LCS/LCSD Recoveries Outside Laboratory Control Limits

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Control Limit (%)*	Associated Samples
K2503321 and K2503348	8081A	LCS	Endosulfan I Endosulfan II cis-Nonachlor trans- Nonachlor	113 118 122 119	50-112 59-116 61-121 58-117	All sediment samples in SR# K2503321 and K2503348
K2503366	7471A	LCS	Mercury	52	57-142	All sediment samples in SR# K2503366
K2503436, K2503439, and K2503440	8260B	LCS	Iodomethane	173	70-130	All sediment samples in SR# K2503436, 3 sediment samples in SR# K2503439, and 8 sediment samples in SR# K2503440
K2503439	8151M	LCS	Pentachlorophenol	133	59-127	20 sediment samples in SR# K2503439
K2503439	8270C	LCS	Bis(2-ethylhexyl) phthalate Di-n-octyl phthalate	1,784 183	52-136 54-127	20 sediment samples in SR# K2503439

Table 2-5. LCS/LCSD Recoveries Outside Laboratory Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Control Limit (%)*	Associated Samples
K2503440, K2503444 and K2503446	8260B	LCS	Dichlorodifluoro-methane Iodomethane	174 169	43-163 70-130	2 sediment samples in SR# K2503440, 2 sediment samples in SR# K2503444, and all sediment samples in SR# K2503446
K2503444 and K2503446	8260B	LCSD	Dichlorodifluoro-methane Iodomethane Tetrachloroethene	183 177 126	43-163 70-130 70-124	2 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444 and K2503446	8270C	LCSD	2,4-Dichlorophenol	100	38-98	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446

Table 2-6. LCS/LCSD RPD Values Outside Laboratory Control Limits

SR#	Analytical Method	QC Samples	Compound	RPD (%)	Control Limit (%)	Associated Samples
K2503158 and K2503244	8270C	LCS/LCSD	Benzoic Acid	60	0-40	All sediment samples in SR# K2503158 and K2503244
K2503269, K2503308, and K2503321	8270C	LCS/LCSD	2,4-Dimethylphenol	43	0-40	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503436 and K2503438	8270C	LCS/LCSD	3,3'-Dichlorobenzidine	53	0-40	All sediment samples in SR# K2503436
K2503439	8270C	LCS/LCSD	Bis(2-ethylhexyl) phthalate Di-n-octyl phthalate	180 68	0-40 0-40	20 sediment samples in SR# K2503439

2.6 MATRIX SPIKES AND MATRIX SPIKE DUPLICATES

Most recoveries and RPD values for site-specific MS and MSD analyses were within laboratory control limits. A summary of MS and MSD recoveries performed on samples for this project that fell outside control limits is presented in Table 2-7. (Excluded from Table 2-7 are instances when the unspiked native sample result is greater than four times the amount spiked, and non-compliant recoveries for MS and MSD analyses performed on batch samples not associated with the project.) Table 2-8 shows RPD values for MS and MSD analyses that were outside project control limits.

Table 2-7. Site-Specific MS/MSD Recoveries Outside Project and Laboratory Control Limits

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Lab Control Limits (%)	Associated Samples
K2503158 and K2503244	6020	WR-VC-03 MS	Antimony	18	70-130	All sediment samples in SR# K2503158 and K2503244
K2503158	8081A	WR-VC-04 MSD	Hexachlorobenzene	68	70-130	All sediment samples in SR# K2503158
K2503158	8081A	WR-VC-04 MS and MSD	Oxychlordane cis-Nonachlor trans-Nonachlor Hexachloroethane	67 and 61 54 and 51 69 and 63 52 and 58	70-130 70-130 70-130 70-130	All sediment samples in SR# K2503158
K2503158 and K2503244	8270C	WR-VC-04 MS and MSD	3,3'-Dichlorobenzidine	0 and 0	10-80	All sediment samples in SR# K2503158 and K2503244
K2503158 and K2503244	8270C SIM	WR-VC-04 MS	Fluoranthene	159	22-145	All sediment samples in SR# K2503158 and K2503244
K2503244, K2503269, and K2503308	8081A	WR-VC-37 MS and MSD	Hexachloroethane	63 and 54	70-130	All sediment samples in SR# K2503244, K2503269, and K2503308
K2503244, K2503269, and K2503308	8081A	WR-VC-52 MS and MSD	2,4'-DDD 2,4'-DDE 2,4'-DDT	265 and 248 170 and 168 208 and 205	39-139 45-135 40-136	All sediment samples in SR# K2503244, K2503269, and K2503308
K2503269, K2503308, and K2503321	6020	WR-VC-28 MS	Antimony	25	70-130	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503269, K2503308, and K2503321	8270C	WR-VC-60 MS WR-VC-60 MSD WR-VC-60 MSD WR-VC-60 MSD	1,4-Dichlorobenzene Aniline Bis(2-chloroethyl)Ether 3,3'-Dichlorobenzidine	3 9 183 0	10-77 10-55 13-107 10-80	All sediment samples in SR# K2503269, K2503308, and K2503321
K2503269, K2503308, and K2503321	8270C SIM	WR-VC-60 MS	Chrysene	168	26-139	All sediment samples in SR# K2503269, K2503308, and K2503321

Table 2-7. Site-Specific MS/MSD Recoveries Outside Project and Laboratory Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Lab Control Limits (%)	Associated Samples
K2503348and K2503393	6020	WR-VC-118 MS	Antimony	24	70-130	All sediment samples in SR# K2503348 and K2503393
K2503321 and K2503348	8081A	WR-VC-46 MS and MSD WR-VC-46 MSD	Cis-Nonachlor Hexachlorethane	62 and 62 50	70-130 70-130	All sediment samples in SR# K2503321 and K2503348
K2503348 and K2503366	8270C SIM	WR-VC-134 MSD	Phenanthrene Fluoranthene	163 202	20-136 22-145	All sediment samples in SR# K2503348 and K2503366
K2503366	6020	WR-VC-132 MS	Antimony	28	70-130	All sediment samples in SR# K2503366
K2503366, K2503393, and K2503405	8082	WR-VC-110 MS WR-VC-110 MS WR-VC-110 MSD	Aroclor 1016 Aroclor 1260 Aroclor 1260	1,378 1,895 1	33-155 36-161 36-161	All sediment samples in SR# K2503366, K2503393, and K2503405
K2503393, K2503405, and K2503424	8270C	WR-VC-110 MSD WR-VC-110 MS and MSD WR-VC-110 MSD WR-VC-110 MS and MSD	Bis(2-chloroethyl)Ether Hexachlorocyclopentadiene Carbazole Di-n-octylphthalate	122 3 and 4 260 -177 and -123	13-107 10-64 27-125 27-143	All sediment samples in SR# K2503393, K2503405, and K2503424
K2503393, K2503405, and K2503424	8270C SIM	WR-VC-110 MSD	12 target compounds	Varies	Varies	All sediment samples in SR# K2503393, K2503405, and K2503424
K2503405 and K2503424	6020	WR-VC-51 MS	Antimony	28	70-130	All sediment samples in SR# K2503405 and K2503424
K2503424 and K2503429	8081A	WR-VC-62 MS WR-VC-62 MS and MSD WR-VC-62 MSD	Oxychlordane Cis-Nonachlor Mirex	66 63 and 57 64	70-130 70-130 68-119	All sediment samples in SR# K2503424 and K2503429
K2503429	6020	WR-VC-58 MS	Antimony	41	70-130	All sediment samples in SR# K2503429
K2503429	8270C	WR-VC-33 MSD WR-VC-33 MSD	Aniline 2,4-Dimethylphenol	8 6	10-55 10-93	All sediment samples in SR# K2503429

Table 2-7. Site-Specific MS/MSD Recoveries Outside Project and Laboratory Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Lab Control Limits (%)	Associated Samples
K2503429	8270C SIM	WR-VC-33 MSD WR-VC-33 MS and MSD WR-VC-33 MSD	Phenanthrene Fluoranthene Pyrene	141 14 and 212 166	20-136 22-145 18-146	All sediment samples in SR# K2503429
K2503436 and K2503438	6020	WR-PG-01-Ref MS	Antimony	28	70-130	All sediment samples in SR# K2503436 and K2503438
K2503436 and K2503438	8081A	WR-PG-126	Hexachloroethane	63	70-130	All sediment samples in SR# K2503436 and K2503438
K2503436 and K2503438	8082	WR-PG63 MS and MSD	Aroclor 1260	19 and -9	36-161	All sediment samples in SR# K2503436 and K2503438
K2503436 and K2503438	8151M	WR-PG-108 MSD	2,4,5-Trichlorophenol	147	60-135	All sediment samples in SR# K2503436 and K2503438
K2503436, K2503439, and K2503440	8260B	WR-PG-60 MS and MSD WR-PG-60 MS and MSD WR-PG-60 MS and MSD WR-PG-60 MSD WR-PG-60 MSD WR-PG-60 MS and MSD WR-PG-60 MSD WR-PG-60 MSD WR-PG-60 MS and MSD WR-PG-60 MS and MSD	Iodomethane Acrylonitrile Vinyl acetate Bromodichloromethane Benzene 2-Chloroethyl vinyl ether 1,1,1,2-Tetrachloroethane Bromoform trans-1,4-Dichloro-2-butene Acrolein	58 and 52 43 and 41 0 and 0 18 42 5 and 6 15 9 19 and 17 0 and 0	70-130 70-130 70-130 19-138 45-129 70-130 17-138 10-136 70-130 0 and 0	All sediment samples in SR# K2503436, 2 sediment samples in SR# K2503439, and all sediment samples in SR# K2503440
K2503436 and K2503438	8270C	WR-PG-108 MSD WR-PG-108 MS WR-PG-108 MS WR-PG-108 MSD WR-PG-108 MSD WR-PG-108 MS and MSD WR-PG-108 MS	Aniline Benzyl Alcohol Benzoic Acid 3-Nitroaniline Butyl benzyl phthalate 3,3'-Dichlorobenzidine Bis(2-ethylhexyl) phthalate	9 113 119 8 1,655 0 and 0 2,613	10-55 26-106 10-113 10-97 23-136 10-80 10-158	All sediment samples in SR# K2503436 and K2503438

Table 2-7. Site-Specific MS/MSD Recoveries Outside Project and Laboratory Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Lab Control Limits (%)	Associated Samples
K2503436 and K2503438	8270C SIM	WR-PG-108 MSD	Phenanthrene Fluoranthene Pyrene	200 158 159	20-136 22-145 18-146	All sediment samples in SR# K2503436 and K2503438
K2503439	6020	WR-PG-106 MS	Antimony	31	70-130	11 sediment samples in SR# K2503439
K2503439	6020	WR-PG-104 MS	Antimony	26	70-130	11 sediment samples in SR# K2503439
K2503439	6020	WR-PG-104 MS	Lead	41	74-117	11 sediment samples in SR# K2503439
K2503439	8081A	WR-PG-33 MSD WR-PG-33 MS and MSD WR-PG-33 MS and MSD	Oxychlordane Hexachloroethane Hexachlorobutadiene	69 40 and 55 55 and 53	70-130 70-130 70-130	20 sediment samples in SR# K2503439
K2503439 and K2503440	8081A	WR-PG-60 MSD WR-PG-60 MS and MSD	Hexachlorobenzene 4,4-DDD	66 178 and 173	70-130 32-156	2 sediment samples in SR# K2503439 and all sediment samples in K2503440
K2503439	8270C	WR-PG-33 MS and MSD WR-PG-33 MS and MSD	Aniline 3,3'-Dichlorobenzidine	4 and 5 0 and 0	10-55 10-80	20 sediment samples in SR# K2503439
K2503439 and K2503440	8270C	WR-PG-60 MSD	Hexachlorocyclopentadiene	9	10-64	2 sediment samples in SR# K2503439 and all sediment samples in K2503440
K2503440	6020	WR-PG-82 MS	Antimony	31	70-130	All sediment samples in SR# K2503440
K2503440	8081A	WR-PG-58 MSD WR-PG-58 MSD WR-PG-58 MS and MSD	Oxychlordane cis-Nonachlor Hexachloroethane Hexachlorobutadiene	61 69 49 and 61 61 and 52	70-130 70-130 70-130 70-130	All sediment samples in SR# K2503440
K2503444	6020	WR-PG-15 MS	Antimony	28	70-130	20 sediment samples in SR# K2503444
K2503444 and K2503446	6020	WR-PG-01 MS	Antimony	21	70-130	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	8081A	WR-PG-137 MS and MSD WR-PG-137 MS and MSD	Cis-Nonachlor Hexachloroethane	63 and 58 68 and 67	70-130 70-130	17 sediment samples in SR# K2503444
K2503444	8081A	WR-PG-18 MSD	4,4'-DDT	220	31-161	9 sediment samples in SR# K2503444

Table 2-7. Site-Specific MS/MSD Recoveries Outside Project and Laboratory Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	Recovery (%)	Lab Control Limits (%)	Associated Samples
K2503444 and K2503446	8081A	WR-PG-16 MS and MSD	Oxychlordane	46 and 40	70-130	9 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
		WR-PG-16 MS and MSD	cis-Nonachlor	47 and 40	70-130	
		WR-PG-16 MS and MSD	trans-Nonachlor	49 and 42	70-130	
		WR-PG-16 MSD	Mirex	62	68-119	
		WR-PG-16 MS and MSD	Hexachloroethane	15 and 28	70-130	
		WR-PG-16 MS and MSD	Hexachlorobutadiene	45 and 41	70-130	
K2503444 and K2503446	8151M	WR-PG-04 MSD	2,4,5-Trichlorophenol	146	60-135	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
		WR-PG-04 MSD	2,3,4,5-Tetrachlorophenol	182	38-163	
K2503444 and K2503446	8270C SIM	WR-PG-04 MS and MSD	9 Target Analytes	Varies	Varies	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503446	8270C	WR-PG-04 MS and MSD	Aniline	4 and 2	10-55	All sediment samples in SR# K2503446
		WR-PG-04 MS and MSD	Hexachlorocyclopentadiene	66 and 66	10-64	
		WR-PG-04 MSD	3,3'-Dichlorobenzidine	8	10-80	

Table 2-8. Site-Specific MS/MSD RPD Values Outside Project Control Limits

SR#	Analytical Method	QC Sample	Compound	RPD (%)	Project Control Limits	Associated Samples
K2503269, K2503308 and K2503321	8270C	WR-VC-60 MS and MSD	Bis(2-chloroethyl)Ether	107	0-40	All sediment samples in SR# K2503269, K2503308 and K2503321
K2503348 and K2503366	8270C	WR-VC-134 MS and MSD	Benzoic Acid 2,4-Dinitrophenol 2-Methyl-4,6-dinitrophenol	70 69 60	0-40 0-40 0-40	All sediment samples in SR# K2503348 and K2503366
K2503348 and K2503366	8270C SIM	WR-VC-134 MS and MSD	Phenanthrene Fluoranthene Pyrene	57 64 42	0-40 0-40 0-40	All sediment samples in SR# K2503348 and K2503366
K2503366, K2503393, and K2503405	8082	WR-VC-110 MS and MSD	Aroclor 1016 Aroclor 1260	169 172	0-50 0-50	All sediment samples in SR# K2503366, K2503393 and K2503405
K2503393, K2503405and K2503424	8270C	WR-VC-110 MS and MSD	2,4-Dimethylphenol Carbazole	41 96	0-40 0-40	All sediment samples in SR# K2503393, K2503405 and K2503424
K2503393, K2503405and K2503424	8270C SIM	WR-VC-110 MS and MSD	17 Target Compounds	Varies	0-40	All sediment samples in SR# K2503393, K2503405 and K2503424
K2503429	8270C	WR-VC-33 MS and MSD	2,4-Dimethylphenol Benzoic Acid 3,3'Dichlorobenzidine	78 41 58	0-40 0-40 0-40	All sediment samples in SR# K2503429
K2503429	8270C SIM	WR-VC-33 MS and MSD	Phenanthrene Fluoranthene Pyrene Benzo(b)fluoranthene Chrysene	82 109 95 51 63	0-40 0-40 0-40 0-40 0-40	All sediment samples in SR# K2503429
K2503436, K2503439 and K2503440	8260B	WR-PG-60 MS and MSD	Bromoform	49	0-40	All sediment samples in SR# K2503436, 3 sediment samples in SR# K2503439, and all sediment samples in SR# K2503440

Table 2-8. Site-Specific MS/MSD RPD Values Outside Project Control Limits (continued)

SR#	Analytical Method	QC Sample	Compound	RPD (%)	Project Control Limits	Associated Samples
K2503436 and K2503438	8270C	WR-PG-108 MS and MSD	N-Nitrosodimethylamine	41	0-40	All sediment samples in SR# K2503436 and K2503438
			Aniline	59	0-40	
			Benzyl alcohol	53	0-40	
			4-Methylphenol	47	0-40	
			2,4-Dimethylphenol	79	0-40	
			Hexachlorocyclopentadiene	52	0-40	
			4-Nitroaniline	88	0-40	
			Butyl benzyl phthalate	182	0-40	
			Bis(2-ethylhexyl) phthalate	185	0-40	
K2503436 and K2503438	8270C SIM	WR-PG-108 MS and MSD	Phenanthrene	56	0-40	All sediment samples in SR# K2503436 and K2503438
			Fluoranthene	49	0-40	
			Pyrene	50	0-40	
K2503439	8081A	WR-PG-33 MS and MSD	4,4-DDT	52	0-50	20 sediment samples in SR# K2503439
K2503439 and K2503440	8270C	WR-PG-60 MS and MSD	Hexachlorocyclopentadiene	41	0-40	2 sediment samples in SR# K2503439 and all sediment samples in SR# K2503440
K2503444a nd K2503446	8081A	WR-PG-18 MS and MSD	4,4-DDT	108	0-50	9 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	8081A	WR-PG-16 MS and MSD	Hexachloroethane	63	0-50	9 sediment samples in SR# K2503444
K2503444 and K2503446	8151M	WR-PG-04 MS and MSD	2,3,4,5-Tetrachlorophenol	56	0-50	6 sediment samples in SR# K2503444 and all sediment samples in SR# K2503446
K2503444	8270C	WR-PG-26 MS and MSD	2,4-Dimethylphenol	50	0-40	20 sediment samples in SR# K2503444
K2503446	8270C	WR-PG-04 MS and MSD	Benzoic Acid	48	0-40	All sediment samples in SR# K2503446
		WR-PG-04 MS and MSD	3,3'-Dichlorobenzidine	70	0-40	
		WR-PG-04 MSD	Bis(2-ethylhexyl)phthatlate	49	0-40	

Following is a summation of qualifying guidelines that were followed during the evaluation of recovery outliers for MS and MSD analyses. 1) For sample results associated with MS or MSD recoveries or RPD values that were outside laboratory control limits, reported results for detected inorganic compounds are qualified as estimated (j). 2) For sample results associated with MS or MSD recoveries of spiked analytes that were less than control limits, detection limits for not-detected inorganic compounds may be biased low and are qualified as estimated (uj). 3) As per applicable guidance documents, organic results are not qualified on the basis of MS and MSD outliers. An exception to the third summation was made for organic results when no recovery was achieved for the MS and MSD; in these cases, associated sample results were qualified as rejected (r). Qualified data are summarized in Section 5.

2.7 LABORATORY REPLICATES

Laboratory duplicates or triplicates were performed for inorganic analyses. The vast majority of RPD and percent RSD values for matrix replicates were within control limits. A summary of outliers is presented in Table 2-9. For sample results associated with RPD and percent RSD outliers, reported results for detected target analytes may represent approximate concentrations; therefore, these results are qualified as estimated (j).

Table 2-9. Site-Specific Laboratory Replicate Values Outside Project Control Limits

SR#	Analytical Method	Native Sample	Compound	RPD or % RSD Value	Associated Samples
K2503348 and K2503366	9030M	WR-VC-30	Sulfide, Total	RPD = 31%	All sediment samples in SR# K2503348 and K2503366
K2503439	6020	WR-PG-104	Lead	RPD = 134%	11 sediment samples in SR# K2503439

2.8 FIELD DUPLICATE SETS

Seven field duplicate sets, identified in Table 2-10, were analyzed.

Table 2-10. Field Duplicate Sets

Sample	Field Duplicate	Date Sampled
WR-PG-01	WR-PG-141Dup	5/27/05
WR-PG-06	WR-PG-140Dup	5/26/05
WR-PG-27	WR-PG-137Dup	5/26/05
WR-PG-36	WR-PG-139Dup	5/26/05
WR-PG-39	WR-PG-136Dup	5/24/05
WR-PG-45	WR-PG-135Dup	5/24/05
WR-PG-48	WR-PG-138Dup	5/26/05

Results for the field duplicate sets were evaluated as specified in the QAPP. The procedure was to compare paired data points from each field duplicate set to determine if the RPD value is within the project goal of 0 to 50 percent.

There were a total of 1,015 paired data points for the seven field duplicate sets. Of these, 936 paired data points had RPD values within the project goal or were reported as not detected for both members of the field duplicate set. There were 46 paired data points in which either a compound was detected in one member of the field duplicate set or the RPD value was greater than 50 percent, but the detections were at low concentrations (i.e., within a factor of five of the reporting limit or grain size results less than 1.5 percent), in ranges where more variability would be expected. Precision was judged acceptable for these 46 cases. The remaining 35 paired data points had RPD values greater than 50 percent (for compounds greater than five times the reporting limit in at least one of the samples comprising the field duplicate set), or were cases in which one member of the field duplicate set had a detection while the other member had a non-detect. These 35 cases are summarized in Table 2-12.

Table 2-11. Field Duplicate Outliers

Field Duplicate Set	Analytical Method	Target Analyte	Reported Sample Results		RPD (%)
WR-PG-01 and WR-PG-141 dup	9030M	Sulfide	24.3 and 11.9	mg/kg	68
WR-PG-06 and WR-PG-140 dup	8270C SIM	Fluoranthene	55 and 98	ug/kg	56
	8270C SIM	Phenanthrene	24 and 43	ug/kg	57
	8270C SIM	Pyrene	63 and 100	ug/kg	54
	9030M	Sulfide	3.4 and 10.4	mg/kg	101
WR-PG-27 and WR-PG-137 dup	6020	Antimony	0.23 and 0.68	mg/kg	99
	6020	Copper	53.5 and 138	mg/kg	88
	7471A	Mercury	0.065 and 4.84	mg/kg	195
	8270C SIM	Naphthalene	17 and 10 u	ug/kg	NC
	9030M	Sulfide	26.6 and 9.8	mg/kg	92
WR-PG-36 and WR-PG-139 dup	7471A	Mercury	0.141 and 0.071	mg/kg	66
	8151M	Pentachlorophenol	140 and 2.9	ug/kg	192
	9030M	Sulfide	8.2 and 2.6	mg/kg	104
WR-PG-39 and WR-PG-136 dup	8081A	Hexachlorobenzene	0.4 U and 5.7	ug/kg	NC
	7471A	Mercury	0.062 and 0.311	mg/kg	134
	9030M	Sulfide	1.2 and 7.2	mg/kg	143
WR-PG-48 and WR-PG-138 dup	ASTM D422	Gravel, Medium	0 and 6.22	%	NC
	6020	Antimony	0.66 and 0.36	mg/kg	59
	8081A	4,4'-DDT	3.7 and 13	ug/kg	111
	8270C SIM	14 PAHs[1/]	Varies[1/]	ug/kg	Varies[1/]
	8270C SIM	Dibenzofuran	91 and 49	ug/kg	60
	9030M	Sulfide	1 and 20.6	mg/kg	182

NC = RPD is not calculable when one result is a detected value and the other a non-detected value.
[1/] = The results for 15 individual PAHs for WR-PG-48 and WR-PG-138Dup had RPD values ranging from 53 to 125 percent.

Occasional outliers are typical for sediment samples. The differences may be due to sample variance (caused by an expected amount of non-homogeneity of the sediment matrix, down to the size of the soil particulates), comparing results at low concentrations (e.g., results from Method 8270C SIM analyses), and potential false positives (which can possibly occur for analyses performed on a gas

chromatograph not equipped with a mass spectrometer, as could be the case for Method 8081A and 8151M analyses).

A notable outlier on the above table is the mercury results for WR-PG-27 and WR-PG-137Dup (at 0.065 mg/kg and 4.84 mg/kg, respectively). After confirming the results were calculated correctly and ensuring the samples were labeled correctly, the laboratory was asked to perform a re-analysis (outside of holding time). The mercury results from the re-analysis (at 0.042 mg/kg and 0.055 mg/kg, respectively) were similar to the original analysis for WR-PG-27 (and dissimilar to the original analysis for WR-PG-137Dup). It is not known if the original result for WR-PG-137 is due to a laboratory artifact (such as contaminated glassware) or a "hotspot" of mercury in the sample.

Overall, the application of the project-specified criterion demonstrated good agreement for the field duplicate sets. Because there is accordance of analytical results for the vast majority of data points, it can be inferred that the data for the samples generally are technically valid and of adequate quality for the intended data usage.

2.9 MULTIPLE RESULTS

For each sample, multiple results were reported for hexachlorobenzene, hexachlorethane, and hexachlorobutadiene. These three compounds were analyzed as SVOCs by Method 8270C and pesticides by Method 8081A. While the Method 8270C analysis provides better selectivity, reducing the possibility for false positives, the Method 8081A analysis provides lower detection limits.

Several samples were analyzed for VOCs by Method 8260B. The laboratory reported 51 VOC target analytes, two of which were also reported in other analyses with multi-analyte target lists. Naphthalene was reported as a VOC by Method 8260B and as a PAH by Method 8270C SIM; 1,4-dichlorobenzene was reported as a VOC by Method 8260B and as an SVOC by Method 8270C.

For the analytes discussed above (i.e., hexachlorobenzene, hexachlorethane, and hexachlorobutadiene, naphthalene, and 1,4-dichlorobenzene), the reviewer recommends the following: 1) When results from both methods are non-detects, use the result with the lower reporting limit. 2) When the result(s) from one or both methods are detections, use the detected result with the higher value (in order to be conservative). Cases of a non-detect and a detection should be carefully evaluated before selecting one result over another.

Several samples were analyzed for dioxin/furans by Method 1613. When target analyte 2,3,7,8-TCDF is detected in a sample, the analytical method requires a confirmation analysis for this compound on a specified analytical column. The laboratory performed the confirmation analysis as required. For these instances, results for 2,3,7,8-TCDF from both the original and confirmation analysis were reported. The reviewer recommends using the result from the confirmation analysis because isomer specificity is superior.

As mentioned in the Field Duplicate Sets section, multiple mercury results were submitted for WR-PG-27 and WR-PG-137Dup. The original mercury result for WR-PG-137Dup (at 4.84 mg/kg) was suspect because it significantly differed from the corresponding field duplicate result (for WR-PG-27) and all other project samples. (The highest result for mercury for all other project samples was 0.698 mg/kg.) Re-analysis for WR-PG-137Dup yielded a result of 0.055 mg/kg for mercury, which is

consistent with the field duplicate result. During the QA1 review, it could not be determined if the original result for WR-PG-137Dup was due to a laboratory artifact (such as contaminated glassware) or a "hotspot" of mercury in the sample.

2.10 COMPLETENESS

The samples in the 18 data packages were reviewed for analytical completeness. The following analyses were identified as incomplete.

WR-PG-12: NWTPH-Gx analysis was not performed. The analysis was requested on the chain-of-custody form; however, 2-ounce sample containers for NWTPH-Gx were not received at the laboratory and the analysis was not performed.

WR-PG-26: Porewater TBT analysis was not performed because the sample did not yield sufficient porewater to allow for analysis.

A total of 90 results were rejected during data validation because the MS/MSD recovery was 0 percent. These 90 results consist of 58 data points for 3,3'dichlorobenzidine, 16 data points for vinyl acetate, and 16 data points for acrolein. None of these analytes was required to be analyzed for the project; rather, they were components of multi-target analyte lists for VOCs and SVOCs.

If all samples were analyzed as requested on the chain-of-custody forms and no data were rejected during data validation, there would be a total of 24,740 sample results (or data points) for target analytes. As discussed above, NWTPH-Gx analysis for WR-PG-12 and Porewater TBT analysis WR-PG-26 were not performed as requested. These two incomplete analyses consist of 1 data point for NWTPH-Gx and 4 data points for Porewater TBT. As mentioned, 90 data points were rejected during data validation. Thus, the overall analytical completeness is calculated to be 99.6 percent.

$$\text{Completeness} = \frac{(24740 - 95)}{24740} \times 100\% = 99.6\%$$

2.11 SUMMARY AND CONCLUSION

The majority of analytical data are within control limits. Some of the reported results may represent approximate concentrations due to control limit exceedances. Therefore, when appropriate, these data are qualified as estimated (j/uj). Some results were qualified as not detected (u) due to laboratory contamination. Some results were rejected (r) due to no recovery (0 percent) in the MS/MSD analysis. Control limit exceedances are typically encountered for data sets of this size and nature. The number of exceedances in this data set is considered to be within the expected range, and they have been appropriately addressed as indicated above. Overall, project objectives were met and the laboratory analyses are considered usable for the intended purpose, with the exception of results that were rejected (r).

3. LABORATORY AND VALIDATION QUALIFIER DEFINITIONS

CAS-Kelso Laboratory Flag Definitions

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

CAS- Houston Laboratory Flag Definitions

- **B** Used when an associated analyte is found in the method blank, as well as in the sample
- C Confirmation of the TCDF compound: When 2378-TCDF is detected on the DB-5 column, confirmation analyses are performed on a second column (DB-225.) The results from both the DB-5 column and the DB-225 column are included in this data package. The results from the DB-225 analyses should be used to evaluate the 23788-TCDF in the samples. The confirmed result should be used in determining the TEQ value for TCDF. The samples requiring confirmation are indicated in the table above.
- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range
- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the detection limit (DL)
- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.
- **U** Indicates the compound was analyzed and not detected.
- **X** User defined; see case narrative for detailed explanation
- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Form 2s. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.
- * Indicates concentration is reported as 'Not Detected'

Data Validation Qualifier Definitions:

j = The result should be considered an estimated value.

r = The result is rejected due to a significant deficiency.

u = The result should be considered not detected at the specified detection limit.

uj = The detection limit for the non-detect should be considered an estimated detection limit.

4. SUMMARY OF QUALIFIED DATA

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503158	WR-VC-03	PSEP	Carbon, Total Organic	1.91	percent		j	holding time exceedance
K2503158	WR-VC-04	PSEP	Carbon, Total Organic	1.47	percent		j	holding time exceedance
K2503158	WR-VC-05	PSEP	Carbon, Total Organic	1.72	percent		j	holding time exceedance
K2503158	WR-VC-36	PSEP	Carbon, Total Organic	2.11	percent		j	holding time exceedance
K2503158	WR-VC-06	PSEP	Carbon, Total Organic	2.12	percent		j	holding time exceedance
K2503158	WR-VC-08	PSEP	Carbon, Total Organic	2.18	percent		j	holding time exceedance
K2503158	WR-VC-10	PSEP	Carbon, Total Organic	2.23	percent		j	holding time exceedance
K2503158	WR-VC-12	PSEP	Carbon, Total Organic	1.96	percent		j	holding time exceedance
K2503158	WR-VC-14	PSEP	Carbon, Total Organic	1.74	percent		j	holding time exceedance
K2503158	WR-VC-16	PSEP	Carbon, Total Organic	1.58	percent		j	holding time exceedance
K2503158	WR-VC-24	PSEP	Carbon, Total Organic	2.40	percent		j	holding time exceedance
K2503158	WR-VC-03	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-04	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-05	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-36	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-06	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-08	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-10	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-12	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-14	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-16	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-24	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-19	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-18	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503158	WR-VC-04	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.7	mg/kg	J	4.0 u	method blank contamination
K2503158	WR-VC-05	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.0	mg/kg	J	4.7 u	method blank contamination
K2503158	WR-VC-36	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.2	mg/kg	J	5.0 u	method blank contamination
K2503158	WR-VC-06	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.3	mg/kg	J	4.8 u	method blank contamination
K2503158	WR-VC-08	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.2	mg/kg	J	4.5 u	method blank contamination
K2503158	WR-VC-10	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.8	mg/kg	J	4.4 u	method blank contamination
K2503158	WR-VC-12	NWTPH-Gx	Gasoline Range Organics-NWTPH	5.3	mg/kg	H	j	method blank contamination
K2503158	WR-VC-14	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.6	mg/kg	H	j	method blank contamination
K2503158	WR-VC-16	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.0	mg/kg	H	j	method blank contamination
K2503158	WR-VC-24	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.4	mg/kg	J	4.8 u	method blank contamination
K2503158	WR-VC-19	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.5	mg/kg	J	4.0 u	method blank contamination
K2503158	WR-VC-18	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.8	mg/kg	J	4.4 u	method blank contamination
K2503158	WR-VC-03	8270C	Bis(2-ethylhexyl) Phthalate	46	ug/kg		u	method blank contamination
K2503158	WR-VC-04	8270C	Bis(2-ethylhexyl) Phthalate	58	ug/kg		u	method blank contamination
K2503158	WR-VC-36	8270C	Bis(2-ethylhexyl) Phthalate	110	ug/kg	D	u	method blank contamination
K2503158	WR-VC-08	8270C	Bis(2-ethylhexyl) Phthalate	95	ug/kg	D	u	method blank contamination
K2503158	WR-VC-10	8270C	Bis(2-ethylhexyl) Phthalate	82	ug/kg	D	u	method blank contamination
K2503158	WR-VC-12	8270C	Bis(2-ethylhexyl) Phthalate	74	ug/kg	D	u	method blank contamination
K2503158	WR-VC-14	8270C	Bis(2-ethylhexyl) Phthalate	49	ug/kg	D	u	method blank contamination
K2503158	WR-VC-16	8270C	Bis(2-ethylhexyl) Phthalate	46	ug/kg		u	method blank contamination
K2503158	WR-VC-24	8270C	Bis(2-ethylhexyl) Phthalate	60	ug/kg		u	method blank contamination
K2503158	WR-VC-03	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-04	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-05	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-36	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-06	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-08	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-10	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-12	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-14	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-16	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-24	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-19	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-18	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503158	WR-VC-04	8270C	Benzoic acid	170	ug/kg	J	j	LCS/LCSD RPD outlier
K2503158	WR-VC-18	8270C	Benzoic acid	870	ug/kg	D	j	LCS/LCSD RPD outlier
K2503244	WR-VC-22	350.1M	Ammonia as Nitrogen	253	mg/kg		j	holding time exceedance
K2503244	WR-VC-15	350.1M	Ammonia as Nitrogen	274	mg/kg		j	holding time exceedance
K2503244	WR-VC-07	350.1M	Ammonia as Nitrogen	297	mg/kg		j	holding time exceedance
K2503244	WR-VC-11	350.1M	Ammonia as Nitrogen	328	mg/kg		j	holding time exceedance
K2503244	WR-VC-09	350.1M	Ammonia as Nitrogen	219	mg/kg		j	holding time exceedance

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503244	WR-VC-22	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-15	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-07	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-11	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-13	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-26	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-09	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503244	WR-VC-22	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.0	mg/kg	J	5.0 u	method blank contamination
K2503244	WR-VC-15	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.9	mg/kg	J	4.6 u	method blank contamination
K2503244	WR-VC-07	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.4	mg/kg	J	4.4 u	method blank contamination
K2503244	WR-VC-11	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.5	mg/kg	J	4.6 u	method blank contamination
K2503244	WR-VC-13	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.3	mg/kg	J	4.3 u	method blank contamination
K2503244	WR-VC-26	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.4	mg/kg	J	4.5 u	method blank contamination
K2503244	WR-VC-09	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.2	mg/kg	J	4.2 u	method blank contamination
K2503244	WR-VC-11	8270C	Bis(2-ethylhexyl) Phthalate	79	ug/kg	D	u	method blank contamination
K2503244	WR-VC-13	8270C	Bis(2-ethylhexyl) Phthalate	64	ug/kg	D	u	method blank contamination
K2503244	WR-VC-26	8270C	Bis(2-ethylhexyl) Phthalate	110	ug/kg	D	u	method blank contamination
K2503244	WR-VC-09	8270C	Bis(2-ethylhexyl) Phthalate	62	ug/kg	D	u	method blank contamination
K2503244	WR-VC-22	8270C	Benzoic acid	660	ug/kg		j	LCS/LCSD RPD outlier
K2503244	WR-VC-15	8270C	Benzoic acid	400	ug/kg		j	LCS/LCSD RPD outlier
K2503244	WR-VC-11	8270C	Benzoic acid	480	ug/kg	D	j	LCS/LCSD RPD outlier
K2503244	WR-VC-09	8270C	Benzoic acid	460	ug/kg	D	j	LCS/LCSD RPD outlier
K2503244	WR-VC-22	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-15	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-07	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-11	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-13	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-26	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503244	WR-VC-09	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503269	WR-VC-28	7742	Selenium	0.10	mg/kg		u	method blank contamination
K2503269	WR-VC-32	7742	Selenium	0.09	mg/kg		u	method blank contamination
K2503269	WR-VC-34	7742	Selenium	0.09	mg/kg	B	0.10 u	method blank contamination
K2503269	WR-VC-56	7742	Selenium	0.07	mg/kg	B	0.10 u	method blank contamination
K2503269	WR-VC-64	7742	Selenium	0.08	mg/kg	B	0.10 u	method blank contamination
K2503269	WR-VC-60	7742	Selenium	0.04	mg/kg	B	0.11 u	method blank contamination
K2503269	WR-VC-28	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-32	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-34	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-56	6020	Antimony	0.21	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-64	6020	Antimony	0.15	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-60	6020	Antimony	0.21	mg/kg	N	j	matrix spike recovery low
K2503269	WR-VC-28	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	holding time exceedance
K2503269	WR-VC-32	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.2	mg/kg	J	4.3 uj	holding time exceedance, method blank contamination
K2503269	WR-VC-34	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	holding time exceedance
K2503269	WR-VC-56	NWTPH-Gx	Gasoline Range Organics-NWTPH	27	mg/kg	H	j	holding time exceedance
K2503269	WR-VC-64	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.1	mg/kg	J	4.3 uj	holding time exceedance, method blank contamination, surrogate outlier (low)
K2503269	WR-VC-60	NWTPH-Gx	Gasoline Range Organics-NWTPH	5.1	mg/kg	Z	uj	holding time exceedance, method blank contamination
K2503269	WR-VC-28	8270C	Di-n-butyl Phthalate	12	ug/kg	JD	22 u	method blank contamination
K2503269	WR-VC-32	8270C	Di-n-butyl Phthalate	8.8	ug/kg	J	11 u	method blank contamination
K2503269	WR-VC-34	8270C	Di-n-butyl Phthalate	12	ug/kg	J	12 u	method blank contamination
K2503269	WR-VC-56	8270C	Di-n-butyl Phthalate	14	ug/kg	JD	40 u	method blank contamination
K2503269	WR-VC-64	8270C	Di-n-butyl Phthalate	8.4	ug/kg	J	12 u	method blank contamination
K2503269	WR-VC-64	8270C SIM	Naphthalene	14	ug/kg	B	u	method blank contamination
K2503308	WR-VC-35	7742	Selenium	0.07	mg/kg	B	0.09 u	method blank contamination
K2503308	WR-VC-37	7742	Selenium	0.05	mg/kg	B	0.12 u	method blank contamination
K2503308	WR-VC-50	7742	Selenium	0.08	mg/kg	B	0.09 u	method blank contamination
K2503308	WR-VC-52	7742	Selenium	0.07	mg/kg	B	0.10 u	method blank contamination
K2503308	WR-VC-54	7742	Selenium	0.10	mg/kg	B	0.11 u	method blank contamination
K2503308	WR-VC-35	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503308	WR-VC-37	6020	Antimony	0.15	mg/kg	N	j	matrix spike recovery low
K2503308	WR-VC-50	6020	Antimony	0.17	mg/kg	N	j	matrix spike recovery low
K2503308	WR-VC-52	6020	Antimony	0.17	mg/kg	N	j	matrix spike recovery low
K2503308	WR-VC-54	6020	Antimony	0.24	mg/kg	N	j	matrix spike recovery low
K2503308	WR-VC-50	NWTPH-Dx	Diesel Range Organics (DRO)	6000	mg/kg	Z	j	surrogate recovery high
K2503308	WR-VC-35	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.5	mg/kg	J	3.4 uj	holding time exceedance,

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
								method blank contamination, surrogate outlier (low)
K2503308	WR-VC-37	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.1	mg/kg	J	3.5 uj	holding time exceedance, method blank contamination
K2503308	WR-VC-50	NWTPH-Gx	Gasoline Range Organics-NWTPH	22	mg/kg	Z	j	holding time exceedance
K2503308	WR-VC-52	NWTPH-Gx	Gasoline Range Organics-NWTPH	87	mg/kg	Z	j	holding time exceedance
K2503308	WR-VC-54	NWTPH-Gx	Gasoline Range Organics-NWTPH	270	mg/kg	Z	j	holding time exceedance
K2503308	WR-VC-35	8270C	Di-n-butyl Phthalate	6.7	ug/kg	J	10 u	method blank contamination
K2503308	WR-VC-37	8270C	Di-n-butyl Phthalate	8.6	ug/kg	J	10 u	method blank contamination
K2503321	WR-VC-66	7742	Selenium	0.08	mg/kg	B	0.09 u	method blank contamination
K2503321	WR-VC-68	7742	Selenium	0.06	mg/kg	B	0.09 u	method blank contamination
K2503321	WR-VC-72	7742	Selenium	0.06	mg/kg	B	0.11 u	method blank contamination
K2503321	WR-VC-29	7742	Selenium	0.09	mg/kg	B	0.11 u	method blank contamination
K2503321	WR-VC-70	7742	Selenium	0.10	mg/kg		u	method blank contamination
K2503321	WR-VC-20	7742	Selenium	0.08	mg/kg	B	0.11 u	method blank contamination
K2503321	WR-VC-66	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-68	6020	Antimony	0.15	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-72	6020	Antimony	0.15	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-29	6020	Antimony	0.19	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-70	6020	Antimony	0.19	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-20	6020	Antimony	0.19	mg/kg	N	j	matrix spike recovery low
K2503321	WR-VC-66	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.3	mg/kg	J	3.9 u	method blank contamination
K2503321	WR-VC-66	8270C	Di-n-butyl Phthalate	6.2	ug/kg	J	11 u	method blank contamination
K2503321	WR-VC-68	8270C	Di-n-butyl Phthalate	9.9	ug/kg	J	11 u	method blank contamination
K2503321	WR-VC-72	8270C	Di-n-butyl Phthalate	11	ug/kg	J	u	method blank contamination
K2503321	WR-VC-29	8270C	Di-n-butyl Phthalate	7.3	ug/kg	J	9.9 u	method blank contamination
K2503321	WR-VC-70	8270C	Di-n-butyl Phthalate	8.1	ug/kg	J	11 u	method blank contamination
K2503321	WR-VC-20	8270C	Di-n-butyl Phthalate	18	ug/kg	J	u	method blank contamination
K2503321	WR-VC-66	8270C SIM	Naphthalene	15	ug/kg	B	u	method blank contamination
K2503321	WR-VC-29	8270C SIM	Naphthalene	9.8	ug/kg	B	u	method blank contamination
K2503321	WR-VC-70	8270C SIM	Naphthalene	14	ug/kg	B	u	method blank contamination
K2503348	WR-VC-118	9030M	Sulfide, Total	22.3	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-124	9030M	Sulfide, Total	11.0	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-30	9030M	Sulfide, Total	16.9	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-42	9030M	Sulfide, Total	9.4	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-46	9030M	Sulfide, Total	30.5	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-120	9030M	Sulfide, Total	9.4	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-126	9030M	Sulfide, Total	25.6	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-134	9030M	Sulfide, Total	5.4	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-128	9030M	Sulfide, Total	7.8	mg/kg		j	duplicate RPD exceedance
K2503348	WR-VC-118	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-124	6020	Antimony	0.07	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-30	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-42	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-46	6020	Antimony	0.17	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-120	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-126	6020	Antimony	0.05	mg/kg	BN	j	matrix spike recovery low
K2503348	WR-VC-134	6020	Antimony	0.05	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-128	6020	Antimony	0.06	mg/kg	N	j	matrix spike recovery low
K2503348	WR-VC-118	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503348	WR-VC-124	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.0	mg/kg	J	4.4 u	method blank contamination
K2503348	WR-VC-46	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503348	WR-VC-30	8081A	trans-Nonachlor	0.79	ug/kg	JP	j	LCS recovery high
K2503348	WR-VC-118	8270C	Bis(2-ethylhexyl) Phthalate	49	ug/kg	B	u	method blank contamination
K2503348	WR-VC-124	8270C	Di-n-butyl Phthalate	4.9	ug/kg	J	10 u	method blank contamination
K2503348	WR-VC-124	8270C	Bis(2-ethylhexyl) Phthalate	64	ug/kg	B	u	method blank contamination
K2503348	WR-VC-30	8270C	Bis(2-ethylhexyl) Phthalate	150	ug/kg	BD	u	method blank contamination
K2503348	WR-VC-42	8270C	Bis(2-ethylhexyl) Phthalate	29	ug/kg	B	u	method blank contamination
K2503348	WR-VC-46	8270C	Bis(2-ethylhexyl) Phthalate	140	ug/kg	BJD	200 u	method blank contamination
K2503348	WR-VC-120	8270C	Bis(2-ethylhexyl) Phthalate	47	ug/kg	B	u	method blank contamination
K2503348	WR-VC-126	8270C	Di-n-butyl Phthalate	5.1	ug/kg	J	9.9 u	method blank contamination
K2503348	WR-VC-126	8270C	Bis(2-ethylhexyl) Phthalate	120	ug/kg	B	u	method blank contamination
K2503348	WR-VC-134	8270C	Di-n-butyl Phthalate	7.5	ug/kg	J	10 u	method blank contamination
K2503348	WR-VC-134	8270C	Bis(2-ethylhexyl) Phthalate	46	ug/kg	B	u	method blank contamination
K2503348	WR-VC-128	8270C	Di-n-butyl Phthalate	7.8	ug/kg	J	10 u	method blank contamination
K2503348	WR-VC-128	8270C	Bis(2-ethylhexyl) Phthalate	140	ug/kg	B	u	method blank contamination
K2503348	WR-VC-124	8270C SIM	Naphthalene	3.2	ug/kg		u	method blank contamination
K2503348	WR-VC-120	8270C SIM	Naphthalene	5.4	ug/kg		u	method blank contamination
K2503366	WR-VC-132	9030M	Sulfide, Total	51.4	mg/kg		j	duplicate RPD exceedance

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503366	WR-VC-43	9030M	Sulfide, Total	13.2	mg/kg		j	duplicate RPD exceedance
K2503366	WR-VC-31	9030M	Sulfide, Total	11.5	mg/kg		j	duplicate RPD exceedance
K2503366	WR-VC-39	9030M	Sulfide, Total	6.9	mg/kg		j	duplicate RPD exceedance
K2503366	WR-VC-132	7471A	Mercury	0.178	mg/kg		j	LCS (i.e., SRM) recovery low
K2503366	WR-VC-43	7471A	Mercury	0.058	mg/kg		j	LCS (i.e., SRM) recovery low
K2503366	WR-VC-31	7471A	Mercury	0.080	mg/kg		j	LCS (i.e., SRM) recovery low
K2503366	WR-VC-39	7471A	Mercury	0.071	mg/kg		j	LCS (i.e., SRM) recovery low
K2503366	WR-VC-132	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503366	WR-VC-43	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503366	WR-VC-31	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503366	WR-VC-39	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503366	WR-VC-132	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.2	mg/kg	J	4.3 u	method blank contamination
K2503366	WR-VC-39	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503366	WR-VC-132	8270C	Bis(2-ethylhexyl) Phthalate	37	ug/kg	B	u	method blank contamination
K2503366	WR-VC-43	8270C	Bis(2-ethylhexyl) Phthalate	68	ug/kg	B	u	method blank contamination
K2503366	WR-VC-31	8270C	Bis(2-ethylhexyl) Phthalate	38	ug/kg	B	u	method blank contamination
K2503366	WR-VC-39	8270C	Di-n-butyl Phthalate	7.2	ug/kg	J	u	method blank contamination
K2503366	WR-VC-39	8270C	Bis(2-ethylhexyl) Phthalate	66	ug/kg	B	u	method blank contamination
K2503366	WR-VC-43	8270C SIM	Naphthalene	3.2	ug/kg		u	method blank contamination
K2503366	WR-VC-31	8270C SIM	Naphthalene	5.1	ug/kg		u	method blank contamination
K2503366	WR-VC-39	8270C SIM	Naphthalene	3.2	ug/kg		u	method blank contamination
K2503393	WR-VC-106	6020	Antimony	0.62	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-108	6020	Antimony	0.94	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-114	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-116	6020	Antimony	0.06	mg/kg	BN	j	matrix spike recovery low
K2503393	WR-VC-122	6020	Antimony	0.04	mg/kg	BN	j	matrix spike recovery low
K2503393	WR-VC-110	6020	Antimony	2.01	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-49	6020	Antimony	0.07	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-57	6020	Antimony	0.06	mg/kg	BN	j	matrix spike recovery low
K2503393	WR-VC-61	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503393	WR-VC-106	NWTPH-Gx	Gasoline Range Organics-NWTPH	7.5	mg/kg	H	u	method blank contamination
K2503393	WR-VC-108	NWTPH-Gx	Gasoline Range Organics-NWTPH	18	mg/kg	H	u	method blank contamination
K2503393	WR-VC-114	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.5	mg/kg	J	4.2 u	method blank contamination
K2503393	WR-VC-49	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.8	mg/kg	J	4.2 u	method blank contamination
K2503393	WR-VC-57	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.6	mg/kg	J	4.9 u	method blank contamination
K2503393	WR-VC-61	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.4	mg/kg	J	4.0 u	method blank contamination
K2503393	WR-VC-106	8270C	Phenol	12	ug/kg	J	28 u	method blank contamination
K2503393	WR-VC-114	8270C	Phenol	25	ug/kg	J	29 u	method blank contamination
K2503393	WR-VC-122	8270C	Phenol	25	ug/kg	J	26 u	method blank contamination
K2503393	WR-VC-110	8270C	Phenol	50	ug/kg	JD	110 u	method blank contamination
K2503393	WR-VC-49	8270C	Phenol	7.4	ug/kg	J	28 u	method blank contamination
K2503393	WR-VC-106	8270C SIM	Naphthalene	12	ug/kg	B	u	method blank contamination
K2503393	WR-VC-114	8270C SIM	Naphthalene	6.2	ug/kg	B	u	method blank contamination
K2503393	WR-VC-116	8270C SIM	Naphthalene	7.1	ug/kg	B	u	method blank contamination
K2503393	WR-VC-122	8270C SIM	Naphthalene	3.1	ug/kg	B	u	method blank contamination
K2503393	WR-VC-57	8270C SIM	Naphthalene	5.2	ug/kg	B	u	method blank contamination
K2503393	WR-VC-61	8270C SIM	Naphthalene	8.1	ug/kg	B	u	method blank contamination
K2503405	WR-VC-47	6020	Antimony	0.20	mg/kg	N	j	matrix spike recovery low
K2503405	WR-VC-59	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503405	WR-VC-55	6020	Antimony	0.16	mg/kg	N	j	matrix spike recovery low
K2503405	WR-VC-41	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503405	WR-VC-45	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503405	WR-VC-55	NWTPH-Gx	Gasoline Range Organics-NWTPH	1.9	mg/kg	J	4.1 u	method blank contamination
K2503405	WR-VC-47	8270C	Phenol	7.5	ug/kg	J	28 u	method blank contamination
K2503405	WR-VC-59	8270C	Phenol	15	ug/kg	J	26 u	method blank contamination
K2503405	WR-VC-55	8270C	Bis(2-ethylhexyl) Phthalate	47	ug/kg		u	method blank contamination
K2503405	WR-VC-41	8270C	Phenol	12	ug/kg	J	31 u	method blank contamination
K2503405	WR-VC-41	8270C	Bis(2-ethylhexyl) Phthalate	70	ug/kg		u	method blank contamination
K2503405	WR-VC-47	8270C SIM	Naphthalene	4.0	ug/kg	B	u	method blank contamination
K2503405	WR-VC-59	8270C SIM	Naphthalene	11	ug/kg	B	u	method blank contamination
K2503405	WR-VC-55	8270C SIM	Naphthalene	8.2	ug/kg	B	u	method blank contamination
K2503405	WR-VC-41	8270C SIM	Naphthalene	2.6	ug/kg	BJ	2.6 u	method blank contamination
K2503405	WR-VC-45	8270C SIM	Naphthalene	11	ug/kg	B	u	method blank contamination
K2503424	WR-VC-51	350.1M	Ammonia as Nitrogen	138	mg/kg		j	holding time exceedance
K2503424	WR-VC-53	350.1M	Ammonia as Nitrogen	150	mg/kg		j	holding time exceedance
K2503424	WR-VC-130	350.1M	Ammonia as Nitrogen	250	mg/kg		j	holding time exceedance
K2503424	WR-VC-51	PSEP	Carbon, Total Organic	1.64	percent		j	holding time exceedance
K2503424	WR-VC-53	PSEP	Carbon, Total Organic	1.43	percent		j	holding time exceedance
K2503424	WR-VC-130	PSEP	Carbon, Total Organic	0.71	percent		j	holding time exceedance

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503424	WR-VC-51	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503424	WR-VC-53	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503424	WR-VC-130	6020	Antimony	0.16	mg/kg	N	j	matrix spike recovery low
K2503424	WR-VC-51	8270C	Phenol	8.8	ug/kg	J	26 u	method blank contamination
K2503424	WR-VC-53	8270C	Phenol	23	ug/kg	J	23 u	method blank contamination
K2503424	WR-VC-130	8270C	Bis(2-ethylhexyl) Phthalate	41	ug/kg		u	method blank contamination
K2503424	WR-VC-51	8270C SIM	Naphthalene	4.1	ug/kg	B	u	method blank contamination
K2503424	WR-VC-53	8270C SIM	Naphthalene	5.3	ug/kg	B	u	method blank contamination
K2503429	WR-VC-58	350.1M	Ammonia as Nitrogen	62.7	mg/kg		j	holding time exceedance
K2503429	WR-VC-62	350.1M	Ammonia as Nitrogen	203	mg/kg		j	holding time exceedance
K2503429	WR-VC-17	350.1M	Ammonia as Nitrogen	177	mg/kg		j	holding time exceedance
K2503429	WR-VC-23	350.1M	Ammonia as Nitrogen	70.6	mg/kg		j	holding time exceedance
K2503429	WR-VC-33	350.1M	Ammonia as Nitrogen	76.9	mg/kg		j	holding time exceedance
K2503429	WR-VC-58	PSEP	Carbon, Total Organic	0.28	percent		j	holding time exceedance
K2503429	WR-VC-62	PSEP	Carbon, Total Organic	2.09	percent		j	holding time exceedance
K2503429	WR-VC-17	PSEP	Carbon, Total Organic	1.56	percent		j	holding time exceedance
K2503429	WR-VC-23	PSEP	Carbon, Total Organic	1.51	percent		j	holding time exceedance
K2503429	WR-VC-33	PSEP	Carbon, Total Organic	1.97	percent		j	holding time exceedance
K2503429	WR-VC-58	6020	Cadmium	0.206	mg/kg		u	method blank contamination
K2503429	WR-VC-58	6020	Selenium	0.13	mg/kg		u	method blank contamination
K2503429	WR-VC-62	6020	Selenium	0.22	mg/kg		u	method blank contamination
K2503429	WR-VC-17	6020	Selenium	0.20	mg/kg		u	method blank contamination
K2503429	WR-VC-23	6020	Selenium	0.17	mg/kg		u	method blank contamination
K2503429	WR-VC-58	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503429	WR-VC-62	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503429	WR-VC-17	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503429	WR-VC-23	6020	Antimony	0.53	mg/kg	N	j	matrix spike recovery low
K2503429	WR-VC-33	6020	Antimony	0.07	mg/kg	N	j	matrix spike recovery low
K2503429	WR-VC-33	NWTPH-Gx	Gasoline Range Organics-NWTPH	4.3	mg/kg	H	u	method blank contamination
K2503429	WR-VC-58	8081A	Hexachlorobenzene	1.1	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	gamma-Chlordane	0.83	ug/kg	P	j	surrogate recovery high
K2503429	WR-VC-58	8081A	4,4'-DDE	4.4	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	4,4'-DDD	22	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	Endosulfan sulfate	0.77	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	4,4'-DDT	48	ug/kg	D	j	surrogate recovery high
K2503429	WR-VC-58	8081A	Endrin Ketone	1.2	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	Hexachloroethane	0.77	ug/kg		j	surrogate recovery high
K2503429	WR-VC-58	8081A	Hexachlorobutadiene	0.49	ug/kg	JP	j	surrogate recovery high
K2503429	WR-VC-58	8270C	Di-n-butyl Phthalate	4.5	ug/kg	J	7.1 u	method blank contamination
K2503429	WR-VC-58	8270C	Bis(2-ethylhexyl) Phthalate	30	ug/kg	B	u	method blank contamination
K2503429	WR-VC-62	8270C	Di-n-butyl Phthalate	11	ug/kg		u	method blank contamination
K2503429	WR-VC-62	8270C	Bis(2-ethylhexyl) Phthalate	120	ug/kg	B	u	method blank contamination
K2503429	WR-VC-17	8270C	Di-n-butyl Phthalate	6.6	ug/kg	J	9.4 u	method blank contamination
K2503429	WR-VC-17	8270C	Bis(2-ethylhexyl) Phthalate	71	ug/kg	B	u	method blank contamination
K2503429	WR-VC-23	8270C	Bis(2-ethylhexyl) Phthalate	100	ug/kg	BD	u	method blank contamination
K2503429	WR-VC-33	8270C	N-Nitrosodiphenylamine	3.7	ug/kg	J	6.8 u	method blank contamination
K2503429	WR-VC-33	8270C	Bis(2-ethylhexyl) Phthalate	63	ug/kg	B	u	method blank contamination
K2503429	WR-VC-33	8270C SIM	Naphthalene	2.8	ug/kg	B	u	method blank contamination
K2503436	WR-PG-01-Ref	6020	Selenium	0.07	mg/kg	B	u	method blank contamination
K2503436	WR-PG-02-Ref	6020	Selenium	0.04	mg/kg	B	u	method blank contamination
K2503436	WR-PG-01-Ref	6020	Antimony	0.06	mg/kg	N	j	matrix spike recovery low
K2503436	WR-PG-02-Ref	6020	Antimony	0.06	mg/kg	N	j	matrix spike recovery low
K2503436	WR-PG-03-Ref	6020	Antimony	0.07	mg/kg	N	j	matrix spike recovery low
K2503436	WR-PG-02-Ref	Krone	Di-n-butyltin	0.0019	ug/L	JP	0.060 u	method blank contamination
K2503436	WR-PG-03-Ref	Krone	Di-n-butyltin	0.0013	ug/L	J	0.050 u	method blank contamination
K2503436	WR-PG-01-Ref	8260B	Acetone	8.90	ug/kg	BJ	10 u	method blank contamination
K2503436	WR-PG-01-Ref	8260B	Methylene chloride	2.6	ug/kg	J	5.0 u	method blank contamination
K2503436	WR-PG-02-Ref	8260B	Acetone	10	ug/kg	B	u	method blank contamination
K2503436	WR-PG-02-	8260B	Carbon disulfide	0.22	ug/kg	J	0.99 u	method blank contamination

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
	Ref							
K2503436	WR-PG-02-Ref	8260B	Methylene chloride	3.0	ug/kg	J	5.0 u	method blank contamination
K2503436	WR-PG-03-Ref	8260B	Acetone	19	ug/kg	B	u	method blank contamination
K2503436	WR-PG-03-Ref	8260B	Carbon disulfide	0.34	ug/kg	J	1.1 u	method blank contamination
K2503436	WR-PG-03-Ref	8260B	Methylene chloride	3.0	ug/kg	J	5.2 u	method blank contamination
K2503436	WR-PG-01-Ref	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-01-Ref	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-02-Ref	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-02-Ref	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-03-Ref	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-03-Ref	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-01-Ref	8270C	Phenol	12	ug/kg	J	24 u	method blank contamination
K2503436	WR-PG-01-Ref	8270C	Di-n-butyl Phthalate	7.4	ug/kg	J	7.9 u	method blank contamination
K2503436	WR-PG-01-Ref	8270C	Bis(2-ethylhexyl) Phthalate	11	ug/kg	J	16 u	method blank contamination
K2503436	WR-PG-02-Ref	8270C	Phenol	11	ug/kg	J	24 u	method blank contamination
K2503436	WR-PG-02-Ref	8270C	Di-n-butyl Phthalate	7.5	ug/kg	J	7.8 u	method blank contamination
K2503436	WR-PG-02-Ref	8270C	Bis(2-ethylhexyl) Phthalate	12	ug/kg	J	16 u	method blank contamination
K2503436	WR-PG-03-Ref	8270C	Phenol	19	ug/kg	J	32 u	method blank contamination
K2503436	WR-PG-03-Ref	8270C	Di-n-butyl Phthalate	8.2	ug/kg	J	11 u	method blank contamination
K2503436	WR-PG-03-Ref	8270C	Bis(2-ethylhexyl) Phthalate	19	ug/kg	J	22 u	method blank contamination
K2503436	WR-PG-01-Ref	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-02-Ref	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-03-Ref	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503436	WR-PG-01-Ref	8270C SIM	Naphthalene	3.6	ug/kg	B	u	method blank contamination
K2503436	WR-PG-02-Ref	8270C SIM	Naphthalene	2.9	ug/kg	B	u	method blank contamination
K2503436	WR-PG-03-Ref	8270C SIM	Naphthalene	4.4	ug/kg	B	u	method blank contamination
K2503436	WR-PG-01-Ref	1613	1,2,3,4,6,7,8-HpCDF	0.706	ng/kg	JB	u	method blank contamination
K2503438	WR-PG-126	7742	Selenium	0.07	mg/kg	B	0.09 u	method blank contamination
K2503438	WR-PG-63	7742	Selenium	0.09	mg/kg	B	0.10 u	method blank contamination
K2503438	WR-PG-61	7742	Selenium	0.10	mg/kg		u	method blank contamination
K2503438	WR-PG-108	7742	Selenium	0.05	mg/kg	B	0.12 u	method blank contamination
K2503438	WR-PG-134	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-132	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-130	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-128	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-126	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-124	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-122	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-120	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-118	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-116	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-114	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-63	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503438	WR-PG-61	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-112	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-108	6020	Antimony	1.27	mg/kg	N	j	matrix spike recovery low
K2503438	WR-PG-114	NWTPH-Dx	Residual Range Organics (RRO)	900	mg/kg	Z	j	surrogate recovery high
K2503438	WR-PG-120	NWTPH-Gx	Gasoline Range Organics-NWTPH	7.1	mg/kg	J	8.0 uj	method blank contamination, surrogate recovery low
K2503438	WR-PG-114	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503438	WR-PG-134	Krone	Di-n-butyltin	0.0013	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-132	Krone	Di-n-butyltin	0.0020	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-130	Krone	Di-n-butyltin	0.0020	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-128	Krone	Di-n-butyltin	0.0020	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-124	Krone	Di-n-butyltin	0.0024	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-122	Krone	Di-n-butyltin	0.0028	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-120	Krone	Di-n-butyltin	0.0015	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-118	Krone	Di-n-butyltin	0.0014	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-116	Krone	Di-n-butyltin	0.0036	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-114	Krone	Di-n-butyltin	0.0019	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-63	Krone	Di-n-butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-61	Krone	Di-n-butyltin	0.0019	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-112	Krone	Di-n-butyltin	0.0022	ug/L	J	0.050 u	method blank contamination
K2503438	WR-PG-108	Krone	Di-n-butyltin	0.0044	ug/L	J	0.052 u	method blank contamination
K2503438	WR-PG-134	8270C	Phenol	22	ug/kg	J	31 u	method blank contamination
K2503438	WR-PG-134	8270C	Di-n-butyl Phthalate	9.9	ug/kg	J	11 u	method blank contamination
K2503438	WR-PG-132	8270C	Phenol	21	ug/kg	J	39 u	method blank contamination
K2503438	WR-PG-132	8270C	Di-n-butyl Phthalate	14	ug/kg	J	14 u	method blank contamination
K2503438	WR-PG-130	8270C	Phenol	17	ug/kg	J	32 u	method blank contamination
K2503438	WR-PG-130	8270C	Di-n-butyl Phthalate	15	ug/kg		u	method blank contamination
K2503438	WR-PG-128	8270C	Phenol	12	ug/kg	J	34 u	method blank contamination
K2503438	WR-PG-128	8270C	Di-n-butyl Phthalate	9.1	ug/kg	J	12 u	method blank contamination
K2503438	WR-PG-126	8270C	Phenol	11	ug/kg	J	30 u	method blank contamination
K2503438	WR-PG-126	8270C	Di-n-butyl Phthalate	11	ug/kg		u	method blank contamination
K2503438	WR-PG-124	8270C	Phenol	20	ug/kg	J	34 u	method blank contamination
K2503438	WR-PG-124	8270C	Di-n-butyl Phthalate	17	ug/kg		u	method blank contamination
K2503438	WR-PG-122	8270C	Phenol	26	ug/kg	J	37 u	method blank contamination
K2503438	WR-PG-122	8270C	Di-n-butyl Phthalate	21	ug/kg		u	method blank contamination
K2503438	WR-PG-120	8270C	Phenol	37	ug/kg	J	54 u	method blank contamination
K2503438	WR-PG-120	8270C	Di-n-butyl Phthalate	22	ug/kg		u	method blank contamination
K2503438	WR-PG-118	8270C	Phenol	23	ug/kg	J	37 u	method blank contamination
K2503438	WR-PG-118	8270C	Di-n-butyl Phthalate	11	ug/kg	J	13 u	method blank contamination
K2503438	WR-PG-116	8270C	Phenol	22	ug/kg	J	36 u	method blank contamination
K2503438	WR-PG-116	8270C	Di-n-butyl Phthalate	10	ug/kg	J	12 u	method blank contamination
K2503438	WR-PG-114	8270C	Phenol	20	ug/kg	J	35 u	method blank contamination
K2503438	WR-PG-114	8270C	Di-n-butyl Phthalate	8.5	ug/kg	J	12 u	method blank contamination
K2503438	WR-PG-63	8270C	Bis(2-ethylhexyl) Phthalate	120	ug/kg	D	u	method blank contamination
K2503438	WR-PG-61	8270C	Phenol	12	ug/kg	J	33 u	method blank contamination
K2503438	WR-PG-61	8270C	Di-n-butyl Phthalate	10	ug/kg	J	11 u	method blank contamination
K2503438	WR-PG-112	8270C	Phenol	26	ug/kg	J	38 u	method blank contamination
K2503438	WR-PG-112	8270C	Di-n-butyl Phthalate	18	ug/kg		u	method blank contamination
K2503438	WR-PG-108	8270C	Di-n-butyl Phthalate	9.7	ug/kg	J	10 u	method blank contamination
K2503438	WR-PG-134	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-132	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-130	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-128	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-126	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-124	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-122	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-120	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-118	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-116	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-114	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-63	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-61	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-112	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-108	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503438	WR-PG-134	8270C SIM	Naphthalene	5.0	ug/kg	B	u	method blank contamination
K2503438	WR-PG-132	8270C SIM	Naphthalene	6.8	ug/kg	B	u	method blank contamination
K2503438	WR-PG-128	8270C SIM	Naphthalene	6.4	ug/kg	B	u	method blank contamination
K2503438	WR-PG-126	8270C SIM	Naphthalene	4.0	ug/kg	B	u	method blank contamination
K2503438	WR-PG-124	8270C SIM	Naphthalene	5.4	ug/kg	B	u	method blank contamination

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503438	WR-PG-122	8270C SIM	Naphthalene	12	ug/kg	B	u	method blank contamination
K2503438	WR-PG-120	8270C SIM	Naphthalene	7.4	ug/kg	B	u	method blank contamination
K2503438	WR-PG-118	8270C SIM	Naphthalene	5.7	ug/kg	B	u	method blank contamination
K2503438	WR-PG-116	8270C SIM	Naphthalene	6.1	ug/kg	B	u	method blank contamination
K2503438	WR-PG-114	8270C SIM	Naphthalene	5.4	ug/kg	B	u	method blank contamination
K2503438	WR-PG-63	8270C SIM	Naphthalene	14	ug/kg	B	u	method blank contamination
K2503438	WR-PG-61	8270C SIM	Naphthalene	8.1	ug/kg	B	u	method blank contamination
K2503438	WR-PG-112	8270C SIM	Naphthalene	7.7	ug/kg	B	u	method blank contamination
K2503438	WR-PG-108	8270C SIM	Naphthalene	9.7	ug/kg	B	u	method blank contamination
K2503439	WR-PG-33	6020	Cadmium	0.100	mg/kg	B	0.115 u	method blank contamination
K2503439	WR-PG-106	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503439	WR-PG-47	7742	Selenium	0.14	mg/kg		u	method blank contamination
K2503439	WR-PG-45	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503439	WR-PG-135 dup	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503439	WR-PG-43	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503439	WR-PG-41	7742	Selenium	0.11	mg/kg		u	method blank contamination
K2503439	WR-PG-39	7742	Selenium	0.14	mg/kg		u	method blank contamination
K2503439	WR-PG-136 dup	7742	Selenium	0.12	mg/kg		u	method blank contamination
K2503439	WR-PG-37	7742	Selenium	0.12	mg/kg		u	method blank contamination
K2503439	WR-PG-35	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503439	WR-PG-33	7742	Selenium	0.07	mg/kg	B	0.11 u	method blank contamination
K2503439	WR-PG-33	6020	Silver	0.076	mg/kg		u	method blank contamination
K2503439	WR-PG-106	6020	Antimony	0.95	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-47	6020	Antimony	0.16	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-45	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-135 dup	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-43	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-41	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-39	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-136 dup	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-37	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-35	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-33	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-104	6020	Antimony	0.20	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-102	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-100	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-98	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-96	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-94	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-92	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-90	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-88	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-86	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-84	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503439	WR-PG-104	6020	Lead	72.0	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-102	6020	Lead	12.2	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-100	6020	Lead	13.2	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-98	6020	Lead	12.1	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-96	6020	Lead	13.6	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-94	6020	Lead	13.1	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-92	6020	Lead	12.6	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-90	6020	Lead	12.2	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-88	6020	Lead	13.7	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-86	6020	Lead	13.4	mg/kg	*N	j	matrix duplicate and matrix spike recovery outliers
K2503439	WR-PG-84	6020	Lead	12.4	mg/kg	*N	j	matrix duplicate and matrix

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
								spike recovery outliers
K2503439	WR-PG-104	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503439	WR-PG-100	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503439	WR-PG-94	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503439	WR-PG-92	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503439	WR-PG-88	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503439	WR-PG-37	8151M	Pentachlorophenol	1.1	ug/kg	J	j	LCS recovery high
K2503439	WR-PG-106	Krone	Di-n-butyltin	0.0033	ug/L	J	0.050 u	method blank contamination
K2503439	WR-PG-47	Krone	Di-n-butyltin	0.0022	ug/L	J	0.050 u	method blank contamination
K2503439	WR-PG-88	8260B	Acetone	22	ug/kg	B	u	method blank contamination
K2503439	WR-PG-88	8260B	Methylene Chloride	2.7	ug/kg	J	6.4 u	method blank contamination
K2503439	WR-PG-86	8260B	Acetone	33	ug/kg	B	u	method blank contamination
K2503439	WR-PG-86	8260B	Methylene Chloride	2.7	ug/kg	J	5.9 u	method blank contamination
K2503439	WR-PG-84	8260B	Acetone	27	ug/kg	B	u	method blank contamination
K2503439	WR-PG-84	8260B	Methylene Chloride	2.4	ug/kg	J	5.7 u	method blank contamination
K2503439	WR-PG-88	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-88	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-86	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-86	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-84	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-84	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-106	8270C	Di-n-butyl Phthalate	19	ug/kg	B	u	method blank contamination
K2503439	WR-PG-47	8270C	Di-n-butyl Phthalate	13	ug/kg	B	u	method blank contamination
K2503439	WR-PG-135 dup	8270C	Di-n-butyl Phthalate	7.0	ug/kg	BJ	10 u	method blank contamination
K2503439	WR-PG-43	8270C	Di-n-butyl Phthalate	6.7	ug/kg	BJ	11 u	method blank contamination
K2503439	WR-PG-41	8270C	Di-n-butyl Phthalate	15	ug/kg	B	u	method blank contamination
K2503439	WR-PG-39	8270C	Di-n-butyl Phthalate	10	ug/kg	B	u	method blank contamination
K2503439	WR-PG-136 dup	8270C	Di-n-butyl Phthalate	18	ug/kg	B	u	method blank contamination
K2503439	WR-PG-37	8270C	Di-n-butyl Phthalate	18	ug/kg	B	u	method blank contamination
K2503439	WR-PG-35	8270C	Di-n-butyl Phthalate	25	ug/kg	B	u	method blank contamination
K2503439	WR-PG-33	8270C	Di-n-butyl Phthalate	14	ug/kg	B	u	method blank contamination
K2503439	WR-PG-104	8270C	Di-n-butyl Phthalate	11	ug/kg	B	u	method blank contamination
K2503439	WR-PG-102	8270C	Di-n-butyl Phthalate	17	ug/kg	B	u	method blank contamination
K2503439	WR-PG-100	8270C	Di-n-butyl Phthalate	26	ug/kg	B	u	method blank contamination
K2503439	WR-PG-98	8270C	Di-n-butyl Phthalate	29	ug/kg	B	u	method blank contamination
K2503439	WR-PG-96	8270C	Di-n-butyl Phthalate	23	ug/kg	B	u	method blank contamination
K2503439	WR-PG-94	8270C	Di-n-butyl Phthalate	12	ug/kg	BJ	14 u	method blank contamination
K2503439	WR-PG-92	8270C	Di-n-butyl Phthalate	15	ug/kg	B	u	method blank contamination
K2503439	WR-PG-90	8270C	Di-n-butyl Phthalate	22	ug/kg	BJD	28 u	method blank contamination
K2503439	WR-PG-88	8270C	Di-n-butyl Phthalate	17	ug/kg	B	u	method blank contamination
K2503439	WR-PG-86	8270C	Phenol	26	ug/kg	J	40 u	method blank contamination
K2503439	WR-PG-86	8270C	Bis(2-ethylhexyl) Phthalate	85	ug/kg		u	method blank contamination
K2503439	WR-PG-84	8270C	Phenol	38	ug/kg		u	method blank contamination
K2503439	WR-PG-106	8270C	Bis(2-ethylhexyl) Phthalate	230	ug/kg		j	LCS recovery high
K2503439	WR-PG-47	8270C	Bis(2-ethylhexyl) Phthalate	76	ug/kg		j	LCS recovery high
K2503439	WR-PG-47	8270C	Di-n-octyl Phthalate	11	ug/kg		j	LCS recovery high
K2503439	WR-PG-45	8270C	Bis(2-ethylhexyl) Phthalate	67	ug/kg		j	LCS recovery high
K2503439	WR-PG-135 dup	8270C	Bis(2-ethylhexyl) Phthalate	44	ug/kg		j	LCS recovery high
K2503439	WR-PG-43	8270C	Bis(2-ethylhexyl) Phthalate	86	ug/kg		j	LCS recovery high
K2503439	WR-PG-41	8270C	Bis(2-ethylhexyl) Phthalate	110	ug/kg		j	LCS recovery high
K2503439	WR-PG-39	8270C	Bis(2-ethylhexyl) Phthalate	74	ug/kg		j	LCS recovery high
K2503439	WR-PG-39	8270C	Di-n-octyl Phthalate	3.7	ug/kg	J	j	LCS recovery high
K2503439	WR-PG-136 dup	8270C	Bis(2-ethylhexyl) Phthalate	84	ug/kg		j	LCS recovery high
K2503439	WR-PG-37	8270C	Bis(2-ethylhexyl) Phthalate	55	ug/kg		j	LCS recovery high
K2503439	WR-PG-35	8270C	Bis(2-ethylhexyl) Phthalate	67	ug/kg		j	LCS recovery high
K2503439	WR-PG-33	8270C	Bis(2-ethylhexyl) Phthalate	66	ug/kg		j	LCS recovery high
K2503439	WR-PG-104	8270C	Bis(2-ethylhexyl) Phthalate	62	ug/kg		j	LCS recovery high
K2503439	WR-PG-104	8270C	Di-n-octyl Phthalate	3.5	ug/kg	J	j	LCS recovery high
K2503439	WR-PG-102	8270C	Bis(2-ethylhexyl) Phthalate	110	ug/kg		j	LCS recovery high
K2503439	WR-PG-100	8270C	Bis(2-ethylhexyl) Phthalate	82	ug/kg		j	LCS recovery high
K2503439	WR-PG-98	8270C	Bis(2-ethylhexyl) Phthalate	66	ug/kg		j	LCS recovery high
K2503439	WR-PG-96	8270C	Bis(2-ethylhexyl) Phthalate	96	ug/kg		j	LCS recovery high
K2503439	WR-PG-94	8270C	Bis(2-ethylhexyl) Phthalate	76	ug/kg		j	LCS recovery high
K2503439	WR-PG-92	8270C	Bis(2-ethylhexyl) Phthalate	210	ug/kg		j	LCS recovery high
K2503439	WR-PG-90	8270C	Bis(2-ethylhexyl) Phthalate	190	ug/kg	D	j	LCS recovery high

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503439	WR-PG-88	8270C	Bis(2-ethylhexyl) Phthalate	160	ug/kg		j	LCS recovery high
K2503439	WR-PG-88	8270C	Di-n-octyl Phthalate	6.4	ug/kg	J	j	LCS recovery high
K2503439	WR-PG-106	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-47	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-45	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-135 dup	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-43	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-41	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-39	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-136 dup	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-37	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-35	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-33	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-104	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-102	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-100	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-98	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-96	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-94	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-92	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-90	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-88	8270C	3,3'-Dichlorobenzidine	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503439	WR-PG-47	8270C SIM	Naphthalene	5.3	ug/kg		u	method blank contamination
K2503439	WR-PG-45	8270C SIM	Naphthalene	2.6	ug/kg		u	method blank contamination
K2503439	WR-PG-135 dup	8270C SIM	Naphthalene	3.5	ug/kg		u	method blank contamination
K2503439	WR-PG-43	8270C SIM	Naphthalene	3.0	ug/kg		u	method blank contamination
K2503439	WR-PG-41	8270C SIM	Naphthalene	3.6	ug/kg		u	method blank contamination
K2503439	WR-PG-39	8270C SIM	Naphthalene	3.1	ug/kg		u	method blank contamination
K2503439	WR-PG-136 dup	8270C SIM	Naphthalene	4.3	ug/kg		u	method blank contamination
K2503439	WR-PG-35	8270C SIM	Naphthalene	2.8	ug/kg		u	method blank contamination
K2503439	WR-PG-33	8270C SIM	Naphthalene	2.5	ug/kg		u	method blank contamination
K2503439	WR-PG-98	8270C SIM	Naphthalene	5.7	ug/kg		u	method blank contamination
K2503439	WR-PG-96	8270C SIM	Naphthalene	5.9	ug/kg		u	method blank contamination
K2503439	WR-PG-94	8270C SIM	Naphthalene	4.4	ug/kg		u	method blank contamination
K2503439	WR-PG-92	8270C SIM	Naphthalene	7.8	ug/kg		u	method blank contamination
K2503439	WR-PG-88	8270C SIM	Naphthalene	4.4	ug/kg		u	method blank contamination
K2503439	WR-PG-86	8270C SIM	Naphthalene	5.5	ug/kg		u	method blank contamination
K2503439	WR-PG-84	8270C SIM	Naphthalene	8.3	ug/kg		u	method blank contamination
K2503440	WR-PG-82	350.1M	Ammonia as Nitrogen	183	mg/kg		j	holding time exceedance
K2503440	WR-PG-80	350.1M	Ammonia as Nitrogen	154	mg/kg		j	holding time exceedance
K2503440	WR-PG-78	350.1M	Ammonia as Nitrogen	147	mg/kg		j	holding time exceedance
K2503440	WR-PG-76	350.1M	Ammonia as Nitrogen	150	mg/kg		j	holding time exceedance
K2503440	WR-PG-74	350.1M	Ammonia as Nitrogen	216	mg/kg		j	holding time exceedance
K2503440	WR-PG-29	350.1M	Ammonia as Nitrogen	114	mg/kg		j	holding time exceedance
K2503440	WR-PG-72	350.1M	Ammonia as Nitrogen	149	mg/kg		j	holding time exceedance
K2503440	WR-PG-70	350.1M	Ammonia as Nitrogen	146	mg/kg		j	holding time exceedance
K2503440	WR-PG-68	350.1M	Ammonia as Nitrogen	72.0	mg/kg		j	holding time exceedance
K2503440	WR-PG-66	350.1M	Ammonia as Nitrogen	78.1	mg/kg		j	holding time exceedance
K2503440	WR-PG-64	350.1M	Ammonia as Nitrogen	84.7	mg/kg		j	holding time exceedance
K2503440	WR-PG-62	350.1M	Ammonia as Nitrogen	136	mg/kg		j	holding time exceedance
K2503440	WR-PG-60	350.1M	Ammonia as Nitrogen	237	mg/kg		j	holding time exceedance
K2503440	WR-PG-58	350.1M	Ammonia as Nitrogen	136	mg/kg		j	holding time exceedance
K2503440	WR-PG-56	350.1M	Ammonia as Nitrogen	143	mg/kg		j	holding time exceedance
K2503440	WR-PG-82	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-80	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-78	6020	Antimony	0.15	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-76	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-74	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-29	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-72	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-70	6020	Antimony	0.14	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-68	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-66	6020	Antimony	0.14	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-64	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-62	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503440	WR-PG-60	6020	Antimony	0.20	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-58	6020	Antimony	0.16	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-56	6020	Antimony	0.14	mg/kg	N	j	matrix spike recovery low
K2503440	WR-PG-68	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.7	mg/kg	J	5.4 u	method blank contamination
K2503440	WR-PG-60	NWTPH-Gx	Gasoline Range Organics-NWTPH	6.9	mg/kg	Z	u	method blank contamination
K2503440	WR-PG-78	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503440	WR-PG-82	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-80	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-80	Krone	n-Butyltin	0.0026	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-78	Krone	Di-n-butyltin	0.021	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-78	Krone	n-Butyltin	0.0031	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-76	Krone	Di-n-butyltin	0.023	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-76	Krone	n-Butyltin	0.0035	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-74	Krone	Di-n-butyltin	0.023	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-74	Krone	n-Butyltin	0.0040	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-29	Krone	n-Butyltin	0.0041	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-72	Krone	Di-n-butyltin	0.022	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-72	Krone	n-Butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-70	Krone	Di-n-butyltin	0.024	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-70	Krone	n-Butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-68	Krone	Di-n-butyltin	0.022	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-68	Krone	n-Butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-66	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-66	Krone	n-Butyltin	0.0031	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-64	Krone	Di-n-butyltin	0.019	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-64	Krone	n-Butyltin	0.0022	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-62	Krone	Di-n-butyltin	0.022	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-60	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-60	Krone	n-Butyltin	0.0030	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-58	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-56	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-56	Krone	n-Butyltin	0.0023	ug/L	J	0.050 u	method blank contamination
K2503440	WR-PG-74	8260B	Acetone	51	ug/kg	B	u	method blank contamination
K2503440	WR-PG-74	8260B	Methylene Chloride	2.5	ug/kg	J	6.4 u	method blank contamination
K2503440	WR-PG-72	8260B	Acetone	53	ug/kg	B	u	method blank contamination
K2503440	WR-PG-72	8260B	Carbon Disulfide	0.37	ug/kg	J	1.3 u	method blank contamination
K2503440	WR-PG-72	8260B	Methylene Chloride	2.8	ug/kg	J	6.4 u	method blank contamination
K2503440	WR-PG-70	8260B	Acetone	34	ug/kg	B	u	method blank contamination
K2503440	WR-PG-70	8260B	Methylene Chloride	2.2	ug/kg	J	5.5 u	method blank contamination
K2503440	WR-PG-68	8260B	Acetone	18	ug/kg	B	u	method blank contamination
K2503440	WR-PG-68	8260B	Methylene Chloride	2.6	ug/kg	J	5.4 u	method blank contamination
K2503440	WR-PG-66	8260B	Acetone	11	ug/kg	BJ	13 u	method blank contamination
K2503440	WR-PG-66	8260B	Methylene Chloride	3.4	ug/kg	J	6.3 u	method blank contamination
K2503440	WR-PG-64	8260B	Acetone	26	ug/kg	B	u	method blank contamination
K2503440	WR-PG-64	8260B	Methylene Chloride	2.1	ug/kg	J	5.5 u	method blank contamination
K2503440	WR-PG-62	8260B	Acetone	17	ug/kg	B	u	method blank contamination
K2503440	WR-PG-62	8260B	Methylene Chloride	3.3	ug/kg	J	5.3 u	method blank contamination
K2503440	WR-PG-60	8260B	Acetone	27	ug/kg	B	u	method blank contamination
K2503440	WR-PG-60	8260B	Carbon Disulfide	0.31	ug/kg	J	0.94 u	method blank contamination
K2503440	WR-PG-60	8260B	Methylene Chloride	3.8	ug/kg	J	4.7 u	method blank contamination
K2503440	WR-PG-58	8260B	Acetone	17	ug/kg		u	method blank contamination
K2503440	WR-PG-58	8260B	Methylene Chloride	2.0	ug/kg	J	4.5 u	method blank contamination
K2503440	WR-PG-56	8260B	Acetone	9.5	ug/kg	J	10 u	method blank contamination
K2503440	WR-PG-56	8260B	Methylene Chloride	1.5	ug/kg	J	5.0 u	method blank contamination
K2503440	WR-PG-74	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-74	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-72	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-72	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-70	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-70	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-68	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-68	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-66	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-66	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-64	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-64	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-62	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-62	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-60	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503440	WR-PG-60	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-58	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-58	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-56	8260B	Vinyl Acetate	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-56	8260B	Acrolein	ND	ug/kg	U	r	MS/MSD recovery was 0%
K2503440	WR-PG-82	8270C	Phenol	32	ug/kg		u	method blank contamination
K2503440	WR-PG-80	8270C	Phenol	29	ug/kg	J	37 u	method blank contamination
K2503440	WR-PG-80	8270C	Bis(2-ethylhexyl) Phthalate	84	ug/kg		u	method blank contamination
K2503440	WR-PG-78	8270C	Phenol	37	ug/kg	J	40 u	method blank contamination
K2503440	WR-PG-76	8270C	Phenol	23	ug/kg	J	37 u	method blank contamination
K2503440	WR-PG-76	8270C	Bis(2-ethylhexyl) Phthalate	73	ug/kg		u	method blank contamination
K2503440	WR-PG-74	8270C	Phenol	22	ug/kg	J	39 u	method blank contamination
K2503440	WR-PG-74	8270C	Bis(2-ethylhexyl) Phthalate	35	ug/kg		u	method blank contamination
K2503440	WR-PG-29	8270C	Phenol	22	ug/kg	J	36 u	method blank contamination
K2503440	WR-PG-72	8270C	Phenol	24	ug/kg	J	40 u	method blank contamination
K2503440	WR-PG-72	8270C	Bis(2-ethylhexyl) Phthalate	79	ug/kg		u	method blank contamination
K2503440	WR-PG-70	8270C	Phenol	24	ug/kg	J	35 u	method blank contamination
K2503440	WR-PG-68	8270C	Phenol	28	ug/kg	J	36 u	method blank contamination
K2503440	WR-PG-66	8270C	Phenol	18	ug/kg	J	38 u	method blank contamination
K2503440	WR-PG-64	8270C	Phenol	21	ug/kg	J	36 u	method blank contamination
K2503440	WR-PG-64	8270C	Bis(2-ethylhexyl) Phthalate	56	ug/kg		u	method blank contamination
K2503440	WR-PG-62	8270C	Phenol	14	ug/kg	J	33 u	method blank contamination
K2503440	WR-PG-62	8270C	Bis(2-ethylhexyl) Phthalate	27	ug/kg		u	method blank contamination
K2503440	WR-PG-60	8270C	Phenol	19	ug/kg	J	28 u	method blank contamination
K2503440	WR-PG-60	8270C	Bis(2-ethylhexyl) Phthalate	34	ug/kg		u	method blank contamination
K2503440	WR-PG-58	8270C	Phenol	6.8	ug/kg	J	27 u	method blank contamination
K2503440	WR-PG-58	8270C	Bis(2-ethylhexyl) Phthalate	33	ug/kg		u	method blank contamination
K2503440	WR-PG-56	8270C	Bis(2-ethylhexyl) Phthalate	35	ug/kg		u	method blank contamination
K2503440	WR-PG-82	8270C SIM	Naphthalene	6.6	ug/kg		u	method blank contamination
K2503440	WR-PG-80	8270C SIM	Naphthalene	5.5	ug/kg		u	method blank contamination
K2503440	WR-PG-78	8270C SIM	Naphthalene	8.5	ug/kg		u	method blank contamination
K2503440	WR-PG-76	8270C SIM	Naphthalene	4.7	ug/kg		u	method blank contamination
K2503440	WR-PG-74	8270C SIM	Naphthalene	5.2	ug/kg		u	method blank contamination
K2503440	WR-PG-29	8270C SIM	Naphthalene	3.8	ug/kg		u	method blank contamination
K2503440	WR-PG-72	8270C SIM	Naphthalene	4.6	ug/kg		u	method blank contamination
K2503440	WR-PG-70	8270C SIM	Naphthalene	8.0	ug/kg		u	method blank contamination
K2503440	WR-PG-66	8270C SIM	Naphthalene	4.9	ug/kg		u	method blank contamination
K2503440	WR-PG-62	8270C SIM	Naphthalene	5.4	ug/kg		u	method blank contamination
K2503444	WR-PG-15	350.1M	Ammonia as Nitrogen	149	mg/kg		j	holding time exceedance
K2503444	WR-PG-17	350.1M	Ammonia as Nitrogen	139	mg/kg		j	holding time exceedance
K2503444	WR-PG-19	350.1M	Ammonia as Nitrogen	140	mg/kg		j	holding time exceedance
K2503444	WR-PG-21	350.1M	Ammonia as Nitrogen	98	mg/kg		j	holding time exceedance
K2503444	WR-PG-23	350.1M	Ammonia as Nitrogen	95	mg/kg		j	holding time exceedance
K2503444	WR-PG-27	350.1M	Ammonia as Nitrogen	24.9	mg/kg		j	holding time exceedance
K2503444	WR-PG-137 dup	350.1M	Ammonia as Nitrogen	24.6	mg/kg		j	holding time exceedance
K2503444	WR-PG-48	350.1M	Ammonia as Nitrogen	102	mg/kg		j	holding time exceedance
K2503444	WR-PG-42	350.1M	Ammonia as Nitrogen	101	mg/kg		j	holding time exceedance
K2503444	WR-PG-138 dup	350.1M	Ammonia as Nitrogen	123	mg/kg		j	holding time exceedance
K2503444	WR-PG-36	350.1M	Ammonia as Nitrogen	121	mg/kg		j	holding time exceedance
K2503444	WR-PG-139 dup	350.1M	Ammonia as Nitrogen	121	mg/kg		j	holding time exceedance
K2503444	WR-PG-34	350.1M	Ammonia as Nitrogen	206	mg/kg		j	holding time exceedance
K2503444	WR-PG-30	350.1M	Ammonia as Nitrogen	210	mg/kg		j	holding time exceedance
K2503444	WR-PG-26	350.1M	Ammonia as Nitrogen	2.0	mg/kg		j	holding time exceedance
K2503444	WR-PG-24	350.1M	Ammonia as Nitrogen	197	mg/kg		j	holding time exceedance
K2503444	WR-PG-22	350.1M	Ammonia as Nitrogen	216	mg/kg		j	holding time exceedance
K2503444	WR-PG-18	350.1M	Ammonia as Nitrogen	154	mg/kg		j	holding time exceedance
K2503444	WR-PG-16	350.1M	Ammonia as Nitrogen	143	mg/kg		j	holding time exceedance
K2503444	WR-PG-14	350.1M	Ammonia as Nitrogen	279	mg/kg		j	holding time exceedance
K2503444	WR-PG-12	350.1M	Ammonia as Nitrogen	270	mg/kg		j	holding time exceedance
K2503444	WR-PG-06	350.1M	Ammonia as Nitrogen	139	mg/kg		j	holding time exceedance
K2503444	WR-PG-140 dup	350.1M	Ammonia as Nitrogen	142	mg/kg		j	holding time exceedance
K2503444	WR-PG-09	350.1M	Ammonia as Nitrogen	154	mg/kg		j	holding time exceedance
K2503444	WR-PG-11	350.1M	Ammonia as Nitrogen	168	mg/kg		j	holding time exceedance
K2503444	WR-PG-13	350.1M	Ammonia as Nitrogen	153	mg/kg		j	holding time exceedance
K2503444	WR-PG-15	PSEP	Carbon, Total Organic	2.02	percent		j	holding time exceedance

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503444	WR-PG-17	PSEP	Carbon, Total Organic	2.04	percent		j	holding time exceedance
K2503444	WR-PG-19	PSEP	Carbon, Total Organic	2.04	percent		j	holding time exceedance
K2503444	WR-PG-21	PSEP	Carbon, Total Organic	1.81	percent		j	holding time exceedance
K2503444	WR-PG-23	PSEP	Carbon, Total Organic	2.50	percent		j	holding time exceedance
K2503444	WR-PG-27	PSEP	Carbon, Total Organic	0.67	percent		j	holding time exceedance
K2503444	WR-PG-137 dup	PSEP	Carbon, Total Organic	0.82	percent		j	holding time exceedance
K2503444	WR-PG-48	PSEP	Carbon, Total Organic	1.97	percent		j	holding time exceedance
K2503444	WR-PG-42	PSEP	Carbon, Total Organic	2.79	percent		j	holding time exceedance
K2503444	WR-PG-138 dup	PSEP	Carbon, Total Organic	2.06	percent		j	holding time exceedance
K2503444	WR-PG-36	PSEP	Carbon, Total Organic	1.19	percent		j	holding time exceedance
K2503444	WR-PG-139 dup	PSEP	Carbon, Total Organic	1.42	percent		j	holding time exceedance
K2503444	WR-PG-34	PSEP	Carbon, Total Organic	3.02	percent		j	holding time exceedance
K2503444	WR-PG-30	PSEP	Carbon, Total Organic	2.35	percent		j	holding time exceedance
K2503444	WR-PG-26	PSEP	Carbon, Total Organic	0.21	percent		j	holding time exceedance
K2503444	WR-PG-24	PSEP	Carbon, Total Organic	2.37	percent		j	holding time exceedance
K2503444	WR-PG-22	PSEP	Carbon, Total Organic	3.13	percent		j	holding time exceedance
K2503444	WR-PG-18	PSEP	Carbon, Total Organic	1.82	percent		j	holding time exceedance
K2503444	WR-PG-16	PSEP	Carbon, Total Organic	2.78	percent		j	holding time exceedance
K2503444	WR-PG-14	PSEP	Carbon, Total Organic	2.84	percent		j	holding time exceedance
K2503444	WR-PG-12	PSEP	Carbon, Total Organic	1.80	percent		j	holding time exceedance
K2503444	WR-PG-06	PSEP	Carbon, Total Organic	2.20	percent		j	holding time exceedance
K2503444	WR-PG-140 dup	PSEP	Carbon, Total Organic	2.23	percent		j	holding time exceedance
K2503444	WR-PG-09	PSEP	Carbon, Total Organic	2.04	percent		j	holding time exceedance
K2503444	WR-PG-11	PSEP	Carbon, Total Organic	2.39	percent		j	holding time exceedance
K2503444	WR-PG-13	PSEP	Carbon, Total Organic	1.93	percent		j	holding time exceedance
K2503444	WR-PG-21	7742	Selenium	0.15	mg/kg		u	method blank contamination
K2503444	WR-PG-27	7742	Selenium	0.10	mg/kg	B	0.11 u	method blank contamination
K2503444	WR-PG-137 dup	7742	Selenium	0.14	mg/kg		u	method blank contamination
K2503444	WR-PG-42	7742	Selenium	0.14	mg/kg		u	method blank contamination
K2503444	WR-PG-139 dup	7742	Selenium	0.15	mg/kg		u	method blank contamination
K2503444	WR-PG-26	7742	Selenium	0.10	mg/kg	B	0.10 u	method blank contamination
K2503444	WR-PG-16	7742	Selenium	0.13	mg/kg		u	method blank contamination
K2503444	WR-PG-15	6020	Antimony	0.14	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-17	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-19	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-21	6020	Antimony	0.16	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-23	6020	Antimony	0.76	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-27	6020	Antimony	0.23	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-137 dup	6020	Antimony	0.68	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-48	6020	Antimony	0.66	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-42	6020	Antimony	1.48	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-138 dup	6020	Antimony	0.36	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-36	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-139 dup	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-34	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-30	6020	Antimony	0.20	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-26	6020	Antimony	0.03	mg/kg	N	uj	matrix spike recovery low
K2503444	WR-PG-24	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-22	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-18	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-16	6020	Antimony	0.18	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-14	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-12	6020	Antimony	0.09	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-06	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-140 dup	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-09	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-11	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-13	6020	Antimony	0.08	mg/kg	N	j	matrix spike recovery low
K2503444	WR-PG-15	Krone	Di-n-butyltin	0.017	ug/L	J	0.050 u	method blank contamination

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503444	WR-PG-15	Krone	n-Butyltin	0.0021	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-17	Krone	Di-n-butyltin	0.014	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-17	Krone	n-Butyltin	0.0021	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-19	Krone	Di-n-butyltin	0.017	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-19	Krone	n-Butyltin	0.0037	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-21	Krone	Di-n-butyltin	0.013	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-21	Krone	n-Butyltin	0.0021	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-23	Krone	Di-n-butyltin	0.001	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-27	Krone	Di-n-butyltin	0.049	ug/L	J	0.19 u	method blank contamination
K2503444	WR-PG-27	Krone	n-Butyltin	0.0081	ug/L	J	0.19 u	method blank contamination
K2503444	WR-PG-137 dup	Krone	Di-n-butyltin	0.032	ug/L	J	0.14 u	method blank contamination
K2503444	WR-PG-137 dup	Krone	n-Butyltin	0.0061	ug/L	J	0.14 u	method blank contamination
K2503444	WR-PG-48	Krone	Di-n-butyltin	0.015	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-48	Krone	n-Butyltin	0.0020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-42	Krone	Di-n-butyltin	0.015	ug/L	J	0.055 u	method blank contamination
K2503444	WR-PG-42	Krone	n-Butyltin	0.0026	ug/L	J	0.055 u	method blank contamination
K2503444	WR-PG-138 dup	Krone	Di-n-butyltin	0.017	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-138 dup	Krone	n-Butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-36	Krone	Di-n-butyltin	0.019	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-36	Krone	n-Butyltin	0.0029	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-139 dup	Krone	Di-n-butyltin	0.019	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-139 dup	Krone	n-Butyltin	0.0031	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-34	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-34	Krone	n-Butyltin	0.0027	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-30	Krone	Di-n-butyltin	0.017	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-30	Krone	n-Butyltin	0.0023	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-24	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-24	Krone	n-Butyltin	0.0026	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-22	Krone	Di-n-butyltin	0.016	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-22	Krone	n-Butyltin	0.0027	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-18	Krone	Di-n-butyltin	0.015	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-18	Krone	n-Butyltin	0.0038	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-16	Krone	Di-n-butyltin	0.015	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-16	Krone	n-Butyltin	0.0044	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-14	Krone	Di-n-butyltin	0.015	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-12	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-12	Krone	n-Butyltin	0.0018	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-06	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-140 dup	Krone	Di-n-butyltin	0.021	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-140 dup	Krone	n-Butyltin	0.0058	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-09	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-09	Krone	n-Butyltin	0.0020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-11	Krone	Di-n-butyltin	0.026	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-11	Krone	n-Butyltin	0.0024	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-13	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-13	Krone	n-Butyltin	0.0023	ug/L	J	0.050 u	method blank contamination
K2503444	WR-PG-23	NWTPH-Gx	Gasoline Range Organics-NWTPH	5.4	mg/kg	J	5.5 u	method blank contamination
K2503444	WR-PG-27	NWTPH-Gx	Gasoline Range Organics-NWTPH	2.9	mg/kg	J	4.2 u	method blank contamination
K2503444	WR-PG-137 dup	NWTPH-Gx	Gasoline Range Organics-NWTPH	1.8	mg/kg	J	5.0 uj	method blank contamination, surrogate recovery low
K2503444	WR-PG-139 dup	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-34	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-30	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-24	NWTPH-Gx	Gasoline Range Organics-NWTPH	6.4	mg/kg	Z	u	method blank contamination
K2503444	WR-PG-18	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-14	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-06	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-140 dup	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-09	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503444	WR-PG-11	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-13	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503444	WR-PG-42	8260B	Acetone	13	ug/kg		u	method blank contamination
K2503444	WR-PG-42	8260B	Methylene Chloride	1.5	ug/kg	J	5.0 u	method blank contamination
K2503444	WR-PG-42	8260B	Benzene	0.070	ug/kg	J	1.0 u	method blank contamination
K2503444	WR-PG-14	8260B	Acetone	30	ug/kg		u	method blank contamination
K2503444	WR-PG-14	8260B	Methylene Chloride	2.0	ug/kg	J	6.0 u	method blank contamination
K2503444	WR-PG-15	8270C	Phenol	12	ug/kg	J	32 u	method blank contamination
K2503444	WR-PG-17	8270C	Phenol	21	ug/kg	J	33 u	method blank contamination
K2503444	WR-PG-23	8270C	Phenol	17	ug/kg	J	31 u	method blank contamination
K2503444	WR-PG-27	8270C	Bis(2-ethylhexyl) Phthalate	330	ug/kg	D	u	method blank contamination
K2503444	WR-PG-137 dup	8270C	Bis(2-ethylhexyl) Phthalate	270	ug/kg	D	u	method blank contamination
K2503444	WR-PG-48	8270C	Bis(2-ethylhexyl) Phthalate	57	ug/kg	JD	220 u	method blank contamination
K2503444	WR-PG-138 dup	8270C	Bis(2-ethylhexyl) Phthalate	99	ug/kg	JD	110 u	method blank contamination
K2503444	WR-PG-36	8270C	Phenol	92	ug/kg	J	29 u	method blank contamination
K2503444	WR-PG-36	8270C	Bis(2-ethylhexyl) Phthalate	44	ug/kg		u	method blank contamination
K2503444	WR-PG-139 dup	8270C	Bis(2-ethylhexyl) Phthalate	46	ug/kg	D	u	method blank contamination
K2503444	WR-PG-34	8270C	Phenol	15	ug/kg	J	41 u	method blank contamination
K2503444	WR-PG-34	8270C	Bis(2-ethylhexyl) Phthalate	60	ug/kg		u	method blank contamination
K2503444	WR-PG-30	8270C	Phenol	11	ug/kg	J	36 u	method blank contamination
K2503444	WR-PG-30	8270C	Bis(2-ethylhexyl) Phthalate	39	ug/kg		u	method blank contamination
K2503444	WR-PG-26	8270C	Phenol	7.8	ug/kg	J	30 u	method blank contamination
K2503444	WR-PG-26	8270C	Bis(2-ethylhexyl) Phthalate	15	ug/kg	J	20 u	method blank contamination
K2503444	WR-PG-24	8270C	Phenol	16	ug/kg	J	34 u	method blank contamination
K2503444	WR-PG-22	8270C	Phenol	16	ug/kg	J	38 u	method blank contamination
K2503444	WR-PG-22	8270C	Bis(2-ethylhexyl) Phthalate	37	ug/kg		u	method blank contamination
K2503444	WR-PG-18	8270C	Bis(2-ethylhexyl) Phthalate	69	ug/kg	JD	110 u	method blank contamination
K2503444	WR-PG-16	8270C	Bis(2-ethylhexyl) Phthalate	73	ug/kg		u	method blank contamination
K2503444	WR-PG-14	8270C	Phenol	14	ug/kg	J	38 u	method blank contamination
K2503444	WR-PG-12	8270C	Phenol	6.0	ug/kg	J	32 u	method blank contamination
K2503444	WR-PG-12	8270C	Di-n-butyl Phthalate	5.9	ug/kg	J	5.9 u	method blank contamination
K2503444	WR-PG-12	8270C	Bis(2-ethylhexyl) Phthalate	33	ug/kg		u	method blank contamination
K2503444	WR-PG-06	8270C	Phenol	13	ug/kg	J	35 u	method blank contamination
K2503444	WR-PG-06	8270C	Di-n-butyl Phthalate	9.8	ug/kg	J	12 u	method blank contamination
K2503444	WR-PG-140 dup	8270C	Phenol	11	ug/kg	J	36 u	method blank contamination
K2503444	WR-PG-140 dup	8270C	Di-n-butyl Phthalate	7.0	ug/kg	J	12 u	method blank contamination
K2503444	WR-PG-140 dup	8270C	Bis(2-ethylhexyl) Phthalate	35	ug/kg		u	method blank contamination
K2503444	WR-PG-09	8270C	Phenol	10	ug/kg	J	35 u	method blank contamination
K2503444	WR-PG-09	8270C	Di-n-butyl Phthalate	12	ug/kg		u	method blank contamination
K2503444	WR-PG-11	8270C	Phenol	19	ug/kg	J	37 u	method blank contamination
K2503444	WR-PG-11	8270C	Di-n-butyl Phthalate	15	ug/kg		u	method blank contamination
K2503444	WR-PG-13	8270C	Bis(2-ethylhexyl) Phthalate	38	ug/kg	JD	110 u	method blank contamination
K2503444	WR-PG-15	8270C SIM	Naphthalene	12	ug/kg		u	method blank contamination
K2503444	WR-PG-137 dup	8270C SIM	Naphthalene	10	ug/kg		u	method blank contamination
K2503444	WR-PG-42	8270C SIM	Naphthalene	520	ug/kg	D	u	method blank contamination
K2503444	WR-PG-26	8270C SIM	Naphthalene	3.7	ug/kg		u	method blank contamination
K2503444	WR-PG-22	8270C SIM	Naphthalene	9.4	ug/kg		u	method blank contamination
K2503444	WR-PG-09	8270C SIM	Naphthalene	8.6	ug/kg		u	method blank contamination
K2503446	WR-PG-01	7742	Selenium	0.20	mg/kg		u	method blank contamination
K2503446	WR-PG-141 dup	7742	Selenium	0.20	mg/kg		u	method blank contamination
K2503446	WR-PG-03	7742	Selenium	0.19	mg/kg		u	method blank contamination
K2503446	WR-PG-04	7742	Selenium	0.20	mg/kg		u	method blank contamination
K2503446	WR-PG-50	7742	Selenium	0.21	mg/kg		u	method blank contamination
K2503446	WR-PG-54	7742	Selenium	0.22	mg/kg		u	method blank contamination
K2503446	WR-PG-01	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-02	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-141 dup	6020	Antimony	0.13	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-03	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-04	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-50	6020	Antimony	0.10	mg/kg	N	j	matrix spike recovery low

SR#	Sample	Method	Analyte	Result	Unit	Lab Flag	Qualifier	Reason
K2503446	WR-PG-52	6020	Antimony	0.12	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-54	6020	Antimony	0.11	mg/kg	N	j	matrix spike recovery low
K2503446	WR-PG-01	Krone	Di-n-butyltin	0.020	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-01	Krone	n-Butyltin	0.0030	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-02	Krone	Di-n-butyltin	0.021	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-02	Krone	n-Butyltin	0.0034	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-141 dup	Krone	Di-n-butyltin	0.019	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-141 dup	Krone	n-Butyltin	0.0018	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-03	Krone	Di-n-butyltin	0.018	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-04	Krone	Di-n-butyltin	0.021	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-04	Krone	n-Butyltin	0.0023	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-50	Krone	Di-n-butyltin	0.024	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-50	Krone	n-Butyltin	0.0027	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-52	Krone	Di-n-butyltin	0.033	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-52	Krone	n-Butyltin	0.0038	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-54	Krone	Di-n-butyltin	0.015	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-54	Krone	n-Butyltin	0.0023	ug/L	J	0.050 u	method blank contamination
K2503446	WR-PG-01	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-02	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-141 dup	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-03	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-04	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-50	NWTPH-Gx	Gasoline Range Organics-NWTPH	7.0	mg/kg	Z	uj	method blank contamination, surrogate recovery low
K2503446	WR-PG-52	NWTPH-Gx	Gasoline Range Organics-NWTPH	3.8	mg/kg	J	3.8 uj	method blank contamination
K2503446	WR-PG-54	NWTPH-Gx	Gasoline Range Organics-NWTPH	ND	mg/kg	U	uj	surrogate recovery low
K2503446	WR-PG-50	8260B	Acetone	54	ug/kg		u	method blank contamination
K2503446	WR-PG-50	8260B	Carbon Disulfide	0.45	ug/kg	J	1.2 u	method blank contamination
K2503446	WR-PG-50	8260B	Methylene Chloride	1.3	ug/kg	J	5.9 u	method blank contamination
K2503446	WR-PG-50	8260B	Benzene	0.12	ug/kg	J	1.2 u	method blank contamination
K2503446	WR-PG-50	8260B	Chlorobenzene	0.29	ug/kg	J	1.2 u	method blank contamination
K2503446	WR-PG-52	8260B	Acetone	15	ug/kg		u	method blank contamination
K2503446	WR-PG-52	8260B	Methylene Chloride	1.0	ug/kg	J	5.1 u	method blank contamination
K2503446	WR-PG-52	8260B	Benzene	0.10	ug/kg	J	1.1 u	method blank contamination
K2503446	WR-PG-54	8260B	Acetone	26	ug/kg		u	method blank contamination
K2503446	WR-PG-54	8260B	Methylene Chloride	1.3	ug/kg	J	5.5 u	method blank contamination
K2503446	WR-PG-01	8270C	Phenol	16	ug/kg	J	39 u	method blank contamination
K2503446	WR-PG-01	8270C	Di-n-butyl Phthalate	13	ug/kg		u	method blank contamination
K2503446	WR-PG-02	8270C	Phenol	22	ug/kg	J	40 u	method blank contamination
K2503446	WR-PG-02	8270C	Di-n-butyl Phthalate	14	ug/kg		u	method blank contamination
K2503446	WR-PG-141 dup	8270C	Phenol	14	ug/kg	J	39 u	method blank contamination
K2503446	WR-PG-141 dup	8270C	Di-n-butyl Phthalate	8.7	ug/kg	J	13 u	method blank contamination
K2503446	WR-PG-141 dup	8270C	Bis(2-ethylhexyl) Phthalate	45	ug/kg		u	method blank contamination
K2503446	WR-PG-03	8270C	Phenol	16	ug/kg	J	37 u	method blank contamination
K2503446	WR-PG-03	8270C	Di-n-butyl Phthalate	12	ug/kg	J	13 u	method blank contamination
K2503446	WR-PG-04	8270C	Bis(2-ethylhexyl) Phthalate	54	ug/kg	JD	99 u	method blank contamination
K2503446	WR-PG-54	8270C	Bis(2-ethylhexyl) Phthalate	78	ug/kg	JD	230 u	method blank contamination
K2503446	WR-PG-01	8270C SIM	Naphthalene	9.2	ug/kg		u	method blank contamination
K2503446	WR-PG-141 dup	8270C SIM	Naphthalene	8.2	ug/kg		u	method blank contamination
K2503446	WR-PG-03	8270C SIM	Naphthalene	13	ug/kg		u	method blank contamination
K2503446	WR-PG-54	8270C SIM	Naphthalene	62	ug/kg	D	u	method blank contamination
K0502929	WR-PG-27	7471A	Mercury	0.042	mg/kg		j	holding time exceedance
K0502929	WR-PG-137 dup	7471A	Mercury	0.055	mg/kg		j	holding time exceedance

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