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NAS PENSACOLA
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FINAL REMEDIAL INVESTIGATION REPORT VOLUME 5 OF 11 SITE 41 NAS PENSACOLA FL
8/17/2005
ENSAFE/ALLEN AND HOSHALL

FINAL REMEDIAL INVESTIGATION REPORT
SITE 41 — OPERABLE UNIT 16 — NAS PENSACOLA WETLANDS

NAVAL AIR STATION
PENSACOLA, FLORIDA

SOUTHNAVFACENGCOM
CONTRACT NUMBER: N62467-89-D-0318

CTO-036

VOLUME IV OF XI
SECTION 11

Prepared for:

Comprehensive Long-Term
Environmental Action Navy
Naval Air Station
Pensacola, Florida

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August 17, 2005
Revised November 16, 2007

11.0 OU 2 — WETLANDS

OU 2 is located in the northeastern portion of the base and is roughly 300 acres in size (Figure 11-1). OU 2 includes Sites 11 (North Chevalier Disposal Area), 12 (Scrap Bins), 25 (Radium Spill Area), 26 (Supply Department Outside Storage Area), 27 (Radium Dial Shop), and 30 (Building 649 Complex). The investigation also included a portion of the former IWTP sewer line (Site 36) serving the OU 2 area. The assessments were conducted to evaluate the nature and extent of contamination in these areas. The OU 2 site topography is presented in Figure 11-2 and the shallow surficial potentiometric map is presented in Figure 11-3. Sample locations for OU 2 are presented on Figure 11-4.

Chronology of Events and Previous Investigations

The following is a chronology of events and previous investigations at OU 2.

1993-1995 Remedial Investigation

The *RI Report OU 2* (EnSafe, 1997b) identified several areas of contamination at the various RI sites within OU 2. Appendix A contains terrestrial site investigation summary tables including data tables from OU 2.

Site 11 is a former landfill where trenching revealed evidence of a “seam” of blackened debris at the water table containing oily metallic debris. Soil inorganic COPCs at Site 11 included arsenic, beryllium, cadmium, chromium, and iron. Soil organic COPCs included aroclor-1260 and BEQs. Groundwater inorganic COPCs included arsenic and beryllium. Groundwater organic COPCs included 1,2-DCE, aldrin, chloroform, 1,2-DCA, dieldrin, 1,1,2,2-tetrachloroethane, PCE, TCE, and vinyl chloride (EnSafe, 1997b).

At Site 12, a storage area for scrap materials, soil exceedances mainly included primary/secondary metals, PCBs, and SVOCs. Additionally, various pieces of radioactive metal debris including a radium dial were recovered during soil sampling at locations SE0101, SE0201, and SE0301 (located south of Building 455). COPCs identified in groundwater included PCBs and VOCs (EnSafe, 1997b).

At Site 25, a radium spill area that includes the area surrounding Building 780, no radium was found. However, Building 780, which formerly housed the Joint Oil Analysis Laboratory, is the source of contamination found at Site 25. Soil samples collected at this building revealed a wide range of primary and secondary metals and SVOC contamination. Adjacent wells contained primary and secondary metals and VOCs. Site 25 also includes the storage yard behind

Building 225, once used as a metal prefabricating shop by the NAS Pensacola PWC. Wells located near Building 225 contained primary and secondary metals, and VOCs. COPCs identified for Site 25 included metals, pesticides, PCBs, BEQs, and VOCs (EnSafe, 1997b).

No significant contamination was detected at Site 26. Inorganic constituents did not contribute to risk identified in Site 26 soil. Organic COPCs were limited to BEQs. Groundwater COPCs included metals, pesticides and VOCs (EnSafe, 1997b).

At Site 27, the Radium Dial Shop at the former Building 709, SVOC exceedances were noted from wells previously installed by ABB, Inc., in support of UST removals at this location. The former UST locations are likely contributors of contamination in these wells. Soil COPCs included metals, pesticides, and BEQs. Groundwater COPCs included chlorinated solvents (EnSafe, 1997b).

At Site 30 (the Building 649 complex, and Buildings 3220 and 3450), numerous former ABB, Inc., wells, which were associated with previous UST removals at the site, revealed the presence of chlorinated solvents, benzene, and phenols. Above ground storage tanks, the former USTs, and associated buried piping are considered sources for this contamination. Soil COPCs at Site 30 included metals, BEQs, and PCBs. Groundwater COPCs included metals and VOCs (EnSafe, 1997b).

For Site 36, at various places along the IWTP sewer where it parallels Wetlands 5B and 6, wells contained primary/secondary metals, pesticides, and VOCs (EnSafe, 1997b).

Site 23 Investigation

At Site 23, an area of Chevalier Field near Wetland 6 where an underground aviation gasoline pipeline leak occurred, the pipeline and several nearby USTs were removed in 1994 and the adjacent soil and groundwater were investigated by ABB, Inc. A 1998 Site Assessment Report prepared by the Navy Public Works Center determined the source of contamination had been removed and the site area was recommended for NFA (Navy Public Works Center, 1998).

OU 2 RI Addendum Sampling

At the request of the Tier 1 NAS Partnering Team, the existing data from the *RI Report OU 2* (EnSafe, 1997b) were reviewed, and a focused sampling plan was developed to assess the current state of contamination at OU 2. In 2003, new soil and groundwater data were collected and compared to previous analytical data to document changes from 1993-1995 and to support the FS. The data are summarized in the *RI Addendum OU 2 Report* (EnSafe, 2004c).

The metals data collected during this investigation indicate there continues to be a soil leachability problem at Site 11. Groundwater metals data indicate migration to surface water continues to be a problem for Wetlands 5A and 5B, 6, and 7 for a number of metals, including cadmium, chromium, iron, and manganese (EnSafe, 2004c).

For pesticides and PCBs, since the 1993-1995 RI sampling, there has been a decrease in both soil and groundwater concentrations. The pesticide and PCB data do not indicate a continuing problem with respect to the soil-to-groundwater pathway, nor the groundwater-to-surface water pathway (EnSafe, 2004c).

The soil data for SVOCs indicate there may be a continuing problem with the soil-to-groundwater pathway at isolated locations on Sites 11 and 27. The groundwater data indicate there continues to be a problem for SVOCs with respect to the groundwater-to-surface water pathway at Site 11 (Wetlands 6 and 7), the southeast corner of Site 30 (Wetlands 5B and 6), and Site 30 near Wetlands 5A and 5B. For VOCs, the soil data indicate there is not a continuing problem with the soil-to-groundwater pathway (EnSafe, 2004c).

The groundwater data indicate there continues to be a problem for VOCs with respect to the groundwater-to-surface water pathway at OU 2 on Sites 30 and 11 at following wells: 030GS111 and 030GI111 adjacent to the southern end of Wetland 6; 030GS18, adjacent to Wetland 5A; 030GS06, adjacent to Wetland 5A; 030GI170, adjacent to Wetland 5B; 011GS52, adjacent to the central portion of Wetland 6; 011GI114, adjacent to the northern portion of Wetland 6; 011GI12, adjacent to the northern portion of Wetland 6; 011GI10, adjacent to the southern portion of Wetland 7; and 011GS47 and 011GS28, both adjacent to Wetland 7 (EnSafe, 2004c).

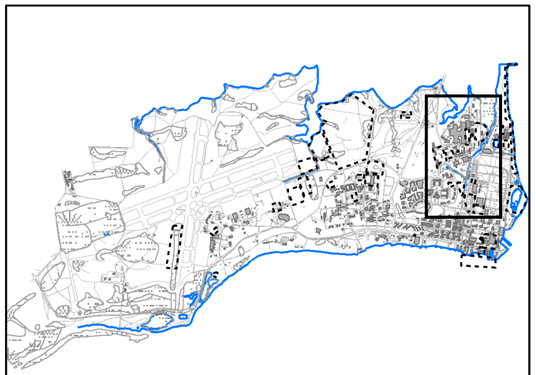
This investigation found a number of wells on Sites 11 and 30 lie immediately adjacent to surface water bodies and have concentrations above appropriate GCTLs for protection of surface water. This is being considered for groundwater alternative development for OU 2 (EnSafe, 2004c).

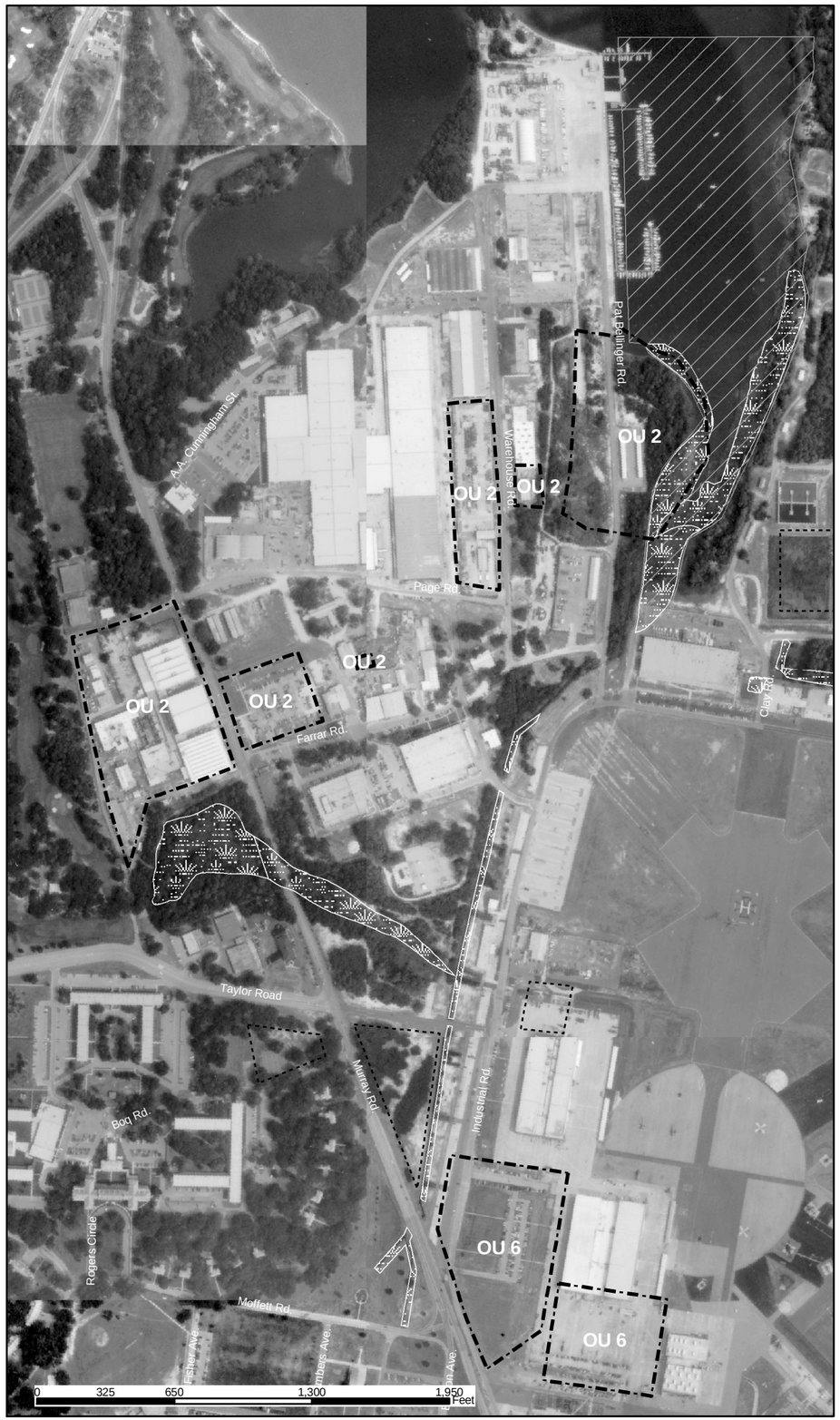
OU 2 Wetlands

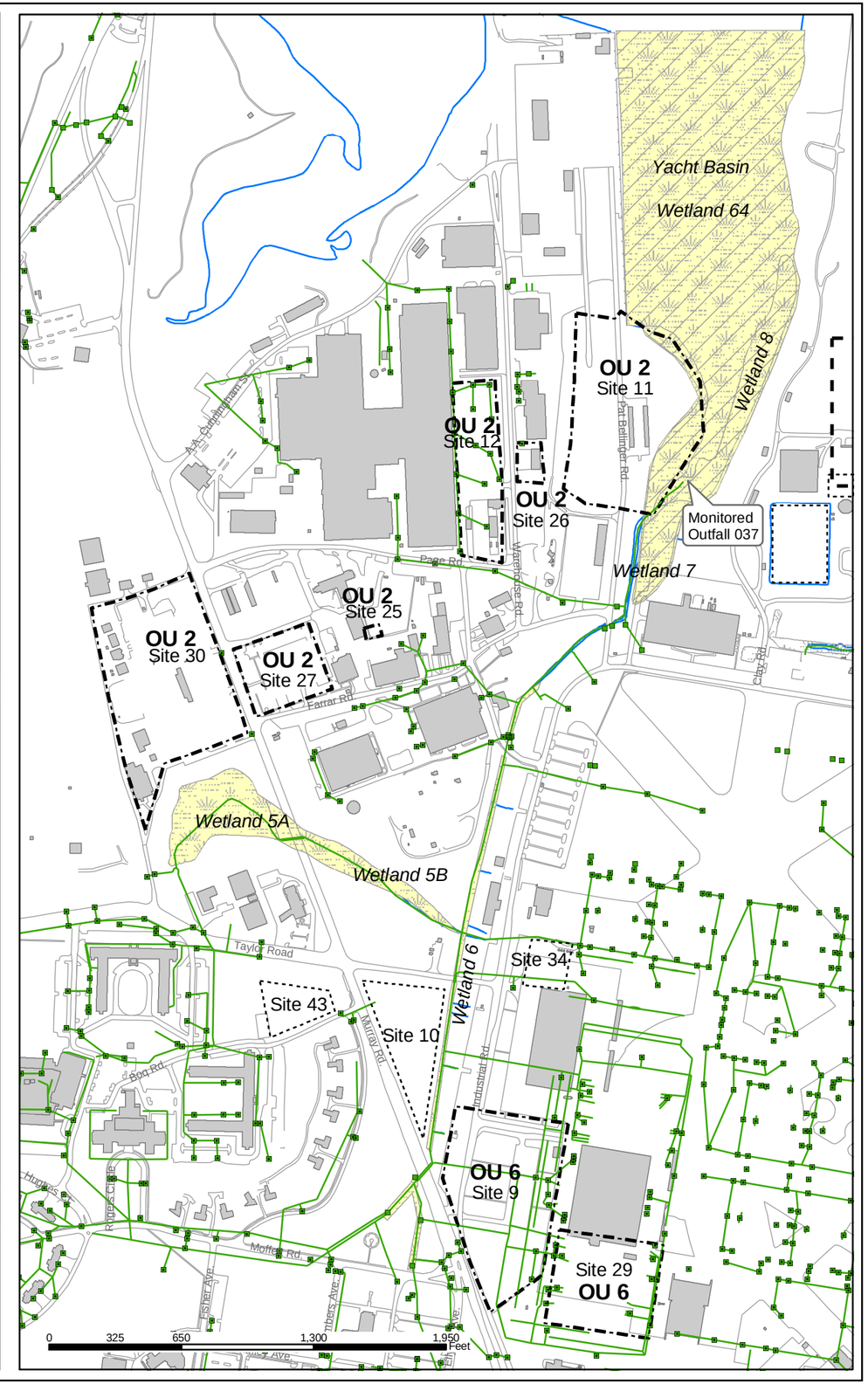
The Site 41 wetlands associated with OU 2 include Wetlands 5A, 5B, 6, and 64. Figure 11-1 shows where these wetlands are located. Wetland 5A is located south of the Building 649 complex. Wetland 5B is a drainage ditch that drains surface water from Wetland 5A to Wetland 6. Wetland 6 is a tidally influenced drainage ditch that drains surface water from the area near the

NAS Pensacola Chapel to the Yacht Basin (Wetland 64). The investigation for Wetland 64 included the Yacht Basin and Wetlands 7, 8 and 64.

This section presents the nature and extent of contamination, ecological risk assessment, fate and transport analysis, and human health risk assessment by wetland. To assist in the data evaluation, Figure 11-5 presents OU 2 Total DDT for sediment, Figure 11-6 presents the Swartz TOC normalized PAHs, and 11-7 presents the Mean ERM quotient categories. Figure 11-8 presents the chemistry and toxicity samples collected during Phases III and IV. To assess effects to selected measurement endpoints, such as the green heron, a food-chain model for all the wetlands associated with OU 2 is presented in Section 11.4.







N
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Legend

- Operable Unit (OU)
- Site
- Wetland- Approximate
- Consolidated Wetland 64
- OU2 Wetland- Approximate
- Building
- Shoreline
- Road
- Storm water Inlet
- Storm water Headwall
- Storm water Pipe

Note: Only the wetlands associated with OU2 have labels.

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FIGURE 11-1
Operable Unit 2 Wetlands and Nearby Sites

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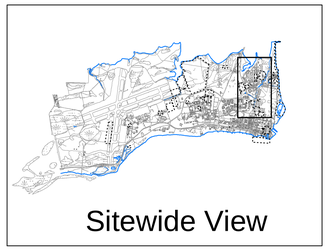

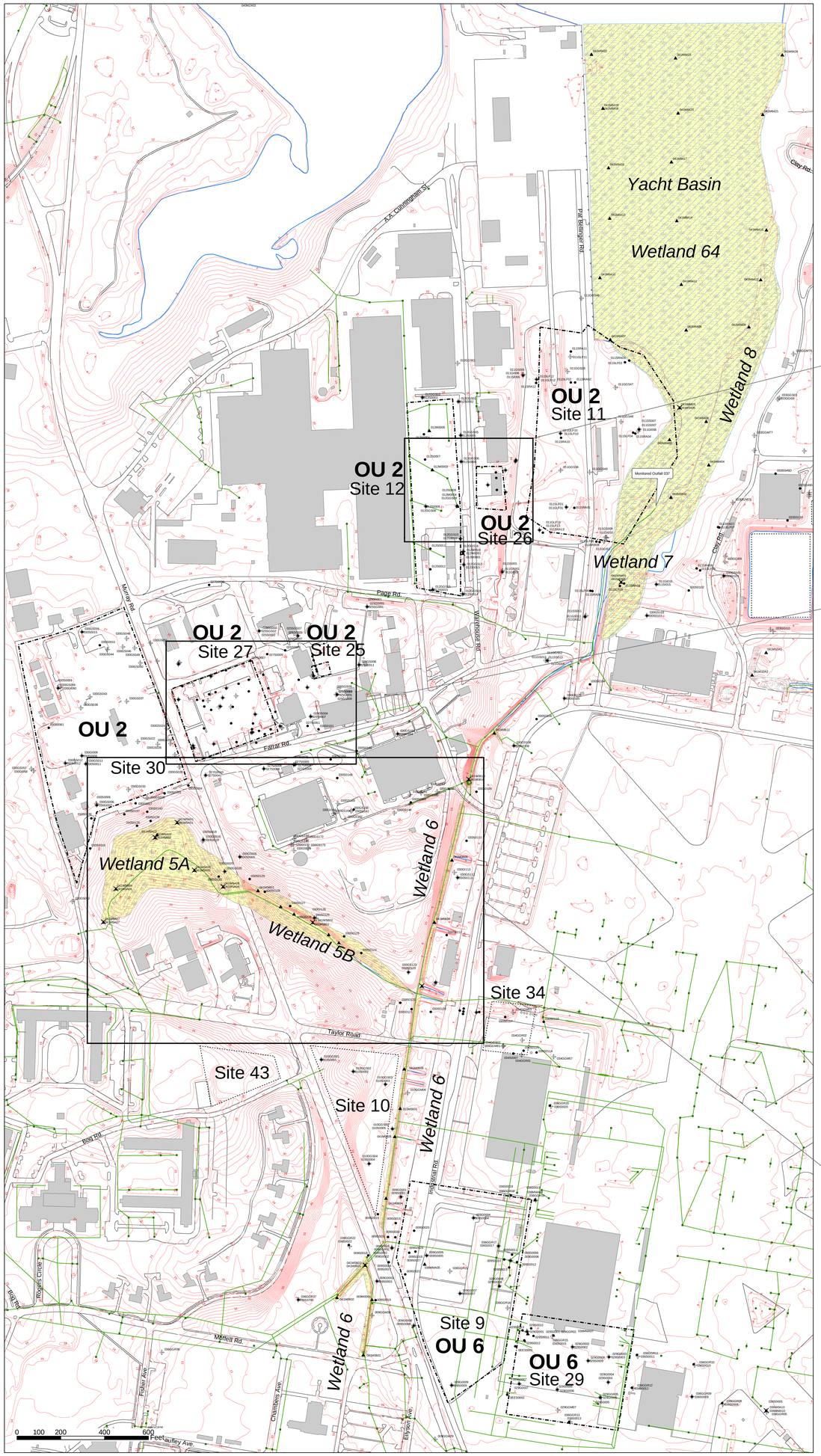

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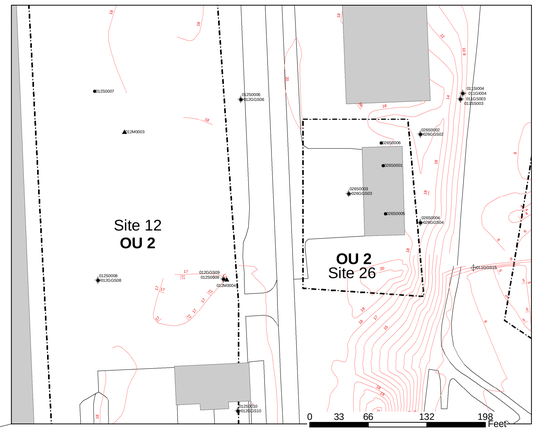

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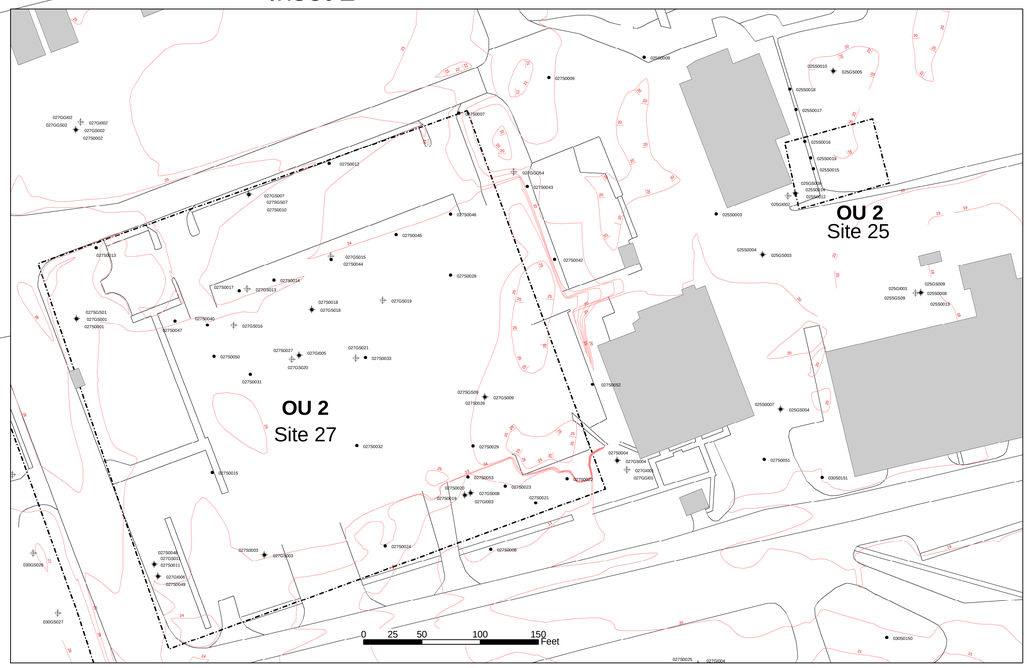

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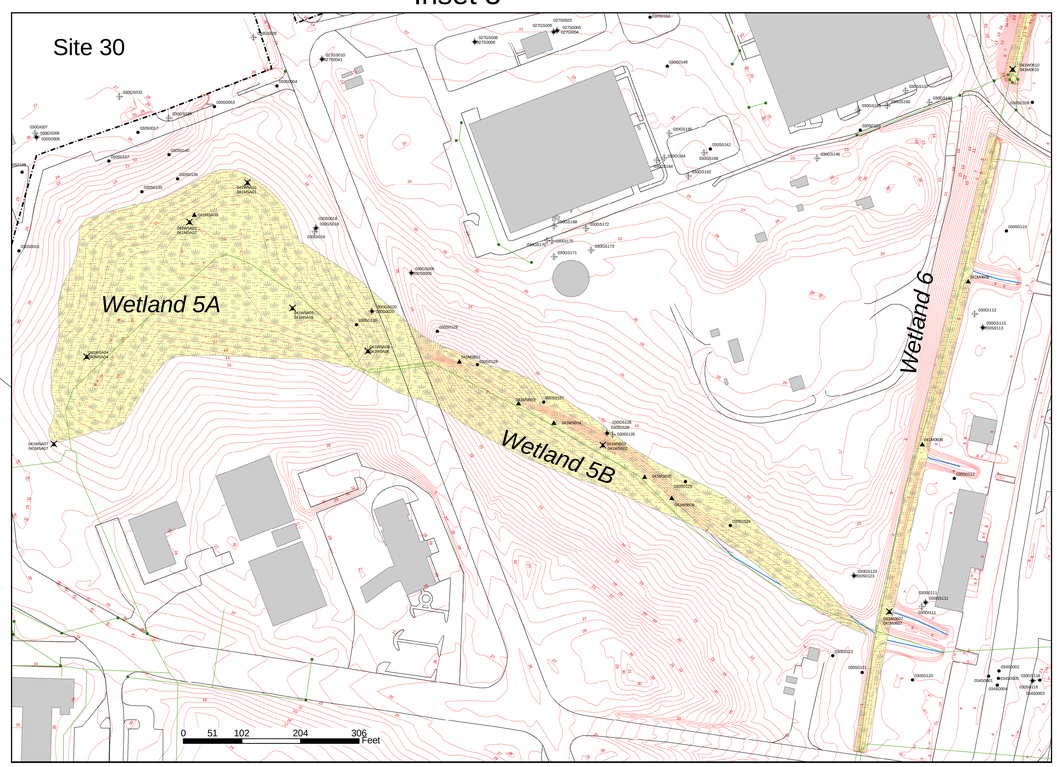

Legend

Sitewide Sample Locations

- Soil
- Site 41 RI Sediment
- Site 41 RI Surface Water
- Groundwater
- Operable Unit (OU)
- Site
- Wetland- Approximate
- Consolidated Wetland 64
- OU2 Wetland- Approximate
- Building
- Shoreline
- Road
- Topographic Contour(ft)
- Storm water Inlet
- Storm water Headwall
- Storm water Pipe

Note: Only the wetlands associated with OU2 have labels.

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FIGURE 11-2
Operable Unit 2
Study Area Topography

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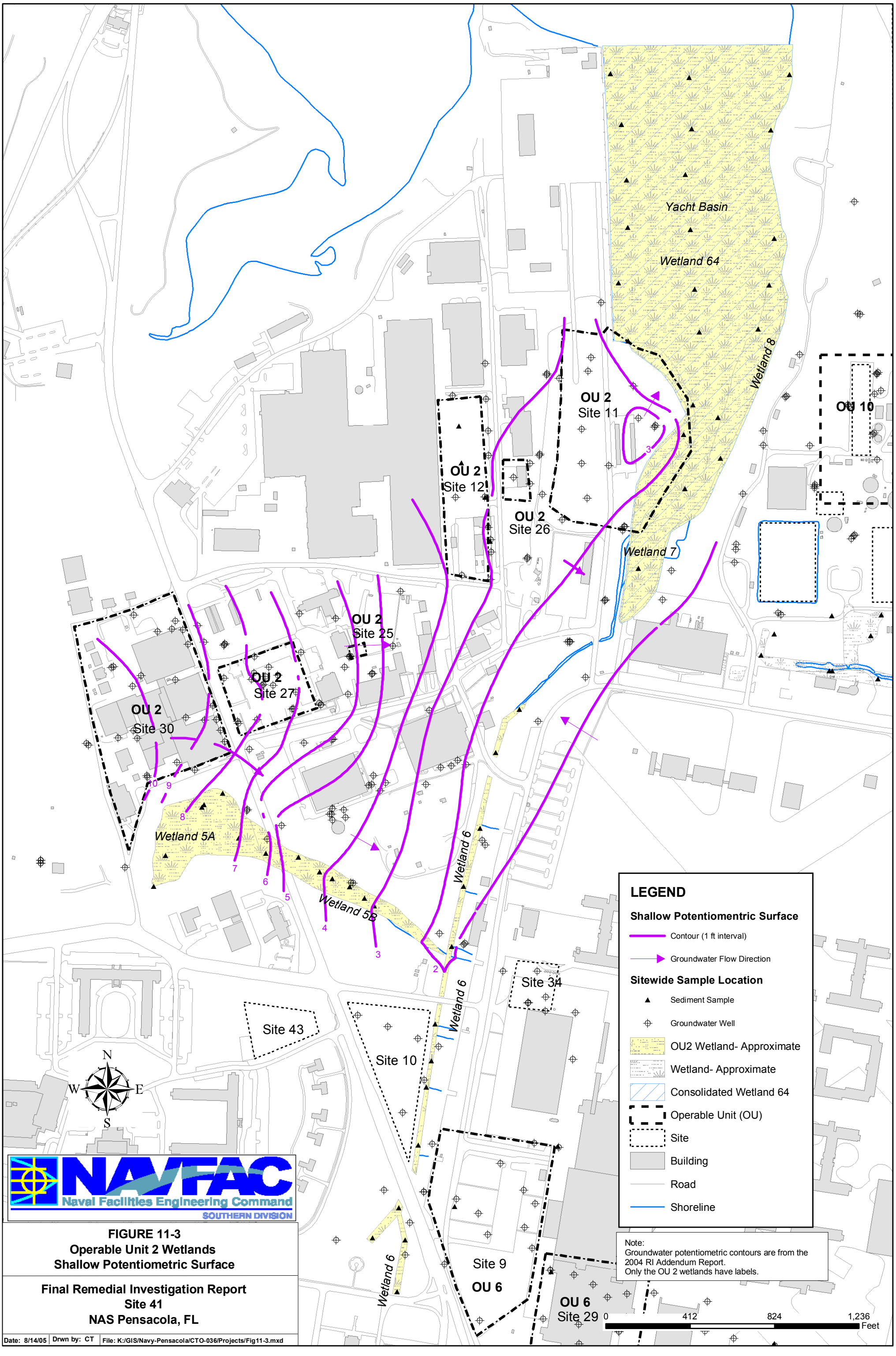

FIGURE 11-3
Operable Unit 2 Wetlands
Shallow Potentiometric Surface

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Site 41
NAS Pensacola, FL

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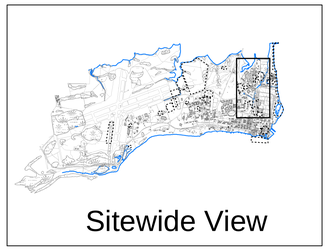

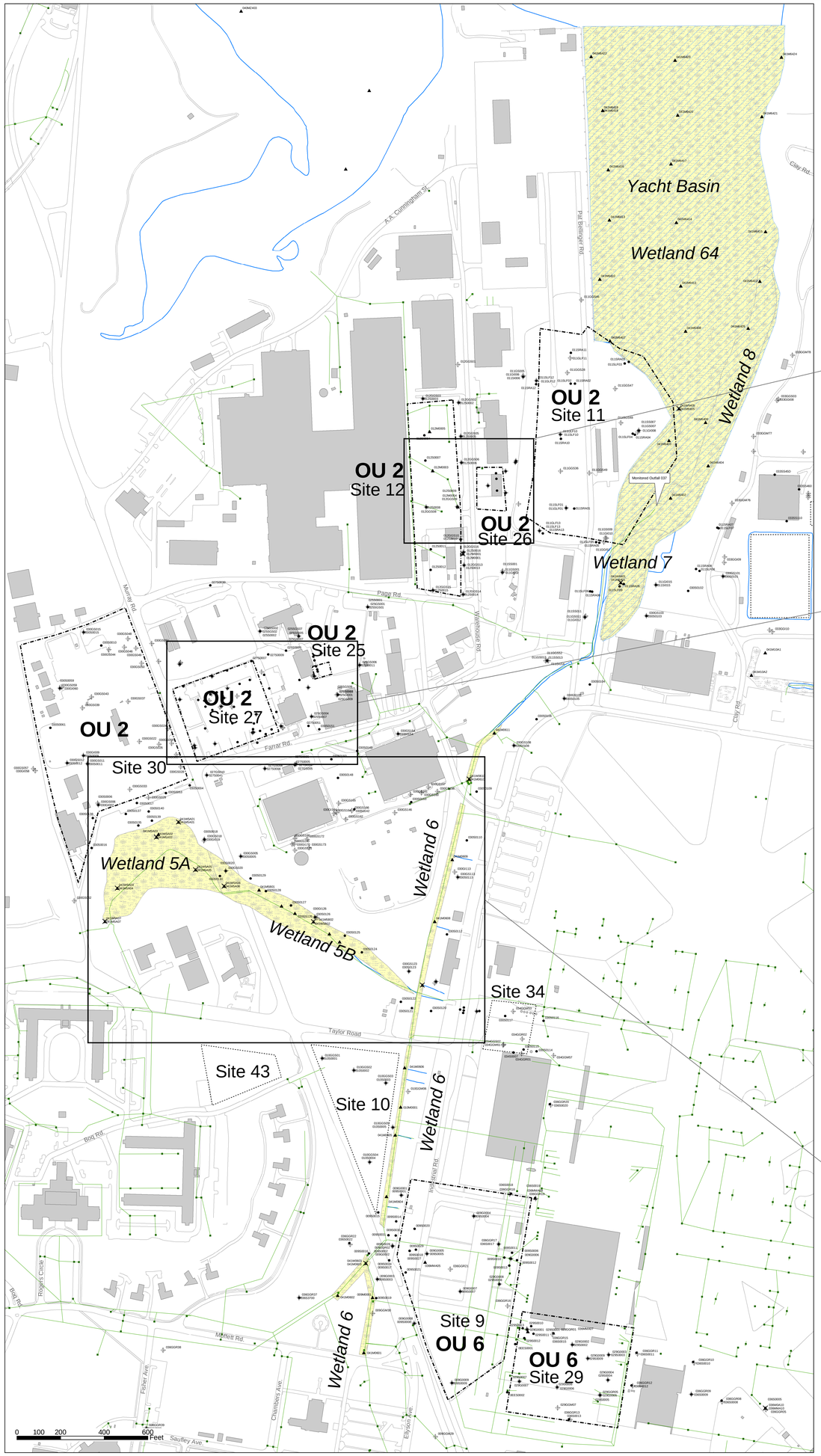

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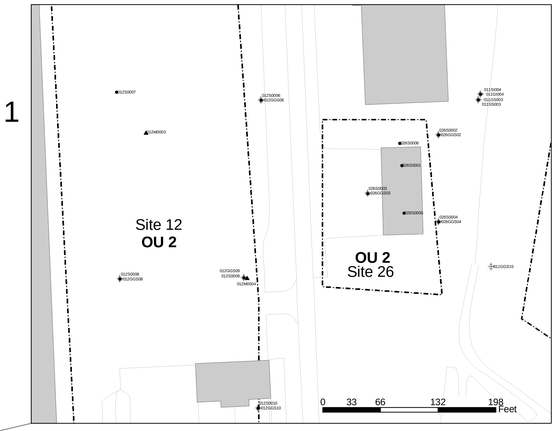

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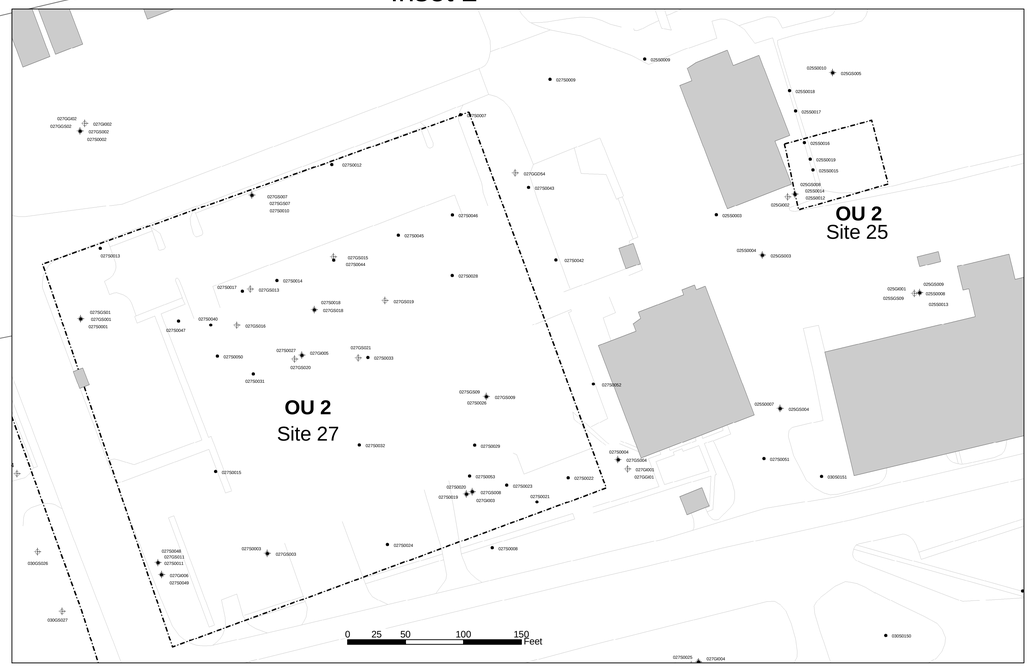

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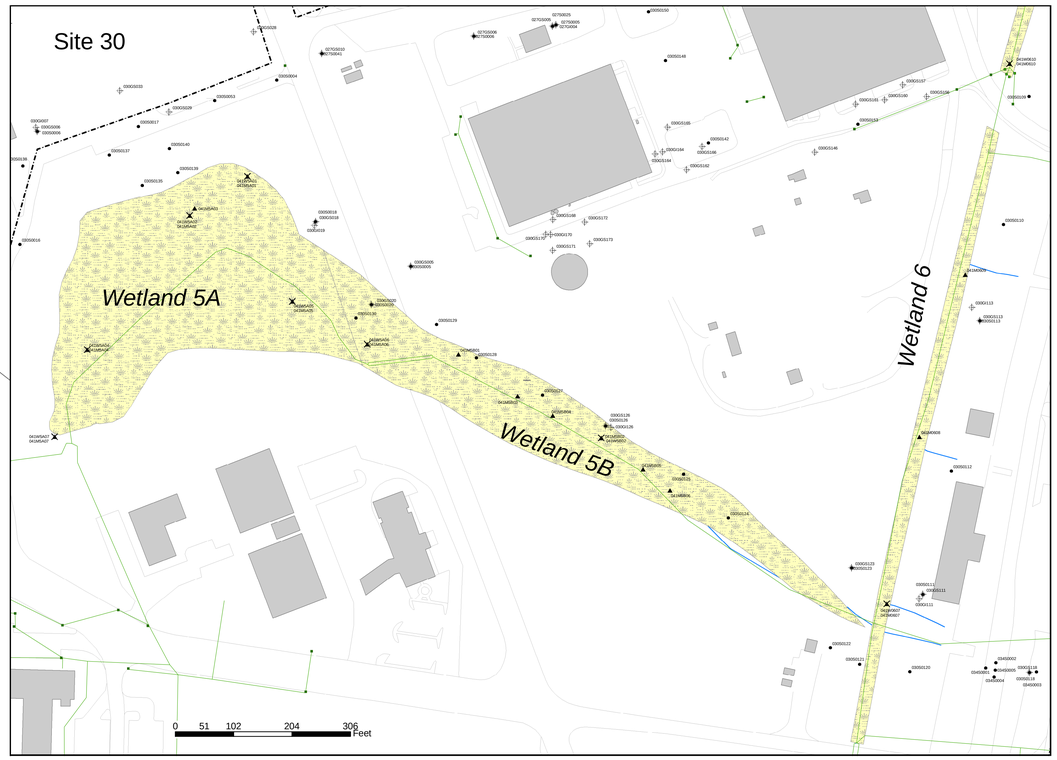

Legend

Sitewide Sample Locations

- Soil
- Site 41 RI Sediment
- Site 41 RI Surface Water
- Groundwater
- Operable Unit (OU)
- Site
- Wetland- Approximate
- Consolidated Wetland 64
- OU2 Wetland- Approximate
- Building
- Shoreline
- Road
- Storm water Inlet
- Storm water Headwall
- Storm water Pipe

Note: Only the wetlands associated with OU2 have labels.

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FIGURE 11-4
Operable Unit 2 Wetlands, Nearby Sites, and Adjacent Soil Borings and Monitoring Wells

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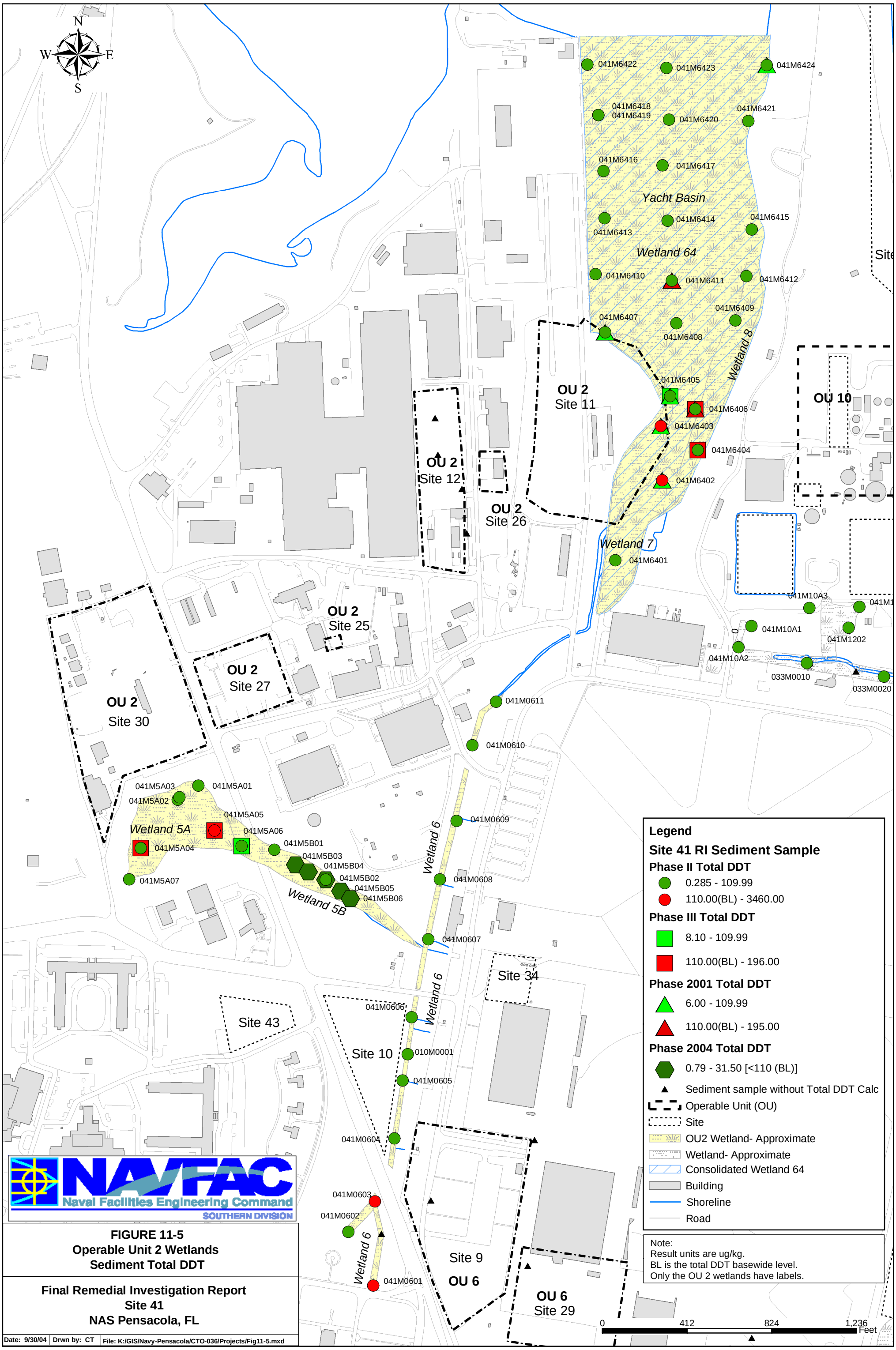

FIGURE 11-5
Operable Unit 2 Wetlands
Sediment Total DDT

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Site 41
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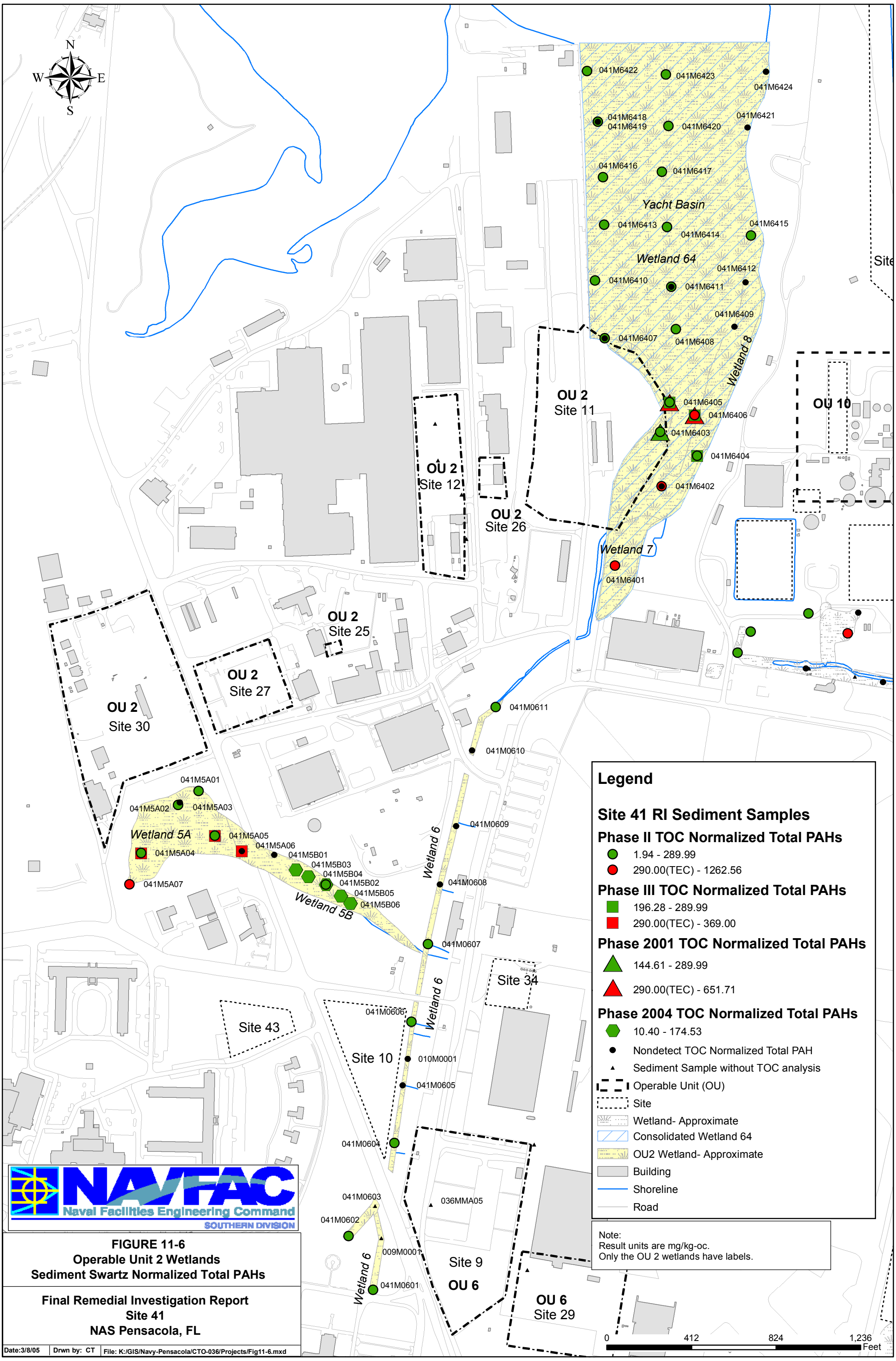

FIGURE 11-6
Operable Unit 2 Wetlands
Sediment Swartz Normalized Total PAHs

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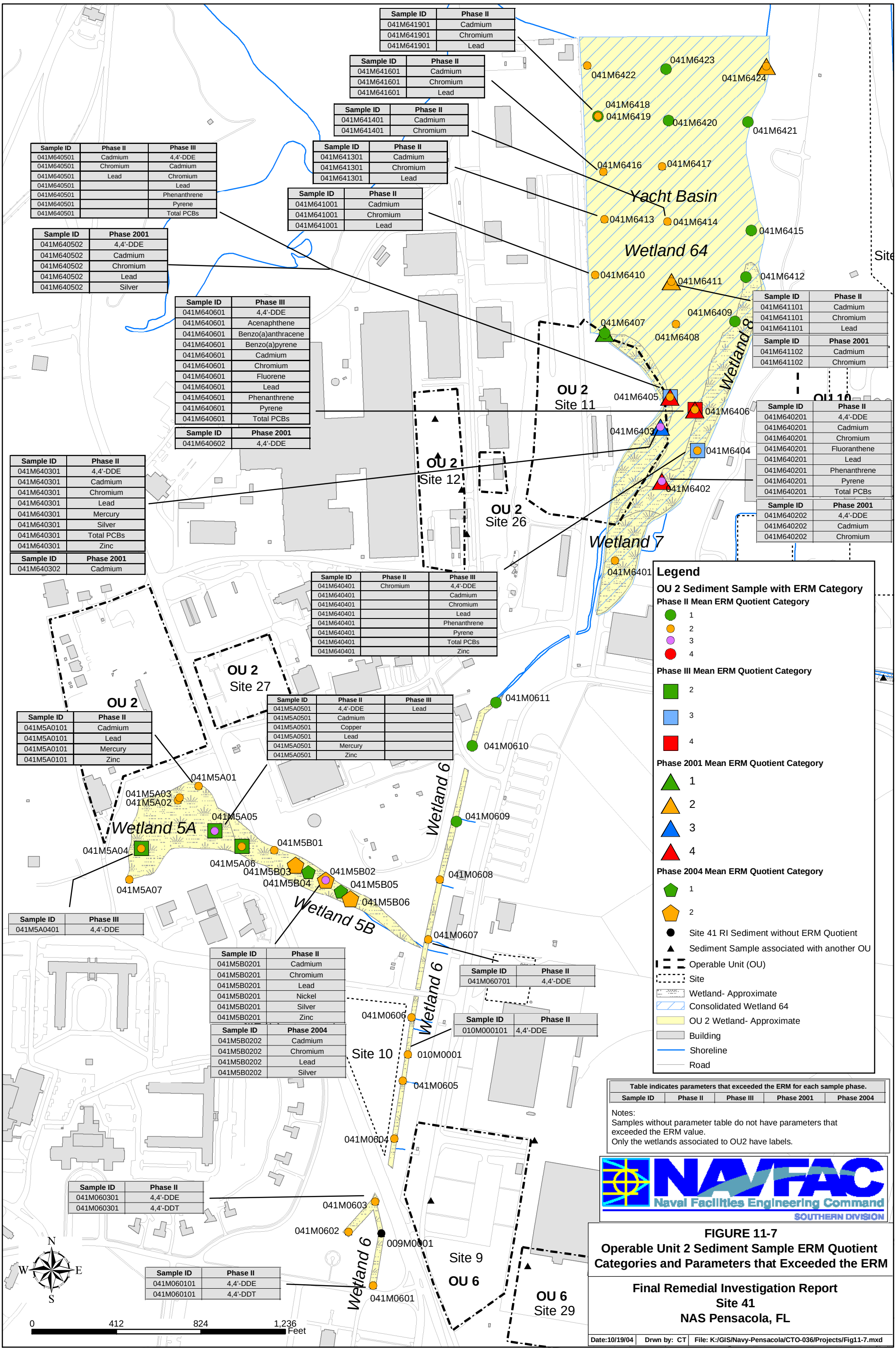

Sample ID	Phase II
041M641901	Cadmium
041M641901	Chromium
041M641901	Lead

Sample ID	Phase II
041M641601	Cadmium
041M641601	Chromium
041M641601	Lead

Sample ID	Phase II
041M641401	Cadmium
041M641401	Chromium

Sample ID	Phase II
041M641301	Cadmium
041M641301	Chromium
041M641301	Lead

Sample ID	Phase II
041M641001	Cadmium
041M641001	Chromium
041M641001	Lead

Sample ID	Phase II	Phase III
041M640501	Cadmium	4,4'-DDE
041M640501	Chromium	Cadmium
041M640501	Lead	Chromium
041M640501		Lead
041M640501		Phenanthrene
041M640501		Pyrene
041M640501		Total PCBs

Sample ID	Phase 2001
041M640502	4,4'-DDE
041M640502	Cadmium
041M640502	Chromium
041M640502	Lead
041M640502	Silver

Sample ID	Phase III
041M640601	4,4'-DDE
041M640601	Acenaphthene
041M640601	Benzo(a)anthracene
041M640601	Benzo(a)pyrene
041M640601	Cadmium
041M640601	Chromium
041M640601	Fluorene
041M640601	Lead
041M640601	Phenanthrene
041M640601	Pyrene
041M640601	Total PCBs

Sample ID	Phase 2001
041M640602	4,4'-DDE

Sample ID	Phase II
041M641101	Cadmium
041M641101	Chromium
041M641101	Lead

Sample ID	Phase 2001
041M641102	Cadmium
041M641102	Chromium

Sample ID	Phase II
041M640201	4,4'-DDE
041M640201	Cadmium
041M640201	Chromium
041M640201	Fluoranthene
041M640201	Lead
041M640201	Phenanthrene
041M640201	Pyrene
041M640201	Total PCBs

Sample ID	Phase 2001
041M640202	4,4'-DDE
041M640202	Cadmium
041M640202	Chromium

Sample ID	Phase II
041M640301	4,4'-DDE
041M640301	Cadmium
041M640301	Chromium
041M640301	Lead
041M640301	Mercury
041M640301	Silver
041M640301	Total PCBs
041M640301	Zinc

Sample ID	Phase 2001
041M640302	Cadmium

Sample ID	Phase II	Phase III
041M640401	Chromium	4,4'-DDE
041M640401		Cadmium
041M640401		Chromium
041M640401		Lead
041M640401		Phenanthrene
041M640401		Pyrene
041M640401		Total PCBs
041M640401		Zinc

Sample ID	Phase II
041M5A0101	Cadmium
041M5A0101	Lead
041M5A0101	Mercury
041M5A0101	Zinc

Sample ID	Phase II	Phase III
041M5A0501	4,4'-DDE	Lead
041M5A0501	Cadmium	
041M5A0501	Copper	
041M5A0501	Lead	
041M5A0501	Mercury	
041M5A0501	Zinc	

Sample ID	Phase III
041M5A0401	4,4'-DDE

Sample ID	Phase II
041M5B0201	Cadmium
041M5B0201	Chromium
041M5B0201	Lead
041M5B0201	Nickel
041M5B0201	Silver
041M5B0201	Zinc

Sample ID	Phase 2004
041M5B0202	Cadmium
041M5B0202	Chromium
041M5B0202	Lead
041M5B0202	Silver

Sample ID	Phase II
041M060701	4,4'-DDE

Sample ID	Phase II
010M000101	4,4'-DDE

Sample ID	Phase II
041M060301	4,4'-DDE
041M060301	4,4'-DDT

Sample ID	Phase II
041M060101	4,4'-DDE
041M060101	4,4'-DDT

Table indicates parameters that exceeded the ERM for each sample phase.				
Sample ID	Phase II	Phase III	Phase 2001	Phase 2004

Notes:
Samples without parameter table do not have parameters that exceeded the ERM value.
Only the wetlands associated to OU2 have labels.

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FIGURE 11-7
Operable Unit 2 Sediment Sample ERM Quotient Categories and Parameters that Exceeded the ERM

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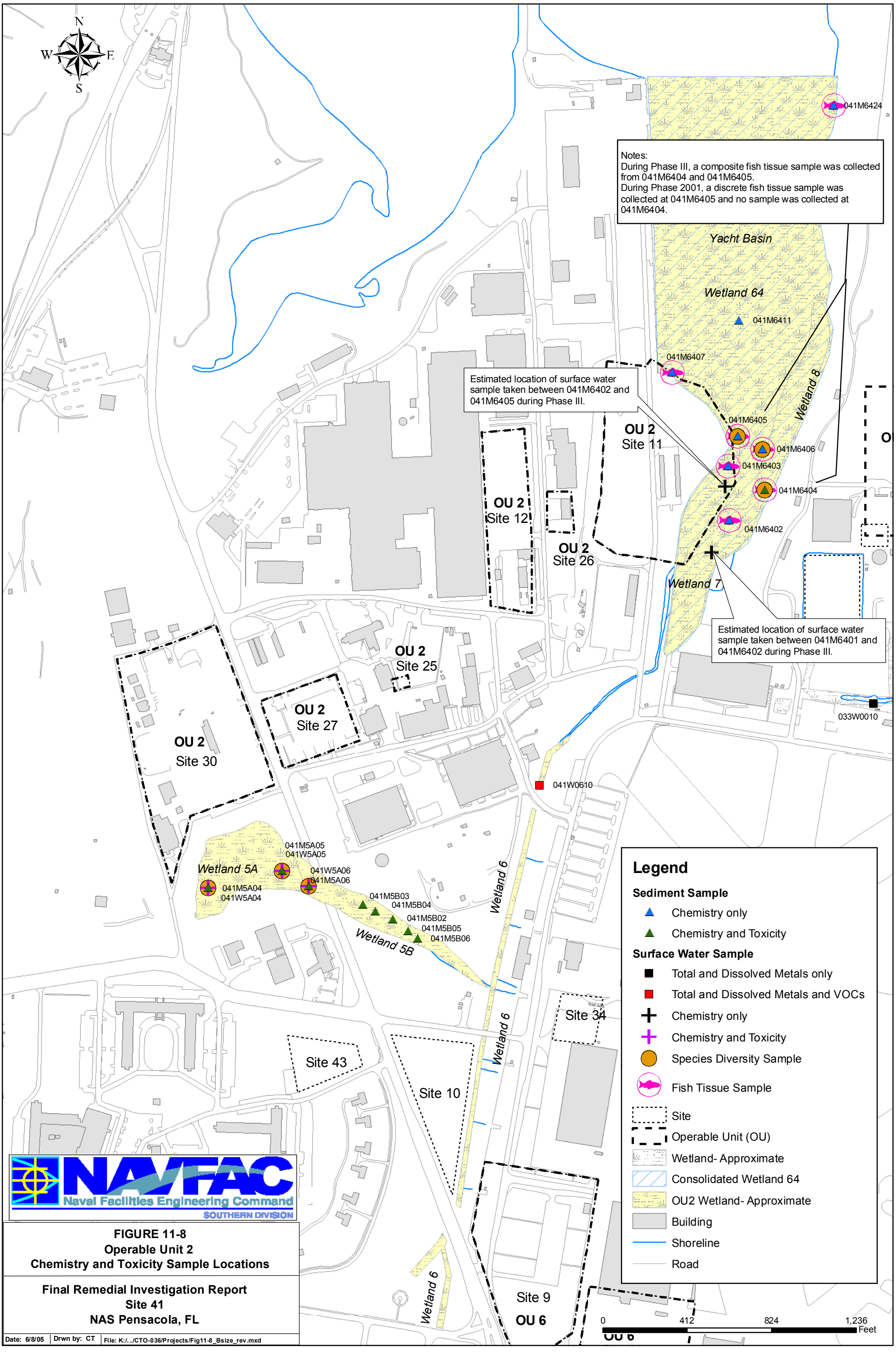

FIGURE 11-8
Operable Unit 2
Chemistry and Toxicity Sample Locations

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11.1 Wetland 5 — Screening Level Problem Formulation

11.1.1 Site Description and Habitats Present at Wetland 5

Wetland 5, a wooded area within the developed portion of NAS Pensacola, is flanked to the west by the A.C. Read Golf Course, to the north by the former NADEP Dynamic Components Division (Building 649 Complex) and other buildings formerly used by NADEP, and to the south by Taylor Road (Figure 11-1). Parsons and Pruitt (USEPA, 1991a) divided this wetland into two parts, 5A and 5B. They described Wetland 5A as a palustrine forested system, and Wetland 5B is described as a palustrine emergent system.

Wetland 5A (roughly 1.3 acres in size) is connected to Wetland 5B (1.2 acres) by a culvert, which runs under Murray Road (Figure 11-1). Wetland 5A is bordered by Murray Road to the east, the golf course to the west, and buildings to the north and south. A 200-300 foot vegetative buffer surrounding this area likely offers habitat to various species. The open water portion of the wetland ranges from zero to three feet in depth and varies from 80-150 feet in width. Sediments in Wetland 5A ranged from brown poorly graded sand with little organics and a TOC of 0.642% (041M5A0601) to a dark brown silty fine sand with organics and a TOC of 40.9% (041M5A0401). Sediments in Wetland 5B ranged from light brown poorly graded medium sand with TOC of 0.18% (41M5B0101) to dark brown silty sand with organics with TOC of 7.45% (041M5B0201).

Photograph 1 Wetland 5 — Facing West to Wetland 5A

Photograph 2 Wetland 5B — Looking towards Wetland 5A. Groundwater monitoring wells 30GI126 and 30GS126 visible in foreground.

Photograph 3 Looking towards Wetland 6 from Wetland 5B. Photo includes all locations (5B03, 5B04, 5B02, 5B05, and 5B06).

Little history is available concerning the origins of Wetland 5A, which is several decades old and likely began as a man made feature (a borrow pit). It served as a drainage pathway as early as the 1930s and reportedly contained a saw mill during the 1940s. A 1939 map of the base labeled Wetland 5 as an "open ditch." In recent years, beaver dams constructed at the downstream end of Wetland 5A raised the water level in the basin containing this wetland, facilitating sedimentation and the emergence of a marsh. After a faulty valve in a nearby potable water storage tank was repaired in 1994, the water level in Wetland 5A has receded. Previously, several thousand gallons of potable water per day accidentally discharged from this tank into Wetland 5A via an overflow pipeline. Wetland 5A continues

to serve as a storm water conduit. NAS Pensacola Storm Drainage Map 1276912 shows three outfalls in Wetland 5A. Outfall T discharges storm water from the Bachelor Officers' Quarters area to the south. Outfall V and an unnamed outfall discharge storm water from the former Building 649 Complex. Wetland 5A drains via Wetland 5B into Wetland 6, which empties into the NAS Pensacola Yacht Basin (Wetland 64). Typical vegetation found in Wetland 5A consists of hardwoods, such as oaks and sweet bay magnolias.

Wetland 5B resembles and functions as a drainage ditch. It receives storm water from Wetland 5A and drains eastward into Wetland 6. NAS Pensacola Storm Drainage Map 1276912 shows one outfall in Wetland 5B, which discharges storm water from the Building 3220 area. Vegetation in Wetland 5B includes cattails *(Typha latifolia)* and other emergent plants.

IR sites potentially affecting Wetland 5 include Sites 30 and 36. Buildings 649 and 755 (Site 30) are north and upgradient of Wetland 5, and are separated by a service road, driveway and a parking lot. Building 649 was used from the 1940s to the 1950s as a tin-cadmium plating operation. Fifteen above-ground tanks near Building 649, ranging from 200 to 500 gallons, contained solutions of tin, cadmium, and cyanide. Additionally, a 250-gallon tank stored 1,1,1-trichloroethylene (TCE). The contents of these tanks reportedly were dumped monthly into a "ditch" east of the building. Based on current topography and historical data, this "ditch" was either the wetland itself, or the wetland was directly fed by the ditch. During the 1960s and 1970s, the 15 tanks stored phosphoric acid, caustics, potassium permanganate, degreasers, and chromate solutions, which were also periodically drained into the "ditch". According to historical data, the concentrated cyanide solutions were placed into a tank truck, transported to the Building 709 plating shop, and disposed of in the sanitary sewer. Plating operations in Building 649 ceased in the 1970s.

Building 755 also operated as a plating shop during the 1960s and 1970s. It had approximately 50 above-ground tanks ranging from 50 to 200 gallons in volume and containing plating solutions of nickel, silver, lead, tin, chromium, and other metals. These tanks were also reportedly periodically drained into the "ditch" east of Building 649. Building 755 plating operations ceased in the 1970s (EnSafe, 1997b).

Photograph 4 Removal of Waste Receiving Structure

Site 36 (Industrial Wastewater Treatment Plant Sewer Line) was investigated in conjunction with sites for OU 2. The wastewater treatment plant, originally built in 1948, was replaced in 1971 with a modern plant that could accept industrial wastes. Most facilities discharging to the sewer did so without any pretreatment or waste segregation. The waste stream has included paint strippers, heavy metals, pesticides, radioactive wastes, fuels, cyanide waste, and waste oil (NEESA, 1983). Beginning in 1973, the Naval Air Rework Facility operations discharged to the sewer instead of to Pensacola Bay. The IWTP sewer line consisted of vitreous clay and cast-iron piping installed both before and after 1971. OU 2 investigated portions of the IWTP sewer line from the Building 649 complex to the wastewater treatment plant.

11.1.2 Wetland 5 — Sample Location Description

11.1.2.1 Wetland 5A

Phase II Sediment Sample Location Description

Seven sediment samples were collected and analyzed from Wetland 5A. Sample locations for Wetland 5A were located in areas where groundwater seeps could occur and depositional areas. Sample locations 041M5A0101, 041M5A0201, and 041M5A0301 are located near the northernmost part of the wetland, closest to Building 649 and near Murray Road. Sample locations 041M5A0401 and

041M5A0701 are located on the west side of the wetland, whereas sample locations 041M5A0501 and 041M5A0601 are located on the eastern side of Wetland 5A, closest to the culvert diverting water under Murray Road into Wetland 5B (Figure 11-4). Table 11-1-1 (tables are located at the end of each section) provides a physical description of the sediments collected at Wetland 5A. Sediments at Wetland 5A were mostly composed of fine-grained sand to silt and clay. TOC concentrations ranged from 0.642% to 40.9%.

Phase II Surface Water Sample Location Description

Six surface water samples were collected at Wetland 5A, locations 041W5A0101 through 041W5A0701 (Figure 11-4), which were co-located with sediment locations. The surface water samples were taken during the 1995 Site 41 investigation. Several surface water samples from Wetland 5A were analyzed for physical parameters (Table 11-1-2). Of the six samples analyzed, five were found to be slightly acidic. Surface water sample 041W5A0601 was analyzed for hardness, but not for pH, specific conductivity, or turbidity.

Phase III Sediment Sample Location Description

Three sediment samples were collected at Wetland 5A during the Phase III investigation (Figure 11-4). Table 11-1-3 provides a physical description of the sediment samples collected. Sediments collected during the Wetland 5A Phase III sampling effort were mostly composed of fine-grained sand to very fine-grained silt and clay. Wetland 5A varies from 80-150 feet in width and up to 3 feet deep in places, with TOC concentrations ranging from 0.7% to 1.0%.

Phase III Surface Water Sample Location Description

As shown on Figure 11-4, three surface water samples were collected during the Phase III portion of the investigation.

11.1.2.2 Wetland 5B

Phase II Sediment Sample Location Description

Wetland 5B acts as a storm water ditch draining Wetland 5A via a culvert. Two sediment samples were collected and analyzed for the Wetland 5B ERA. Sample locations for Wetland 5B were located downstream from the culvert that passes under Murray Road. Sample location 041M5B0101 is approximately 100 feet from the culvert, and sample location 041M5B0201 is located 325 feet downstream of 041M5B0101 (Figure 11-4). Table 11-1-4 provides a physical description of the sediments collected at Wetland 5B. Sediments at Wetland 5B were mostly composed of fine-grained sand to very fine-grained silt and clay. Wetland 5B TOC concentrations ranged from 0.18% to 7.45%.

Phase II Surface Water Sample Location Description

One surface water sample was collected at Wetland 5B for this ERA process. Sample 041W5B0201 was collected in 1995. The surface water sample was co-located with sediment samples as shown in Figure 11-4. No physical description, other than hardness, of the Phase II surface water samples were collected at Wetland 5B. Hardness was measured at 52.3 mg/L at sampling location 041W5B0201.

Phase IV Sediment Sample Location Description

Five sediment samples were collected during the Phase IV/2004 sampling effort at Wetland 5B (Figure 11-4). A physical description of Wetland 5B sediments was not conducted during this sampling effort. However, TOC analysis was performed, and concentrations ranged from 0.35% to 1.5%.

11.1.3 Nature and Extent of Contamination

11.1.3.1 Wetland 5A

Phase II Sediment

Figure 11-4 presents the Phase II sediment sampling locations for Wetland 5A. Table 11-1-5 summarizes the analytical results of the seven Phase II sediment samples.

Metals — Twenty-three metals were detected during Phase II sediment sampling at Wetland 5A. The greatest number of metals detections and reference value exceedances during Phase II sampling at Wetland 5A were from sample location 041M5A0101. This sample is in the northeast section of the wetland area. Concentrations of 12 analytes exceeded freshwater reference values at this location. Location 041M5A0501, within the center of the wetland, exhibited 21 detections, with 11 of these parameters exceeding freshwater reference values. Parameters with detections exceeding freshwater reference values were aluminum, antimony, barium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, and zinc. All locations exhibited concentrations of zinc above its reference value.

Pesticides and PCBs — Eleven pesticide compounds and the PCBs aroclor-1254 and aroclor-1260 were detected during Phase II sediment sampling at Wetland 5A. Total DDT was calculated for each location by adding the concentrations of 4,4′-DDD, 4,4′-DDE and 4,4′-DDT, and were compared with the basewide total DDT concentrations. The greatest number of pesticides detected in Wetland 5A sediments during Phase II sampling was near the center of the wetland at location 041M5A0501, with seven detections. The reference values were exceeded at this location for 4,4′-DDE and total DDT. All other locations exhibited detections; however, these detections were significantly less. Aroclor-1254 was detected at 041M5A0601, and aroclor-1260 was detected at 041M5A0101, 041M5A0501, and 041M5A0701, in various areas of the wetland.

SVOCs — Nineteen SVOCs (including PAHs) were detected in sediment samples collected during Phase II sampling at Wetland 5A. Six of the seven sample locations exhibited detections of SVOCs, with the majority of detections and highest concentrations at location 041M5A0501. Location 041M5A0501 had the greatest number of SVOC detections, with 15 compounds detected. The detections of SVOCs in Wetland 5A were similar to the other analytes, with the greatest number of detections being from locations 041M5A0501, 041M5A0701, and 041M5A0101.

VOCs — Three VOCs, (acetone, methylene chloride, and toluene) were detected in sediments collected from Wetland 5A during Phase II sampling. The highest concentrations were at locations 041M5A0101, 041M5A0201, and 041M5A0301, within the northern area of the wetland. Locations 041M5A0401 and 041M5A0601 also exhibited detections.

Phase III Sediment

Based on the results of the Phase II sampling, Phase III was initiated to confirm elevated detections at sediment locations 041M5A0401, 041M5A0501, and 041M5A0601 in Wetland 5A. Table 11-1-6 summarizes the analytical results of the Phase III sediment sampling.

Metals — Twenty-two metals were detected in sediments collected during Phase III. Thallium was not detected in this event. The Phase III sample results were in close agreement with the Phase II results confirming the common problematic location 041M5A0501. Maximum detections exceeded reference values for antimony, barium, cadmium, chromium, copper, lead, and zinc. As during the Phase II sampling, all three locations exhibited concentrations of zinc above the freshwater reference value.

Pesticides and PCBs — In Phase II, the majority of detections and highest detections were exhibited at location 041M5A0501. In Phase III sampling, this location had no parameters above detection limits. Ten pesticides were detected during the Phase III sampling efforts. Locations 041M5A0401 and 041M5A0601 exhibited eight and six detections, respectively. Location 041M5A0401 exhibited the highest detections for 4,4′-DDD, 4,4′-DDE, and 4,4′-DDT, all exceeding basewide concentrations. Total DDT also exceeded its reference value at this location. PCBs were not detected during Phase III sediment sampling.

SVOCs — During Phase III sampling, 12 SVOCs were detected as compared to 19 during Phase II. Locations 041M5A0401 and 041M5A0501 each had 10 SVOCs detected. During Phase II, location 041M5A0401 had four SVOCs detected, and they were present at low concentrations. SVOCs were confirmed at location 041M5A0501.

VOCs — No VOCs were detected during Phase III sampling.

Comparison of Phase II vs. Phase III Sediment Sampling Results

Between Phase II and Phase III sediment sampling events, an overall decrease in detections and number of exceedances occurred. Metals decreased from 23 detections and 11 exceedances in the seven Phase II samples to seven exceedances in the three Phase III samples. Location 041M5A0501 seems to be a problematic location, with the most detections and exceedances for all groups of analytes. However, in Phase II, this location exhibited seven detections of pesticides, with 4,4'-DDE and total DDT exceeding reference values; yet, in Phase III, this location had no detections. For SVOCs, 19 detections were exhibited with the greatest number being at location 041M5A0501 for Phase II. Phase III sampling confirmed detections at this location, but concentrations and number of compounds detected were lower. Limited VOCs were detected in Phase II. In Phase III, no VOCs were detected.

Phase II Surface Water

Figure 11-4 presents the Phase II surface sampling locations for Wetland 5A. Table 11-1-7 summarizes the analytical results of the seven Phase II surface water samples.

Metals — Seventeen metals were detected in Phase II surface water samples collected from Wetland 5A. All locations exhibited detections, with the highest number of detections at location 041W5A0501. Location 041W5A0501 had 13 detections, seven exceeding their reference concentrations. All other sampling locations exhibited five detections exceeding reference concentrations, with the exception of 041W5A0401 which had four.

Pesticides and PCBs — Only one pesticide, endosulfan I, was detected during Phase II surface water sampling at Wetland 5A. Endosulfan I was detected at 041W5A0101.

SVOCs — One SVOC, BEHP, was detected during Phase II sampling. BEHP was detected at all locations, except for locations 041W5A0201 and 041W5A0701.

VOCs — VOCs were detected at two sampling locations, 041W5A0101 and 041W5A0601. Location 041W5A0101 exhibited a detection for 1,1-dichloroethane. Location 041W5A0601 exhibited detections for acetone, bromodichloromethane, chloroform, cis-1,2-dichloroethene, and dibromochloromethane.

Phase III Surface Water

Phase III of the surface water sampling at Wetland 5A was implemented to confirm the previous Phase II results at locations 041W5A0401, 041W5A0501, and 041W5A0601. Table 11-1-8 summarizes the Phase III surface water sample results.

Metals — Seventeen metals were detected in the Phase III surface water sample. In general, the concentrations were comparable to those observed during Phase II, except for increases in the number of detections at all three locations. The problematic analytes were antimony, barium, calcium, chromium, cobalt, copper, iron, lead, manganese, and zinc.

Pesticides and PCBs — No pesticides or PCBs were detected during Phase III sampling efforts.

SVOCs — No SVOCs were detected in the Phase III surface water sampling at Wetland 5A.

VOCs — 1,2-Dichloroethene (total), acetone, and toluene were detected in the Phase III surface water samples. Toluene was not reported during Phase II sampling. 1,2-Dichloroethene (total) and acetone, common to location 041W5A0601 during the Phase II sampling, were detected at a relatively low concentrations; however, the acetone concentration increased from Phase II to Phase III. During Phase II investigation, 1,2-dichloroethene (total) was reported as cis-1,2-dichloroethene.

11.1.3.2 Wetland 5B

Phase II Sediment

Figure 11-4 presents the Phase II sediment sampling locations for Wetland 5B. Table 11-1-9 summarizes the analytical results of the Phase II sediment sample event.

Metals — Twenty-one metals were detected during Phase II sediment sampling at Wetland 5B. Location 041M5B0201 exhibited detections of 21 metals, nine exceeding the freshwater reference values. This sample is in the eastern section of the wetland. Location 041M5B0101 had 12 metals detected; however, none exceeded the reference values. Parameters with detections exceeding freshwater reference values were barium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc. Location 041M5B0201 exhibited greater metals diversity and higher concentrations than other locations.

Pesticides and PCBs — Six pesticide compounds and one PCB, aroclor-1254, were detected during Phase II sediment sampling at Wetland 5B. Total DDT was calculated for each location by adding the

concentrations of 4,4′-DDD, 4,4′-DDE, and 4,4′-DDT. Likewise, a basewide total DDT reference concentration was calculated using the basewide concentrations for these same constituents.

The greatest number of pesticides detected in Wetland 5B sediments during Phase II sampling was at location 041M5B0201 with six detections. Location 041M5B0101 exhibited four detections. The reference values were not exceeded at either location for 4,4′-DDT constituents or total DDTs.

SVOCs — Six SVOCs (including PAHs) were detected in sediment samples collected during Phase II sampling at Wetland 5B. All sample locations exhibited detections of SVOCs, with the majority of detections and highest concentrations at location 041M5B0201.

VOCs — Five VOCs were detected in sediments collected from Wetland 5B during Phase II sampling: 1,2-dichloroethene (total), acetone, chlorobenzene, toluene, and vinyl chloride. Location 041M5B0201 exhibited the greatest number of VOC detections and highest concentrations in the wetland.

Phase IV Sediment

Five sediment samples were collected as part of the Phase IV sampling event. Table 11-1-10 summarizes the Phase IV/2004 sediment sample results.

Metals — Twenty-one metals were detected in the Phase IV sediment samples. Location 041M5B0202 had the greatest diversity and concentrations of metals. The analytes exhibiting concentrations above the freshwater reference values were barium, cadmium, chromium, cobalt, copper, lead, nickel, silver, and zinc.

Pesticides and PCBs — Three pesticides and one PCB, aroclor-1260, were detected during Phase IV sampling efforts. Of these detections, none exceeded reference values for 4,4′-DDE or total DDT. Aroclor-1260 was present in four of the five sample locations.

SVOCs — Seven SVOCs were detected during Phase IV sediment sampling at Wetland 5B. All five sampling locations exhibited detections, with locations 041M5B0202, 041M5B0301, and 041M5B0601 having the majority and highest of detections.

VOCs — Four VOCs, (acetone, cis-1,2-dichloroethene, toluene, and vinyl chloride) were detected in the Phase IV sediment samples. These detected constituents are similar to the Phase II sampling event.

Phase II Surface Water

Figure 11-4 presents the Phase II surface water sampling location for Wetland 5B. Table 11-1-11 summarizes the analytical results of the single Phase II surface water sample.

Metals — Sixteen metals were detected in the Phase II surface water sample taken from Wetland 5B. Of these 16 metals, 13 exceeded the freshwater reference values: aluminum, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, vanadium, and zinc.

Pesticides and PCBs — No pesticides and PCBs were detected during Phase II surface water sampling at Wetland 5B.

SVOCs — Five SVOCs were detected at low concentrations during Phase II sampling: 2-chlorophenol, 4-chloro-3-methylphenol, bis(2-ethylhexyl)phthalate, n-nitroso-di-n-propylamine, and pyrene.

VOCs — Four VOCs were detected during Phase II sampling: 1,1-dichloroethane, acetone, trichloroethene, and vinyl chloride.

11.1.4 Ecological Risk Assessment

11.1.4.1 Wetland 5A — Phase II Investigation Summary

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-12, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-13.

Baseline Problem Formulation — Wetland 5A Sediment COPC Refinement

During the COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs. This risk assessment presents a statement of potential risk for each of the COPCs.

The COPC refinement process included:

- Comparison of maximum concentrations to RVs
- Comparison of average concentrations to SVs and RVs
- Comparison to basewide (reference) concentrations for total DDT
- Comparison of inorganic constituents to reference wetland values
- Interpretive tool for metals

- Di Toro EqP SQGs for VOCs
- Comparison to Swartz consensus values
- Mean ERM quotients
- Description of exceedances of RVs and their extent

The methods used in the COPC refinement for the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-14. A list of COPCs retained after refinement are presented in Table 11-1-15. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5A concentrations to reference concentrations.

At Wetland 5A, total DDT was above the basewide level at one of nine sample locations (Figure 11-5). Total DDT is retained for this wetland and will be further evaluated in the OU-wide food-chain models. For Wetland 5A, aluminum, barium, cadmium, calcium, chromium, cobalt, copper, lead, manganese, mercury, nickel, and zinc exceeded their Site 41 freshwater sediment reference concentrations. However, barium concentrations did not appear enriched, when normalized to aluminum and iron concentrations using FDEP's interpretative tool (Appendix L). In addition, chromium and nickel concentrations were below RVs.

Several organic compounds were detected and retained through the ERA process. Endosulfan II and total BHC were retained. Seven SVOCs were retained due to lack of screening criteria: 4-methylphenol(p-cresol), benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-chloroethoxy)methane, carbazole, and indeno(1,2,3-cd)pyrene. Three VOCs were retained as well (acetone, methylene chloride, and toluene). When normalized to detected TOC concentrations, both VOCs and PAHs do not appear to be risk drivers for Wetland 5A (Figure 11-6).

Table 11-1-16 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Based on this approach, six sample locations (041M5A01, 041M5A02, 041M5A03, 041M5A04, 041M5A06, and 041M5A07) were determined to be Category 2, which according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this Category also has the highest level of uncertainty. Sampling location 041M5A05 was determined to be Category 3, which is the category that includes the studies where about 50% of samples were found to be toxic and average survival was about 60-70%. Figure 11-7 shows the Mean ERM category for each sediment sample location at Wetland 5A.

The inorganic constituents with SV HQs greater than 10 all had widespread exceedances of the screening values, and all had their maximum concentration at location 041M5A0101. This indicates the source for these elevated inorganic detections may be in the general area of this sample location. Alternately, most of the organics detected with SV HQs greater than 10 were generally less widespread and had their maximum concentrations at location 041M5A0501.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-17, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-18.

Baseline Problem Formulation — Wetland 5A Surface Water COPC Refinement

During the surface water COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs.

The COPC refinement process included:

- Comparison of maximum SV concentrations to average SV concentrations
- Comparison of inorganic constituents to reference wetland values
- Description of surface water exceedances and their extent

The methods used in the COPC refinement in the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-19. COPCs retained after refinement are presented in Table 11-1-20. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 5A, barium, cadmium, calcium, chromium, copper, lead, manganese, vanadium, and zinc exceeded their Site 41 freshwater reference surface water concentrations (Table 11-1-20) and were retained as COPCs for Wetland 5A surface water.

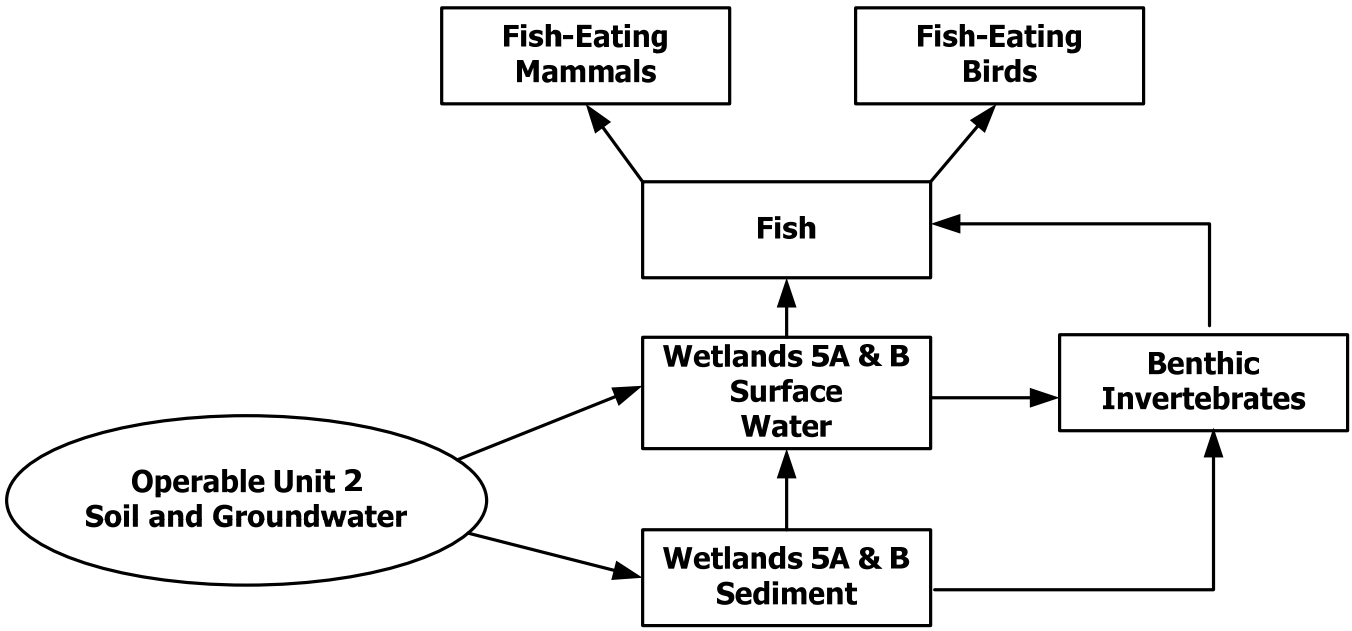
At Wetland 5A, a few organic constituents were detected in surface water at various sample locations. BEHP concentrations were detected at four of the six sample locations. Location 041W5A0401 reported the highest BEHP concentration. Five VOCs were detected and retained during the ERA process. 1,1-Dichloroethane was detected at sample location 041W5A0101. Acetone, bromodichloromethane,

cis-1,2-dichloroethene, and dibromochloromethane were detected at sample location 041W5A0601. These constituents were retained during the ERA process due to HQ exceedances or no associated screening values.

At Wetland 5A during the Phase II investigation, several of the same constituents were detected and retained in both sediment and surface water samples. These included barium, cadmium, copper, lead, manganese, and zinc.

The conceptual model below symbolizes which environmental habitats may be impacted by constituents retained during the ERA process and are likely sources.

Wetlands 5A & B
Conceptual Site Model



11.1.4.2 Wetland 5A — Phase III Investigation Summary

Additional investigation was determined to be necessary based on the Phase II results. The following assessment and measurement endpoints were selected:

Wetland Groups and Representative Wetland(s)	Assessment Endpoints	Measurement Endpoints
Wetland 5A	A) Survival, growth, and emergence of macroinvertebrates associated with the benthic environment (general benthic community)	A1) 28-day midge larvae, *Chironomous tentans,* survival, growth, and emergence A2) Benthic community indices
Wetland 5A	B) Protection of fish viability using fathead minnow (*Pimephales promelas*)	B1) 7-day fathead minnow, *Pimephales promelas*, survival and growth (by weight)
Wetland 5A	C) Bioaccumulation in wading birds and mammals	C1) These endpoints will be evaluated in the Food-Chain Model in Section 11.4

As detailed in the *Final RI/FS SAP Addendum* (E/A&H, 1997d), additional data were collected from three sample locations (041M5A04/041W5A04, 041M5A05/041W5A05, and 041M5A06/041W5A06) within Wetland 5A. These sample locations were selected because of elevated inorganic concentrations in sediment and surface water. These samples were analyzed for the following parameters:

- Laboratory analysis of full TAL/TCL list
- TOC and other physical parameters
- Sediment and surface water toxicity testing
- Benthic Community Indices

11.1.4.3 Phase III Sediment Chemistry Summary

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-21, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-22.

Baseline Problem Formulation — Phase III Sediment COPC Refinement

The same approach (Section 11.1.4.1) used to refine Wetland 5A Phase II sediments were applied to Phase III sediments.

The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-23. COPCs retained after refinement are presented in Table 11-1-24. Additionally, the tables compare:

1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5A concentrations to reference concentrations.

At Wetland 5A, 4,4'-DDD, 4,4'-DDT, and total DDT were above basewide levels, indicating that 4,4'-DDT and its daughter products are a concern for this wetland and were carried forward as COPCs. Total DDT was also included as a COPC in the OU-wide food-chain models.

For Wetland 5A Phase III, antimony, barium, cadmium, copper, lead, and zinc exceeded their Site 41 freshwater sediment reference concentrations; however, cadmium and copper were below their respective RVs and were not retained as COPCs. When assessed, using the interpretative tool, barium did not appear to be enriched.

Several pesticides were detected and retained during the ERA process due to HQ exceedances or no associated screening values. These constituents included endosulfan I, endosulfan sulfate, total chlordane, total endrin, and total BHC. Benzo(b)fluoranthene and benzo(k)fluoranthene were also detected and retained as COPCs. When normalized to detected TOC concentrations, PAHs and VOCs concentrations were not detected at levels expected to cause unacceptable ecological effects.

Table 11-1-25 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Figure 11-7 shows the Mean ERM Category for each sediment sample at Wetland 5A Phase III sediments. Based on the methods and the approach detailed in Section 8, three sample locations (041M5A04, 041M5A05, and 041M5A06) were determined to be Category 2, which, according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this category also has the greatest uncertainty in predicting toxicity.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-26, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-27.

Baseline Problem Formulation — Phase III Surface Water COPC Refinement

The same approach (Section 11.1.4.1) used to refine Wetland 5A Phase II surface water was applied to Phase III surface water samples.

The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-28. Table 11-1-29 presents the COPCs retained after refinement. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5A concentrations to reference concentrations.

In Wetland 5A, barium, chromium, cobalt, copper, iron, lead, manganese, and zinc exceeded their freshwater reference concentrations (Table 11-1-28); however, chromium generated SV HQ less than 1 and was not retained as a COPC.

Two VOCs were detected and retained during the ERA process due to lack of appreciate screening values: 1,2-dichloroethene (total) and acetone. Both detections were reported at sample Location 041W5A0601.

11.1.4.4 Comparison of Phase II and III Sediment and Surface Water Results for Wetland 5A

Both the Phase II and III results indicated inorganic constituents and pesticides were the greatest concern for Wetland 5A. Concentrations dropped among constituents common between the two phases; however, surface water concentrations increased between the sampling efforts.

The differences between the Phase II and Phase III sampling efforts are presented below.

Sediment

Constituent	Phase II	Phase III	Difference
Metals mg/kg			
Copper	317	108	- 209 drop
Lead	427	258	- 169 drop
Zinc	2,290	394	- 1,896 drop

Note:
mg/kg = milligrams per kilogram

Surface Water

Constituent	Phase II	Phase III	Difference
Metals µg/L			
Copper	19.6	42.8	+ 23.2 increase
Lead	20.3	91.4	+ 71.1 increase
Zinc	236	338	+ 102 increase

Note:
µg/L = microgram per liter

Evaluation of Assessment Endpoints

In addition to the chemical analyses, during the Phase III sampling, three sediments and surface water samples were collected for whole sediment and surface water toxicity tests, as well as species diversity analysis. Section 8 described the rationale and intent for this additional information.

Assessment Endpoint A — Survival, Growth, and Reproduction of Macroinvertebrates Associated with the Benthic Environment

The benthic invertebrate communities inhabiting the sediments in the fresh and salt water marshes included in Site 41 were selected as important biological resources to be evaluated in these habitats. This assessment endpoint is aimed at maintaining an ecologically viable benthic community and organism sustainability.

The benthic macroinvertebrates were selected because:

- Their relatively sessile life habits cause potential for increased exposure to contaminated sediments
- They are important component in the aquatic food web
- They are a food source for many species of fish and crustaceans harvested for recreational and commercial purposes
- Benthos has been documented to be an excellent indicator of habitat condition

Risk Questions

- Is the toxicity of COPCs to benthic macroinvertebrates in onsite sediments significantly greater that those of control sediments?
- Are the toxic responses lethal or sublethal?
- Do the results of this study show any stressor-response relationship?

To address the risk questions for this assessment endpoint, the following measurement endpoints were proposed:

- Measurement Endpoint A1: Evaluate the toxicity of COPCs in sediment to the midge Chironomous tentans by conducting a whole sediment toxicity tests measuring survival, growth and emergence

- Measurement Endpoint A2: Evaluate the health of the onsite benthic community using benthic community indices

Measurement Endpoint A1

Additional sediments were collected at locations 041M5A04, 041M5A05, and 041M5A06 during the Phase III portion of the investigation. Sediments from this freshwater wetland were prepared for testing with a terrestrial insect, *Chironomus tentans,* and a larval midge which spends its larval cycle in aquatic habitats. The larval midge *(C. tentans)* test included several endpoints: survival, growth (measured by weight), and emergence (into its terrestrial flight stage). Wetland 5A sediments were also tested against a laboratory control, which has a documented record of good survival and other test endpoint results, to determine if Wetland 5A sediments could be impacting benthic species.

The following summarizes and explains the test results:

Sample Location	Midge Survival/100	Midge Weight (mg)	Emergence (%)
Laboratory Control	100	2.6	60
041M5A0401	100	2.6	75
041M5A0501	100	1.6*	50
041M5A0601	83	2.8*	75

Note:
* = Statistically significant difference when compared to the control

The TAC are met when control survival rates are 90% or above for the control and 80% or above for the sediment being tested. The TAC for the control performance includes a minimum weight of 2.5 mg and at least 50% emergence. A simple statistical T-test can be preformed on sediment performance compared to the control performance, once the TAC is met.

Sediments from all three stations performed well in the survival and emergence portions of the test. Sediment stations 041M5A05 and 041M5A06 were found to be statistically different, when compared to the control performance for growth, which is measured by weight and is denoted with an asterisk in the

table above. Station 041M5A05 underperformed the control, whereas location 041M5A06 over-performed the control, causing both stations to be statistically significant.

Measurement Endpoint A2

In addition to collecting sediments for chemical characterization and toxicity tests, sediments were also collected at locations 041M5A04 through 041M5A06 during the Phase III portion of the investigation for species identification. Section 8 describes the process for diversity sampling and explains the importance of evenness and richness. The diversity findings for Wetland 5A are presented below:

Sample Location	Diversity Results
041M5A0401	2.56 Diversity 1.11 Evenness 9.76 Richness
041M5A0501	3.16 Diversity 1.37 Evenness 9.74 Richness
041M5A0601	2.43 Diversity 1.25 Evenness 6.88 Richness

Diversity, richness, and evenness of organisms were best at location 041M5A05, when compared to the other locations. Sample location 041M5A04 was dominated by *Limnodrilus* species and *Tubifex tubifex*, both of which are oligocheates. Location 041M5A05 exhibited a higher diversity (3.16) than locations 041M5A04 (2.56) and 041M5A06 (2.43).

Assessment Endpoint A: Conclusions

This assessment endpoint was assessed by evaluating sediment chemistry, amphipod toxicity testing, and community analysis. Based on the evaluation of Wetland 5A to date, previous levels of constituents caused statistically significant reduction of growth at one sampling station, 041M5A05. However, the community index indicated that this location indicated the highest levels of diversity in Wetland 5A.

Assessment Endpoint B: Protection of Forage Fish Viability

The forage fish communities inhabiting surface waters within Site 41 were selected as an important biological resource to be evaluated in the aquatic habitat. The forage fish community was selected as an assessment endpoint because:

- The isolated nature of these habitats and the narrow habitat requirements for forage fish causes the potential for increased exposure to contaminated sediments.

- They are an important component of the estuarine and freshwater food web.

- They are a food source for many species of fish and piscivorous birds.

Risk Questions

Are statistically significant levels of toxicity occurring to forage fish using Site 41 wetlands for forage, cover, and breeding areas?

Measurement Endpoint B1

Surface water samples were collected from locations 041W5A04, 041W5A05, and 041W5A06 during the Phase III sampling effort at Wetland 5A. These samples were tested with the freshwater fathead minnow, *Pimephales promelas*. Besides survival, the other endpoint for this test is growth, also measured by weight.

The TAC for the *P. promelas* test includes 90% survival of control organisms and a minimum weight of 0.30 mg. Wetland 5A Phase III surface water samples passed these toxicity tests for the survival endpoint but did identify sub-lethal effects at location 041W5A05 and 041W5A06 when looking at the growth endpoint, as shown below:

Sample Location	Minnow Survival/100	Minnow Weight (mg)
Laboratory Control	100	0.58
041W5A04	100	0.49
041W5A05	100	0.43*
041W5A06	97.5	0.46*

Note:
* = Statistically significant difference when compared to the control

The toxicity data reflect no acute results from Wetland 5A surface water samples but did indicate a sub-lethal impact from contaminants has been observed in the growth endpoint for sample locations 041W5A05 and 041W5A06.

Assessment Endpoint B: Conclusions

This assessment endpoint was evaluated using the surface water chemistry and minnow toxicity test result. The data indicated that constituents present in surface water at locations 041W5A05 and 041W5A06 may be causing sublethal effects (reduced growth) on forage fish.

Assessment Endpoint C: Bioaccumulation in Wading Birds and Mammals

To assess risk from contaminants that bioaccumulate, the results from Wetland 5A are used in the OU 2 food-chain models presented in Section 11.4.

11.1.4.5 Wetland 5B — Phase II Investigation Summary

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-30, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-31.

Baseline Problem Formulation — Wetland 5B Sediment COPC Refinement

During the COPC refinement, additional information as used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs. This risk assessment presents a statement of potential risk for each of the COPCs.

The COPC refinement process included:

- Comparison of maximum concentrations to RVs
- Comparison of average concentrations to SVs and RVs
- Comparison to basewide (reference) concentrations for total DDT
- Comparison of inorganic constituents to reference wetland values
- Interpretive tool for metals
- Di Toro EqP SQGs for VOCs
- Comparison to Swartz consensus values
- Mean ERM quotients
- Description of exceedances of RVs and their extent

The methods used in the COPC refinement for the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-32. COPCs retained after refinement are presented in Table 11-1-33. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5B concentrations to reference concentrations.

At Wetland 5B, total DDT was below basewide level, indicating that 4,4'-DDT and it's daughter products are not a concern for this wetland. For Wetland 5B, barium, cadmium, chromium, cobalt, copper, lead,

manganese, mercury, nickel, selenium, silver, and zinc exceeded their Site 41 freshwater sediment reference concentrations. All the constituents were retained for further consideration; except for mercury, which did not exceed screening values. However, barium concentrations did not appear enriched, when normalized to aluminum and iron concentrations using FDEP's interpretative tool (Appendix K).

At Wetland 5B, the highest inorganic exceedances were all detected at sample location 041M5B0201. Cadmium generated the largest inorganic SV and RV HQs (323.53 and 52.26, respectively). Of the two sediment samples, only one location exceeded the cadmium RV. Other RV exceedances were for chromium, copper, lead, nickel, silver, and zinc, all of which had exceedances at location 041M5B0201.

There were several organic SV and RV HQs exceedances at 041M5B0201. However, their HQs were much lower than those of the inorganic constituents listed above. Included in the organic COPCs are several pesticides, namely dieldrin, alpha and total BHCs. Several SVOCs were also detected at 041M5B0201, none of which have screening or refinement values developed for them; therefore, they were carried forward in the ERA process. Five VOCs were also detected and retained after screening: 1,2-dicholorethene (total), acetone, chlorobenzene, toluene, and vinyl chloride. When normalized to detected TOC concentrations, both VOCs (Appendix L) and PAHs do not appear to be risk drivers for Wetland 5B.

Table 11-1-34 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Based on this approach, sample location 041M5B0101 was determined to be Category 2, which, according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this Category also has the highest level of uncertainty. Sample location 041M5B0201 was determined to be Category 3, indicating sediments where approximately 50% of samples were found to be toxic and average survival was about 60-70%. Figure 11-7 shows the Mean ERM quotient for each sediment sample location at Wetland 5B.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-35, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of parameters retained after screening are presented in Table 11-1-36.

Baseline Problem Formulation — Phase II Surface Water COPC Refinement

The same approach used to refine Wetland 5A Phase II surface water was applied to Wetland 5B Phase II surface water samples.

The methods used in the COPC refinement for the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-37. COPCs retained after refinement are presented in Table 11-1-38. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5B concentrations to reference concentrations.

For Wetland 5B, aluminum, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, vanadium, and zinc exceeded their freshwater reference values and were retained for further evaluation (Table 11-1-37).

Four SVOCs and four VOCs were detected in surface water sample collected at Wetland 5B (041W5B0201). Since there are no screening values associated with these constituents, they were retained for further evaluation in the ERA process.

At Wetland 5B, Station 041W5B02 was found to have a number of double digit and one triple digit HQ values for inorganic constituents. This station is also located in a portion of the wetland that appears to be depositional in nature and had TOC levels of 7.45%.

The following constituents occurred in both Wetland 5B Phase II sediments and surface waters and were retained through the ERA process: cadmium, chromium, cobalt, copper, lead, manganese, zinc, 1,2-dichloroethene (total), and vinyl chloride.

A conceptual model symbolizes which environmental habitats may be impacted by Wetland 5B Phase II constituents was previously presented in Section 11.1.4.1.

11.1.4.6 Wetland 5B — Phase IV Investigation Summary

Additional investigation was determined to be necessary based on the Phase II results. The following assessment and measurement endpoints were selected:

Wetland Groups and Representative Wetland(s)	Assessment Endpoints	Measurement Endpoints
Wetland 5B	Survival and growth of macroinvertebrates associated with the benthic environment (representative of the general benthic community)	10-day amphipod, *Hyallela azteca*, survival and growth

As detailed in the technical memorandum (EnSafe, 2004a), additional data were collected from sample locations 041M5B02 through 041M5B06 within Wetland 5B, where COPC concentrations were high. These sample locations were selected because of elevated inorganic concentrations (specifically, cadmium) and pesticides in sediment and to address the potential ecological risks associated with this wetland. These samples were analyzed for the following parameters:

- Laboratory analysis of full TAL/TCL list
- TOC and other physical parameters
- Sediment toxicity testing
- Benthic Community Indices

11.1.4.7 Phase IV Sediment Chemistry Summary

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-1-39, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-1-40.

Baseline Problem Formulation — Phase IV Sediment COPC Refinement

The same approach used to refine Wetland 5A Phase II sediments was applied to Wetland 5B Phase IV sediments. The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-1-41. COPCs retained after refinement are presented in Table 11-1-42. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 5B concentrations to reference concentrations.

At Wetland 5B, total DDT was below base-wise level, indicating that 4,4'-DDT and its daughter products are not a concern for this wetland. For Wetland 5B, barium, cadmium, chromium, cobalt, copper, lead, nickel, silver, and zinc exceeded their Site 41 freshwater sediment reference concentrations

(Table 11-1-41). Barium, cadmium, chromium, lead, and silver were assessed using the interpretative tool. Barium did not appear to be enriched, while other constituents were enriched.

Several organic constituents were detected and retained during the ERA process due to RV HQs greater than one or no appreciate screening values. Total PCBs, dieldrin, and total BHC were retained with maximum concentrations at sample location 041M5B0601. One SVOC (3-methylphenol/4-methylphenol) and four VOCs (acetone, cis-1,2-dichloroethene, toluene, and vinyl chloride) were also detected and retained. When normalized to detected TOC concentrations, VOCs and PAHs were not detected at levels expected to cause unacceptable ecological effects.

Table 11-1-43 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location for Wetland 5B. Based on the methods and approach detailed in Section 8, sample locations 041M5B04 and 041M5B05 were found to be Category 1, indicating these sediments are considered nontoxic. Sample locations 041M5B02, 041M5B03, and 041M5B06 were determined to be Category 2, indicating these sediments according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this category also has the greatest uncertainty in predicting toxicity. Figure 11-7 shows the Mean ERM Category for each sediment sample at Wetland 5B.

Wetland 5B acts as a storm water conveyance feature between upgradient Wetland 5A and downgradient Wetland 6. Several storm water outfalls discharge into Wetland 5A eventually flow into 5B. Constituents detected in Wetland 5B most likely originate from anthropomorphic activities associated with this portion of the base. Sites affecting this wetland included Sites 30 and 36.

11.1.4.8 Comparison of Phase II and IV Sediment Results — Wetland 5B

Both the Phase II and III results indicated inorganic constituents and pesticides were of greatest concern in Wetland 5B. Generally, concentrations dropped among constituents common between the two phases. The exceptions were chromium, silver, dieldrin, and total BHC.

The differences between the Phase II and III sampling efforts are presented below.

Constituent	Phase II Sediment	Phase IV Sediment	Difference
Metals mg/kg			
Barium	30.2	18	-12.2 drop
Cadmium	220	31	-189 drop
Chromium	416	470	+54 increase
Cobalt	5.3	4.1	-1.2 drop
Lead	481	420	-61 drop
Silver	5.2	6.4	+1.2 increase
Pesticides µg/kg			
Dieldrin	7.1	100	+92.9 increase
Total BHC	2.34	3.475	+1.135 increase
VOCs µg/kg			
Acetone	180	28	-152 drop
1,2-Dichloroethene (total)	11	7.7	-3.3 drop
Toluene	13	3.5	-9.5 drop
Vinyl chloride	42	3.7	-38.3 drop

Notes:
mg/kg = Milligrams per kilogram
µg/kg = Micrograms per kilogram

11.1.4.9 Toxicity Test Results

Wetland 5B was selected for additional analysis based on the level of contamination detected during Phase IV. In addition to chemical analyses, during the Phase IV sampling at Wetland 5B, five sediment samples were collected for whole sediment toxicity tests to determine if sediments at Wetland 5B were having any toxicological effects on organisms in this wetland. Section 8 describes the rationale and intent for this additional information.

Sediment Toxicity

Additional sediments were collected from 041M5B02, 041M5B03, 041M5B04, 041M5B05, and 041M5B06 during the Phase IV sampling portion of the Site 41 investigation in an attempt to delineate contaminants previously identified at Station 041M5B02. Sediments from this freshwater wetland were prepared for testing with the amphipod, *Hyallela azteca,* a benthic macroinvertebrate.

Benthic macroinvertebrates fill a multitude of ecological niches: functioning as prey, predators, herbivores, omnivores, collectors, gatherers, shredders, and filter feeders, thus interacting with multiple trophic levels, which control energy/nutrient/organic matter cycling dynamics in many

ecosystems. Therefore, the health of the benthic community was used as an assessment endpoint for evaluating the sediments collected from Wetland 5B. *H. azteca* are the primary food source for many juvenile fish and are voracious feeders of animal, plant, and detrital material. Wetland 5B sediments were also tested against a laboratory control, which has a documented record of good survival and other test endpoints, to determine if Wetland 5B sediments are impacting benthic species. The test results are shown and explained below:

Sample Location	*Hyallela* Survival (%)	*Hyallela* Growth as Measured by Weight (mg)
Laboratory Control #1	97.5	0.06
041M5B02	97.5	0.06
041M5B03	97.5	0.07
041M5B03 — duplicate	97.5	0.10
Laboratory Control # 2	97.5	0.06
041M5B04	96.25	0.06
041M5B05	100	0.08
041M5B06	100	0.10

The test acceptability criteria (TAC) are met when the laboratory control survival rates are 90% or above for the control. The TAC for the control performance includes a minimum weight of 0.05 mg per organism. A simple statistical T-test can be performed on sediment performance compared to the control performance once the TAC is met.

The Phase IV sediments from all five stations performed well in the survival and growth portions of the test. The toxicity data reflects good result from these wetland sediment samples and indicated no impact from sediments (either acute or chronic) has been observed at Wetland 5B.

11.1.5 Wetland 5 — Human Health Risk Assessment

Wetland 5 is described in Section 11.1.1, and the HHRA is summarized below.

11.1.5.1 Site Data

Surface water and sediment data were collected at Wetland 5 during Phases II, III, and IV of the RI. Section 11.1.3 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data are summarized in Tables 11-1-5 through 11-1-11.

11.1.5.2 Conceptual Site Model

As described in Section 11.1.1, Wetland 5 was separated into two parts, Wetlands 5A and 5B. Wetland 5A is a palustrine forested system as documented by Parsons and Pruitt, and Wetland 5B is a

palustrine emergent system. Wetlands 5A and 5B are located in an active portion of the base and are not under homeland security restrictions. Both trespassers and Navy personnel could obtain access to these wetlands.

Wetland 5A is located to the north of Murray Road and is connected to Wetland 5B (towards the south) by a large culvert. Some sediment at Wetland 5A is exposed part of the year, so sediment exposure would be assessed using soil exposure models. Wetland 5B sediments is not exposed during the year; therefore, sediment exposure was excluded from Wetland 5B calculations. Dermal contact with surface water could be a significant exposure pathway and was included in this HHRA. Based on the species present, depth of surface water, and available habitat, fishing would not likely occur, and wading would be the most likely exposure scenario.

The following scenarios and exposure pathways were evaluated for Wetland 5A:

Scenario	Medium	Ingestion	Dermal
Maintenance	Sediment	√	√
	Surface water	√	√
Trespasser	Sediment	√	√
	Surface water	√	√

11.1.5.3 Risk Characterization

The child trespasser and adult maintenance worker scenarios were assessed for this wetland as described in Section 9.

Wetland 5A Phase II

Trespasser

As shown in Tables 11-1-44 through 11-1-49, sediment and surface water ingestion and dermal contact risk estimates for trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-1-44 through 11-1-49, sediment ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

As shown in Tables 11-1-44 through 11-1-49, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 5A Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	2.25E-01	4.65E-07
	Surface water	4.20E-02	8.67E-08
Trespasser	Sediment	2.35E-01	3.17E-07
	Surface water	2.43E-02	2.60E-08

Based on these data, no COCs were identified for Wetland 5A Phase II.

Wetland 5A Phase III

Trespasser

As shown in Tables 11-1-50 through 11-1-55, sediment and surface water risks were below FDEP's acceptable risk range, and hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-1-50 through 11-1-55, sediment and surface water risks were below FDEP's acceptable risk range, and hazard indices were below 1.0.

Summary of Wetland 5A Phase III Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	2.76E-02	5.33E-07
	Surface water	1.83E-02	N/A
Trespasser	Sediment	4.23E-02	3.34E-07
	Surface water	1.37E-02	N/A

Based on these data, no COCs were identified for Wetland 5A Phase III.

Wetland 5B Phase II

Trespasser

As shown in Tables 11-1-56 through 11-1-58, surface water dermal contact risk estimates for trespassers exceeded the FDEP risk threshold of 1E-6 for pyrene. Hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-1-56 through 11-1-58, surface water dermal contact risk estimates for maintenance workers exceeded the FDEP risk threshold of 1E-6 for N-nitroso-di-n-propylamine, pyrene, and trichloroethene. Hazard indices were below 1.0.

Summary of Wetland 5B Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	N/A	N/A
	Surface water	1.39E-01	1.17E-05
Trespasser	Sediment	N/A	N/A
	Surface water	9.49E-02	6.90E-06

Based on Wetland 5B Phase II data, N-nitroso-di-n-propylamine, pyrene, and trichloroethene were identified as COCs for this wetland.

Wetland 5 — HHRA COC Summary

The following parameters were determined in the HHRA to be COCs for Wetland 5:

- N-Nitroso-di-n-propylamine
- Pyrene
- Trichloroethene

11.1.6 Wetland 5 — Fate and Transport Analysis

Because these wetlands are contiguous, they are evaluated as a single complex. This wetland complex lies in the eastern central portion of NAS Pensacola and is bordered on the north by OU 2 (Sites 30, 27, and 25) and the east by Wetland 6 and the former Chevalier Field area. Thirteen sediment and seven surface water samples were collected from this wetland complex. The wetland drains to the east, then southeast towards Wetland 6, a channelized wetland bordering the western side of the NTTC facility (formerly Chevalier Field; see Figure 11-1). For the purpose of the fate and transport evaluation, short IDs are used for brevity.

The sediment COPCs retained after refinement are summarized in Tables 11-1-15 (5A, Phase II), 11-1-24 (5A, Phase III), 11-1-33 (5B, Phase II), and 11-1-42 (5B, Phase IV). The surface water COPCs retained after refinement are summarized in Tables 11-1-20 (5A, Phase II), 11-1-29 (5A, Phase III), and 11-1-38 (5B, Phase II). Also provided are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis. For Wetland 5A and its upgradient location, there were a set of associated borings and wells pertinent only to it, with regards to sediment and groundwater influx (meaning that borings and wells proximal to Wetland 5B are not expected to exert influence on the upgradient 5A). Since Wetland 5B is downgradient from Wetland 5A, borings associated with Wetland 5A are applicable to Wetland 5B.

Associated Monitoring Wells for Wetland 5A Only: 030GS062, 030GS006, 030GI007, 030GS033, 030GS029, 030GS028, 030GS018, 030GI019, 030GS005, 030GS0020, 030GS026, 030GS027

Associated Monitoring Wells for Wetland 5B: 030GI170, 030GS173, 030GS170, 030GS171, 030GS172, 030GS168, 030GS165, 030GS164, 030GI164, 030GS166, 030GS162, 030GS126, 030GI126, 030GS123, 027GS010

Associated Borings for Wetland 5A Only: 030S0016, 030S0138, 030S0006, 030S0135, 030S0137, 030S0017, 030S0053, 030S0004, 030S0140, 030S0139, 030S0018, 030S0020, 030S0130

Associated Borings for Wetland 5B: 030S0005, 030S0129, 030S0128, 030S0127, 030S0126, 030S0125, 030S0124, 030S0038, 030S0123, 030S0122, 030S0121

Surface Water/Sediment Transport into the Wetland Media:

Surface Water — There are no directly comparable storm water data from the area proximal to this wetland complex. There is a main storm water conveyance inlet at the headwaters of the wetland complex, at the west end of Wetland 5A). Because of the lack of data, a definitive statement can not be made regarding the validation of the pathway via storm water runoff into the wetland complex. The vast majority of surface drainage to this wetland is from the western and southern portions of OU 2 and from the storm water inflow at the western end of Wetland 5A.

Sediment — Based on the data from surface soil proximal to this wetland complex, this storm water to sediment pathway is validated for the following parameters:

Wetland 5A — Phase II	Wetland 5A — Phase III
Aluminum	Barium
Barium	Lead
Cadmium	Zinc
Copper	gamma-Chlordane
Cobalt	4,4'-DDD
Lead	4,4'-DDT
Manganese	Total Chlordane
Mercury	Total DDT
Zinc	
Total DDT	
Carbazole	
Barium	Barium
Cadmium	Cadmium
Chromium	Chromium
Cobalt	Cobalt
Copper	Lead

Wetland 5A — Phase II	Wetland 5A — Phase III
Lead	Silver
Manganese	Dieldrin
Nickel	Total PCBs
Selenium	
Silver	
Zinc	
Dieldrin	

Groundwater Discharge into the Wetland:

Surface Water — Based on the data from associated wells, this pathway is validated and significant for the following parameters (**note:** the metals data from the 1993 sampling are not used due to potential bias introduced by the sampling methodology):

Wetland 5A — Phase II	Wetland 5A — Phase III
Barium	Barium
Cadmium	Cobalt
Cobalt	Chromium
Chromium	Copper
Copper	Iron
Lead	Lead
Manganese	Manganese
Vanadium	Zinc
Zinc	1,2 Dichloroethene
1,1-Dichloroethane	Acetone
Cis-1,2-Dichloroethene	

Wetland 5B — Phase II
Aluminum
Iron
Lead
Manganese
Barium
Cadmium
Chromium
Cobalt
Copper
Vanadium
Zinc
Total PAH
Acetone
1,1-Dichloroethane
Trichloroethene

Sediment — Based on the data from associated wells, this pathway is validated and significant for the following parameters (**note:** the metals data from the 1993 sampling are not used due to potential bias introduced by the sampling methodology):

Wetland 5A — Phase II	Wetland 5A — Phase III
Aluminum	Barium
Barium	Lead
Cadmium	Zinc
Cobalt	
Copper	
Lead	
Manganese	
Zinc	
4-Methylphenol (p-Cresol)	
Carbazole	

Wetland 5B — Phase II	Wetland 5B — Phase IV/2004
Barium	Barium
Cadmium	Cadmium
Chromium	Chromium
Cobalt	Cobalt
Copper	Lead
Lead	4-Methylphenol
Manganese	
Nickel	
Zinc	
4-Methyphenol	

Surface Water/Sediment Transport within the Wetlands:

To evaluate these pathways in Wetland 5A, upgradient surface water/sediment sample location 041W5A07/041M5A07 (sampled during Phase II) was compared to downgradient surface water/sediment location 041W5A06/041M5A06 (sampled during Phase II and III). To evaluate these pathways in Wetland 5B, upgradient surface water/sediment sample 041W5A06/041M5A06 was compared to downgradient surface water/sediment sample 041W5B02/041M5B02 (sampled during Phase II). Criteria of note are the number of detected parameters and the apparent trend in concentrations.

Wetland 5A

Surface Water — Evaluation of Wetland 5A locations 04W5A07 and 041W5A06 indicated a marked increase in detected organic parameters (11 metals and zero organics upgradient versus 10 metals and six organics downgradient). For metals, one constituent was present downgradient that

was not detected upgradient, and of the ones detected at both locations, six metals decreased in concentration and three increased. Downgradient detected organics consisted primarily of VOCs and were most likely attributed to inputs from Site 30.

Sediment — Evaluation of Wetland 5A locations 041M5A07 and 041M5A06 Phase II sampling indicated a higher number of detections in the upgradient location (18 metals and 18 organics in 041M5A07 versus 18 metals and six metals in 041M5A06). In general, metals decreased from upgradient to downgradient. For those metals detected downgradient, 11 constituents showed a decrease, five showed an increase, and one was not detected upgradient. For organics, 17 parameters detected upgradient were not detected downgradient and five parameters detected downgradient were not detected in upgradient locations. Furthermore, most of the organics detected upgradient were SVOCs (primarily BAP equivalents), whereas those detected downgradient were mostly pesticides. This indicates a dominate influence of storm water, likely containing high SVOCs as a result of asphalt runoff, on the upgradient location, and a tendency for the sediment in Wetland 5A to quickly adsorb these types of contaminants. Pesticides detected in the downgradient location likely reflect application residuals. The generally higher metals in the upgradient location may also be a function of storm water runoff influences.

Wetland 5B

Surface Water — Evaluation of upgradient location 041W5A06 and downgradient location 041W5B02 sampled in Phase II indicated a higher number of detections in the downgradient location (10 metals and six metals in the upgradient location versus 16 metals and nine organics in the downgradient location). Six metals were detected downgradient that were not detected upgradient. Seven metals increased in concentration, and two constituents decreased. For organics, seven were present at downgradient that were not detected upgradient and two exhibited essentially equal concentrations. Of those not present upgradient, four of these were SVOCs, and three were VOCs. The presences of these constituents in the downgradient location indicate groundwater discharge from the south central portions of OU 2 as a valid mechanism for their presence. Of the two organics detected at each locations (BEHP and acetone), concentrations remained essentially equal, suggesting laboratory analysis as source.

Sediment — Evaluation of upgradient location 041M5A06 and downgradient location 041M5B02 indicated a higher number of detections in the downgradient location, particularly with respect to organics (18 metals and six organics upgradient versus 21 metals and 18 organics downgradient). For metals, concentrations increased in the downgradient location. Of the 21 metals present, four parameters were not detected at the upgradient location, and 17 parameters increased in

concentration. Of the organics, 13 compounds were present downgradient that were not detected upgradient. Five constituents were detected at both locations. All five compounds exhibited an increase in concentration. TOC also exhibited a large increase in the downgradient location. This general increase in parameter detections and concentrations validates the downgradient transport and accumulation of adsorbed contaminants within the 5A/5B complex. This accumulation may be enhanced by the increase in TOC, supplemented by partitioning from groundwater discharge and/or storm water runoff (containing entrained sediment) from the south central portion of OU 2, and/or partitioning from upgradient surface water.

Evaluation of Phase II versus Phase III Data:

This section includes a brief comparison of Phase II and Phase III data to define trends in sediment and surface water contamination (disregarding to some degree the inherent heterogeneity of sediment media, and the temporal sensitivity of surface water). Criteria to be noted include the number of parameters detected and the apparent trend of parameter concentrations.

Wetland 5A

Surface Water — Three locations (041W5A04, 041W5A05, and 041W5A06) were sampled as part of Phase II and Phase III activities. Evaluations of both sets of data indicated the following:

- **Location 041W5A04** — Nine metals and one organic were detected at this location in Phase II, while 12 metals and zero organics were detected in Phase III. For the metals, three parameters were present in Phase III that were not detected in Phase II. Of nine metals detected during both events, four exhibited a decrease and five an increase. The only organic detection (BEHP) detected during Phase II, was likely an associated lab artifact. Overall, there were no a clear trend in surface water quality at this location.

- **Location 041W5A05** — Thirteen metals and one organic were detected during Phase II versus 17 metals and one organic during Phase III. For the metals, four constituents were present in the Phase III that were not detected in Phase II. Of the 13 metals detected during both phases, six exhibited an increase, six exhibited a decrease, and one remained essentially the same. For the organics, BEHP, detected in Phase II, is likely a lab artifact. Overall, there was not a clear trend in surface water quality at this location.

- **Location 041W5A06** — Ten metals and six organics were detected in Phase II, while 10 metals and two organics were detected in Phase II. For the metals, only one parameter was present in Phase III that was not detected in Phase II. Of the nine metals detected in

both phases, five exhibited an increase and four exhibited a decrease. For the organics, two compounds that were detected in both phases, and both exhibited an increase. Overall, the decrease in the number of organics detected was notable. There was not a clear trend in inorganic detections.

Sediment — Three locations (041M5A04, 041M5A05, and 041M5A06) were sampled as part of Phase II and Phase III activities. An evaluation of both sets of data indicated the following:

- **Location 041M5A04** — 17 metals and nine organics were detected during Phase II versus 19 metals and 18 organics during Phase III. For metals, four parameters were present during Phase III that were not present during Phase II. Of the 15 detected in both phases, all metals exhibited a decrease in concentration. For the organics, 12 compounds were present during Phase III that were not detected in Phase II. Of the six organics detected in both phases, all exhibited an increase in concentration. Finally, TOC exhibited a notable decrease in concentration. Given the results of the evaluation listed above, the decreases in metals and the increase in organics were notable and potentially represent input from groundwater from the western portion of OU 2.

- **Location 041M5A05** — Twenty-one metals and 23 organics were detected during Phase II versus 21 metals and 10 organics during Phase III. For the metals, only one was present in Phase III that was not detected in Phase II. Of the 20 parameters detected during both phases, 18 exhibited a decrease in concentration, and two parameters exhibited an increase. For the organics, three were present in Phase III that were not detected in Phase II. Of the seven compounds detected in both phases, all seven exhibited a decrease in concentration. Overall, decreases in both metals and organics were noted, and may be due to an actual decrease in contaminant adsorption (potentially related to a decrease in measured TOC), or decreases in introduction from pathways providing parameters to the sediment.

- **Location 041M5A06** — Eighteen metals and six organics were detected during Phase II versus 17 metals and seven organics during Phase III. For the metals, only one was present in Phase III that was not detected in Phase II. Of the 16 metals that were detected during both phases, 11 parameters exhibited an increase in concentration and five exhibited a decrease. For the organics, five compounds were present in Phase III that were not detected in Phase II. Of the two organics detected in both phases, both exhibited a decrease in concentration. Finally, TOC was higher in Phase III than in Phase II. Overall, based on the relative differences in concentrations between phases, there were no notable trends in inorganic or organic detections.

Wetland 5B

Surface Water — There was one surface water sample collected in Wetland 5B (location 041W5B02, sampled during Phase II); therefore, no trend analysis was conducted for this medium.

Sediment — One sediment location (041M5B02) was sampled during Phase II and Phase IV/2004. There were 21 metals and 18 organics detected in Phase II and 26 metals and 11 organics during Phase IV. For the metals, only one was detected during Phase IV that was not detected during Phase II. Of the 25 parameters detected during both phases, 23 parameters exhibited a decrease in concentration and two exhibited an increase. Five organic parameters were present in Phase IV that were not detected in Phase II, four organic compounds exhibited higher concentrations, and two organic compounds exhibited lower concentrations. TOC was also higher in the Phase II sample than in Phase IV. For constituents detected in both events, the trend was downward in terms of overall concentrations and number of detections. This may be attributable to a decrease in actual pathway contributions or a decrease in TOC.

Table 11-1-1
Wetland 5A Phase II
Sediment Physical Parameters

Parameter	041M5A0101	041M5A0201	041M5A0301	041M5A0401	041M5A0501	041M5A0601	041M5A0701
TOC (%)	25.4	3.75	9.97	40.9	15.3	0.642	0.21
Percent Solids (%)	16.2	26.5	26.9	11.6	18.7	70.1	83.2
Grain Size Analysis (percent of composition[1])							
Fine Gravel	0	1	0	0	0	0	0
Coarse Sand	6	1	1	0	0	1	4
Medium Sand	21	38	11	36	22	30	40
Fine Sand	52	58	51	30	28	67	56
Silt and Clay	21	2	37	34	50	2	0
Description	Dark Brown Silty Fine Sand with Organics	Dark Brown Medium to Fine Sand with Organics	Dark Brown Silty Fine Sand with Organics	Dark Brown Silty Fine Sand with Organics	Dark Brown Sandy Silt with Organics	Brown Poorly Graded Sand with little Organics	Gray Medium Sand with Some Organics, shells.

Note:
1 = Derived from sieve analyses.

Table 11-1-2
Wetland 5A Phase II
Surface Water Physical Parameters

Parameter	041W5A0101	041W5A0201	041W5A0401	041W5A0501	041W5A0601	041W5A0701	041W5B0201
Hardness as CaCO3 (mg/L)	69.2	37	41.4	99	22.2	47.1	52.3
pH	6.3	6.1	6.31	6.03	No Data	6.78	No Data
Specific Conductivity (mS/cm)	0.169	0.146	0.166	0.21	No Data	1.18	No Data
Turbidity (NTU)	21	38	12	144	No Data	4	No Data
Salinity (%)	0	0	0	0	No Data	0	No Data

Notes:

mg/L = Milligrams per liter
MS/cm = Millisiemens per centimeter
NTU = Nephelometric turbidity units
% = Percent

Table 11-1-3
Wetland 5A Phase III
Sediment Physical Parameters

Parameter	041M5A0401	041M5A0501	041M5A0601
TOC (%)	0.7	0.74	1
Grain Size Analysis (percent of composition[1])			
Fine Gravel	0.3	1.2	2
Coarse Sand	0.4	1.4	0.8
Medium Sand	18.9	21.7	19.4
Fine Sand	75.9	70.7	74.1
Silt and Clay	4.5	5	3.7

Note:
[1] = Derived from sieve analyses.

Table 11-1-4
Wetland 5B Phase II
Sediment Physical Parameters

Parameter	041M5B0101	041M5B0201
TOC (%)	0.18	7.45
Percent Solids (%)	72.7	13.4
Grain Size Analysis (percent of composition[1])		
Medium Sand	32	23
Fine Sand	67	62
Silt and Clay	1	15
Description	Light Brown Poorly Graded Sand,Medium	Dark Brown Silty Sand with Organics

Note:
1 = Derived from sieve analyses.

Table 11-1-5
Wetland 5A Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	13,610.00	1	7	7	699.0	18,700.0	8,120.0	041M5A0101
Antimony	4.43	2	5	7	0.280	10.0	2.970	041M5A0101
Arsenic	6.62	0	6	7	0.780	3.20	1.840	041M5A0501
Barium	14.00	4	7	7	4.10	150.0	40.10	041M5A0101
Beryllium	0.84	0	3	7	0.270	0.830	0.276	041M5A0101
Cadmium	1.80	5	7	7	0.270	11.20	5.950	041M5A0101
Calcium	10,756.67	1	7	7	351.0	71,000.0	14,000.0	041M5A0701
Chromium	39.37	3	7	7	2.80	115.0	51.60	041M5A0501
Cobalt	2.80	3	6	7	0.30	13.40	4.310	041M5A0501
Copper	19.50	4	7	7	13.10	317.0	87.50	041M5A0501
Iron	11,911.67	0	7	7	616.0	9,830.0	4,680.0	041M5A0101
Lead	82.47	4	7	7	11.50	427.0	174.0	041M5A0101
Magnesium	7,513.33	0	7	7	44.40	5,960.0	1,330.0	041M5A0701
Manganese	37.97	3	7	7	11.80	205.0	59.70	041M5A0101
Mercury	0.55	2	5	7	0.250	1.0	0.444	041M5A0101
Nickel	9.28	3	6	7	1.30	25.20	10.90	041M5A0501
Potassium	1,628.67	0	7	7	20.30	413.0	185.0	041M5A0101
Selenium	3.45	0	5	7	1.50	2.60	1.340	041M5A0501
Silver	2.10	0	2	7	0.420	1.10	0.581	041M5A0201
Sodium	18,993.33	0	7	7	8.60	122.0	55.30	041M5A0401
Thallium	1.57	0	1	7	1.40	1.40	0.465	041M5A0101
Vanadium	28.67	0	6	7	2.20	24.0	11.70	041M5A0101
Zinc	36.73	7	7	7	39.30	2,290.0	459.0	041M5A0101
PAHs (µg/kg)								
Acenaphthylene	N/A	0	1	7	120.0	120.0	54.90	041M5A0501
Anthracene	N/A	0	1	7	44.0	44.0	81.50	041M5A0701
Benzo(a)anthracene	N/A	0	3	7	120.0	320.0	123.0	041M5A0501
Benzo(a)pyrene	N/A	0	4	7	37.0	240.0	116.0	041M5A0701
Chrysene	N/A	0	3	7	180.0	510.0	181.0	041M5A0501
Fluoranthene	N/A	0	5	7	71.0	1,100.0	339.0	041M5A0501
Phenanthrene	N/A	0	3	7	110.0	240.0	109.0	041M5A0501
Pyrene	N/A	0	5	7	71.0	730.0	258.0	041M5A0501
Total PAHs	N/A	0	5	7	462.0	3,655.0	1,460.0	041M5A0501
Pesticides and PCBs (µg/kg)								
Aroclor-1254	N/A	0	1	7	14.0	14.0	4.320	041M5A0601
Aroclor-1260	N/A	0	3	7	2.60	100.0	18.40	041M5A0501
Total PCBs	N/A	0	4	7	9.60	128.250	38.60	041M5A0501

Table 11-1-5
Wetland 5A Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Pesticides and PCBs (µg/kg) - cont.								
Dieldrin	N/A	0	2	7	0.850	2.50	0.669	041M5A0101
Endosulfan II	N/A	0	1	7	1.70	1.70	0.434	041M5A0501
alpha-Chlordane	N/A	0	2	7	0.330	1.60	0.350	041M5A0501
gamma-Chlordane	N/A	0	2	7	0.230	1.30	0.307	041M5A0501
Total Chlordane	N/A	0	3	7	0.280	2.90	0.657	041M5A0501
Endrin	N/A	0	1	7	1.10	1.10	0.348	041M5A0501
Endrin aldehyde	N/A	0	1	7	0.720	0.720	0.294	041M5A0501
Endrin ketone	N/A	0	1	7	0.260	0.260	0.271	041M5A0701
Total Endrin	N/A	0	2	7	0.460	2.225	0.913	041M5A0501
alpha-BHC	N/A	0	2	7	0.340	0.640	0.259	041M5A0101
Total BHC	N/A	0	2	7	0.505	1.090	0.630	041M5A0101
4,4'-DDD	50.0	0	5	7	0.230	2.30	0.861	041M5A0401
4,4'-DDE	40.0	1	5	7	0.870	120.0	17.90	041M5A0501
4,4'-DDT	20.0	0	3	7	0.780	5.0	1.110	041M5A0501
Total DDT	110.0	1	7	7	0.430	125.405	19.90	041M5A0501
SVOCs (µg/kg)								
4-Methylphenol (p-Cresol)	N/A	0	3	7	100.0	200.0	256.0	041M5A0101
Benzo(b)fluoranthene	N/A	0	3	7	57.0	360.0	124.0	041M5A0701
Benzo(g,h,i)perylene	N/A	0	3	7	120.0	280.0	111.0	041M5A0501
Benzo(k)fluoranthene	N/A	0	3	7	73.0	170.0	75.0	041M5A0701
bis(2-Chloroethoxy)methane	N/A	0	1	7	110.0	110.0	393.0	041M5A0501
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	7	690.0	1,500.0	815.0	041M5A0501
Butylbenzylphthalate	N/A	0	1	7	200.0	200.0	406.0	041M5A0501
Carbazole	N/A	0	2	7	48.0	96.0	369.0	041M5A0501
Di-n-butylphthalate	N/A	0	1	7	100.0	100.0	391.0	041M5A0501
Di-n-octylphthalate	N/A	0	1	7	22.0	22.0	466.0	041M5A0701
Indeno(1,2,3-cd)pyrene	N/A	0	3	7	110.0	310.0	113.0	041M5A0501
VOCs (µg/kg)								
Acetone	N/A	0	5	7	140.0	5,200.0	1,690.0	041M5A0201
Methylene chloride	N/A	0	1	7	250.0	250.0	51.30	041M5A0101
Toluene	N/A	0	3	7	5.0	280.0	63.60	041M5A0401

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-1-6
Wetland 5A Phase III
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	13,610.00	0	3	3	821.0	2,480.0	1,630.0	041M5A0401
Antimony	4.43	1	2	3	2.0	27.70	10.20	041M5A0501
Arsenic	6.62	0	1	3	0.520	0.520	0.325	041M5A0401
Barium	14.00	1	3	3	6.90	17.20	12.20	041M5A0501
Beryllium	0.84	0	2	3	0.130	0.20	0.118	041M5A0401
Cadmium	1.80	1	3	3	0.420	3.20	1.610	041M5A0501
Calcium	10,756.67	0	3	3	495.0	3,660.0	2,430.0	041M5A0501
Chromium	39.37	1	3	3	4.10	50.10	26.20	041M5A0501
Cobalt	2.80	0	3	3	0.940	1.60	1.380	041M5A0501
Copper	19.50	3	3	3	21.50	108.0	51.70	041M5A0501
Iron	11,911.67	0	3	3	546.0	3,020.0	1,550.0	041M5A0501
Lead	82.47	1	3	3	54.50	258.0	129.0	041M5A0501
Magnesium	7,513.33	0	3	3	56.10	690.0	466.0	041M5A0501
Manganese	37.97	0	3	3	8.60	21.30	15.10	041M5A0501
Mercury	0.55	0	3	3	0.060	0.130	0.093	041M5A0401
Nickel	9.28	0	3	3	1.80	7.50	3.930	041M5A0501
Potassium	1,628.67	0	2	3	54.0	93.20	51.90	041M5A0401
Selenium	3.45	0	1	3	0.60	0.60	0.290	041M5A0501
Silver	2.10	0	1	3	0.150	0.150	0.082	041M5A0501
Sodium	18,993.33	0	3	3	14.60	35.0	25.0	041M5A0401
Vanadium	28.67	0	3	3	1.80	4.20	3.20	041M5A0401
Zinc	36.73	3	3	3	77.10	394.0	191.0	041M5A0501
PAHs (µg/kg)								
Anthracene	N/A	0	1	3	16.0	16.0	182.0	041M5A0401
Benzo(a)anthracene	N/A	0	2	3	41.0	100.0	137.0	041M5A0401
Benzo(a)pyrene	N/A	0	2	3	52.0	140.0	154.0	041M5A0401
Chrysene	N/A	0	2	3	58.0	170.0	166.0	041M5A0401
Fluoranthene	N/A	0	3	3	16.0	260.0	116.0	041M5A0401
Phenanthrene	N/A	0	2	3	28.0	97.0	132.0	041M5A0401
Pyrene	N/A	0	2	3	87.0	300.0	219.0	041M5A0401
Total PAHs	N/A	0	3	3	2,158.0	3,256.0	2,670.0	041M5A0601

Table 11-1-6
Wetland 5A Phase III
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
Pesticides and PCBs (µg/kg) - cont.								
Dieldrin	N/A	0	1	3	1.40	1.40	17.60	041M5A0601
Endosulfan I	N/A	0	1	3	5.20	5.20	10.80	041M5A0401
Endosulfan sulfate	N/A	0	2	3	0.660	2.30	17.70	041M5A0401
alpha-Chlordane	N/A	0	1	3	4.50	4.50	10.50	041M5A0401
gamma-Chlordane	N/A	0	1	3	7.90	7.90	11.70	041M5A0401
Total Chlordane	N/A	0	1	3	12.40	12.40	22.20	041M5A0401
Endrin	N/A	0	1	3	1.10	1.10	0.882	041M5A0601
Total Endrin	N/A	0	1	3	6.50	6.50	36.90	041M5A0601
gamma-BHC (Lindane)	N/A	0	1	3	0.240	0.240	9.550	041M5A0401
Total BHC	N/A	0	1	3	4.140	4.140	39.20	041M5A0401
4,4'-DDD	50.0	1	2	3	1.30	100.0	50.40	041M5A0401
4,4'-DDE	40.0	2	2	3	3.60	57.0	36.90	041M5A0401
4,4'-DDT	20.0	1	2	3	3.20	7.20	20.10	041M5A0401
Total DDT	110.0	2	2	3	8.10	164.20	107.0	041M5A0401
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	2	3	62.0	120.0	151.0	041M5A0401
Benzo(k)fluoranthene	N/A	0	1	3	110.0	110.0	213.0	041M5A0401
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	2	3	210.0	950.0	477.0	041M5A0501
Butylbenzylphthalate	N/A	0	1	3	140.0	140.0	220.0	041M5A0501
Di-n-octylphthalate	N/A	0	1	3	290.0	290.0	270.0	041M5A0501

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-1-7
Wetland 5A Phase II
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	1,090.25	0	5	6	153.0	945.0	437.0	041W5A0201
Antimony	4.00	0	1	6	3.1	3.1	3.1	041W5A0501
Barium	3.68	6	6	6	13.6	41.4	26.6	041W5A0101
Cadmium	3.00	1	1	6	3.2	3.2	3.2	041W5A0201
Calcium	7,675.00	5	6	6	5,460.0	28,600.0	15,600.0	041W5A0501
Chromium	8.00	1	1	6	11.4	11.4	11.4	041W5A0501
Cobalt	3.00	0	1	6	3.0	3.0	3.0	041W5A0101
Copper	4.00	5	3	6	7.2	21.3	16.0	041W5A0701
Iron	2,360.00	0	6	6	357.0	1,710.0	1,110.0	041W5A0501
Lead	3.20	4	5	6	2.8	20.3	11.4	041W5A0401
Magnesium	20,260.00	0	6	6	2,090.0	6,710.0	3,300.0	041W5A0501
Manganese	13.20	6	6	6	20.5	80.0	48.6	041W5A0101
Potassium	6,995.00	0	6	6	1,050.0	5,580.0	2,670.0	041W5A0501
Sodium	182,200.00	0	6	6	7,710.0	21,300.0	12,200.0	041W5A0501
Thallium	4.20	0	1	6	3.5	3.5	3.5	041W5A0101
Vanadium	4.70	1	1	6	4.8	4.8	4.8	041W5A0601
Zinc	5.53	6	4	6	55.8	236.0	123.0	041W5A0601
Pesticides (µg/L)								
Endosulfan I	N/A	0	1	6	0.029	0.029	0.029	041W5A0101
SVOCs (µg/L)								
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	4	6	2.0	5.0	3.0	041W5A0401
VOCs (µg/L)								
1,1-Dichloroethane	N/A	0	1	6	1.0	1.0	1.0	041W5A0101
Acetone	N/A	0	1	1	9.0	9.0	9.0	041W5A0601
Bromodichloromethane	N/A	0	1	6	2.0	2.0	2.0	041W5A0601
Chloroform	N/A	0	1	6	1.0	1.0	1.0	041W5A0601
cis-1,2-Dichloroethene	N/A	0	1	6	1.0	1.0	1.0	041W5A0601
Dibromochloromethane	N/A	0	1	6	2.0	2.0	2.0	041W5A0601

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-1-8
Wetland 5A Phase III
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	1,090.25	0	3	3	124.0	668.0	305.0	041W5A0501
Antimony	4.00	1	1	3	94.3	94.3	94.3	041W5A0501
Barium	3.68	3	3	3	22.3	28.0	24.7	041W5A0501
Cadmium	3.00	0	1	3	1.2	1.2	1.2	041W5A0501
Calcium	7,675.00	3	3	3	9,160.0	12,600.0	10,600.0	041W5A0401
Chromium	8.00	1	1	3	12.0	12.0	12.0	041W5A0501
Cobalt	3.00	1	2	3	2.0	3.2	2.6	041W5A0501
Copper	4.00	2	2	3	4.1	42.8	23.5	041W5A0501
Iron	2,360.00	1	3	3	756.0	2,500.0	1,450.0	041W5A0601
Lead	3.20	2	2	3	9.0	91.4	50.2	041W5A0501
Magnesium	20,260.00	0	3	3	1,520.0	3,940.0	2,580.0	041W5A0401
Manganese	13.20	3	3	3	124.0	198.0	166.0	041W5A0501
Potassium	6,995.00	0	3	3	1,190.0	3,400.0	1,970.0	041W5A0401
Silver	4.00	0	1	3	0.1	0.1	0.1	041W5A0501
Sodium	182,200.00	0	3	3	4,450.0	9,590.0	7,670.0	041W5A0401
Vanadium	4.70	0	2	3	1.1	3.4	2.25	041W5A0501
Zinc	5.53	3	3	3	15.4	338.0	126.0	041W5A0501
VOCs (µg/L)								
1,2-Dichloroethene (total)	N/A	0	1	3	1.1	1.1	1.1	041W5A0601
Acetone	N/A	0	1	3	23.0	23.0	23.0	041W5A0601
Toluene	N/A	0	1	3	0.41	0.41	0.41	041W5A0501

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-1-9
Wetland 5B Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	13,610.00	0	2	2	491.0	10,500.0	5,500.0	041M5B0201
Arsenic	6.62	0	1	2	1.30	1.30	0.685	041M5B0201
Barium	14.00	1	2	2	1.30	30.20	15.80	041M5B0201
Beryllium	0.84	0	1	2	0.480	0.480	0.258	041M5B0201
Cadmium	1.80	1	2	2	0.30	220.0	110.0	041M5B0201
Calcium	10,756.67	0	2	2	109.0	4,400.0	2,250.0	041M5B0201
Chromium	39.37	1	2	2	7.90	416.0	212.0	041M5B0201
Cobalt	2.80	1	1	2	5.30	5.30	2.70	041M5B0201
Copper	19.50	1	1	2	268.0	268.0	135.0	041M5B0201
Iron	11,911.67	0	2	2	306.0	3,290.0	1,800.0	041M5B0201
Lead	82.47	1	2	2	17.90	481.0	249.0	041M5B0201
Magnesium	7,513.33	0	2	2	27.10	668.0	348.0	041M5B0201
Manganese	37.97	1	2	2	1.40	42.70	22.10	041M5B0201
Mercury	0.55	1	1	2	0.680	0.680	0.353	041M5B0201
Nickel	9.28	1	2	2	2.20	93.90	48.10	041M5B0201
Potassium	1,628.67	0	2	2	10.50	247.0	129.0	041M5B0201
Selenium	3.45	1	1	2	3.60	3.60	1.850	041M5B0201
Silver	2.10	1	1	2	5.20	5.20	2.670	041M5B0201
Sodium	18,993.33	0	1	2	95.20	95.20	48.30	041M5B0201
Vanadium	28.67	0	1	2	18.80	18.80	9.610	041M5B0201
Zinc	36.73	1	2	2	9.80	1,160.0	585.0	041M5B0201
PAHs (µg/kg)								
Fluoranthene	N/A	0	1	2	110.0	110.0	65.30	041M5B0201
Pyrene	N/A	0	1	2	88.0	88.0	54.30	041M5B0201
Total PAHs	N/A	0	1	2	1,527.0	1,527.0	979.0	041M5B0201
Pesticides and PCBs (µg/kg)								
Aroclor-1254	N/A	0	2	2	8.70	53.0	30.90	041M5B0201
Total PCBs	N/A	0	2	2	23.150	102.50	62.80	041M5B0201
Dieldrin	N/A	0	2	2	0.420	7.10	3.760	041M5B0201
alpha-Chlordane	N/A	0	2	2	0.190	1.20	0.695	041M5B0201
gamma-Chlordane	N/A	0	1	2	1.0	1.0	0.525	041M5B0201
Total Chlordane	N/A	0	2	2	0.240	2.20	1.220	041M5B0201
alpha-BHC	N/A	0	2	2	0.30	1.80	1.050	041M5B0201
Total BHC	N/A	0	2	2	0.450	2.340	1.40	041M5B0201
4,4'-DDD	50.0	0	1	2	2.20	2.20	1.150	041M5B0201
4,4'-DDE	40.0	0	2	2	0.320	3.90	2.110	041M5B0201
Total DDT	110.0	0	2	2	0.530	6.465	3.50	041M5B0201

Table 11-1-9
Wetland 5B Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
SVOCs (µg/kg) - cont.								
2-Methylphenol (o-Cresol)	N/A	0	1	2	200.0	200.0	203.0	041M5B0201
4-Methylphenol (p-Cresol)	N/A	0	1	2	150.0	150.0	178.0	041M5B0201
Benzo(b)fluoranthene	N/A	0	1	2	83.0	83.0	51.80	041M5B0201
Butylbenzylphthalate	N/A	0	2	2	38.0	80.0	59.0	041M5B0201
VOCs (µg/kg)								
1,2-Dichloroethene (total)	N/A	0	1	2	11.0	11.0	8.50	041M5B0201
Acetone	N/A	0	2	2	66.0	180.0	123.0	041M5B0101
Chlorobenzene	N/A	0	1	2	7.0	7.0	6.50	041M5B0201
Toluene	N/A	0	1	2	13.0	13.0	9.50	041M5B0201
Vinyl chloride	N/A	0	1	2	42.0	42.0	22.0	041M5B0201

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-1-10
Wetland 5B Phase IV
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	13,610.0	0	5	5	300.0	3,400.0	1,150.0	041M5B0202
Antimony	4.430	0	5	5	1.10	3.60	2.240	041M5B0202
Arsenic	6.620	0	1	5	0.840	0.840	0.382	041M5B0202
Barium	14.0	1	5	5	1.50	18.0	5.820	041M5B0202
Beryllium	0.840	0	5	5	0.036	0.150	0.072	041M5B0202
Cadmium	1.80	2	5	5	0.950	31.0	7.830	041M5B0202
Calcium	10,756.670	0	5	5	100.0	1,100.0	412.0	041M5B0202
Chromium	39.370	2	5	5	14.0	470.0	117.0	041M5B0202
Cobalt	2.80	1	5	5	0.30	4.10	1.260	041M5B0202
Copper	19.50	1	5	5	5.30	90.0	26.20	041M5B0202
Iron	11,911.670	0	5	5	210.0	1,800.0	714.0	041M5B0202
Lead	82.470	1	5	5	19.0	420.0	110.0	041M5B0202
Magnesium	7,513.330	0	5	5	26.0	210.0	81.0	041M5B0202
Manganese	37.970	0	5	5	1.10	21.0	8.120	041M5B0601
Mercury	0.550	0	4	5	0.019	0.220	0.090	041M5B0202
Nickel	9.280	1	5	5	0.610	20.0	5.160	041M5B0202
Potassium	1,628.670	0	5	5	12.0	74.0	32.0	041M5B0202
Silver	2.10	1	2	5	0.380	6.40	1.40	041M5B0202
Sodium	18,993.330	0	5	5	7.50	38.0	16.0	041M5B0202
Vanadium	28.670	0	5	5	0.550	6.70	2.080	041M5B0202
Zinc	36.730	3	5	5	19.0	200.0	70.40	041M5B0202
PAHs (µg/kg)								
Benzo(a)anthracene	N/A	0	2	5	98.0	120.0	46.90	041M5B0202
Chrysene	N/A	0	3	5	56.0	160.0	69.30	041M5B0202
Fluoranthene	N/A	0	5	5	15.0	290.0	123.0	041M5B0202
Pyrene	N/A	0	5	5	13.0	210.0	95.80	041M5B0202
Total PAHs	N/A	0	5	5	55.950	922.50	413.0	041M5B0202
Pesticides and PCBs (µg/kg)								
Aroclor-1260	N/A	0	4	5	20.0	150.0	65.80	041M5B0202
Total PCBs	N/A	0	4	5	56.0	202.850	110.0	041M5B0202
Dieldrin	N/A	0	5	5	8.60	100.0	32.10	041M5B0601
beta-BHC	N/A	0	1	5	2.90	2.90	0.783	041M5B0601
Total BHC	N/A	0	1	5	3.475	3.475	1.250	041M5B0601
4,4'-DDE	40.0	0	3	5	18.0	24.0	14.60	041M5B0601
Total DDT	110.0	0	3	5	25.350	31.50	20.70	041M5B0601

Table 11-1-10
Wetland 5B Phase IV
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
SVOCs (µg/kg)								
3-Methylphenol/4-Methylphenol	N/A	0	2	5	73.0	200.0	75.50	041M5B0601
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	5	150.0	190.0	119.0	041M5B0301
Di-n-butylphthalate	N/A	0	1	5	330.0	330.0	95.20	041M5B0301
VOCs (µg/kg)								
Acetone	N/A	0	2	5	21.0	28.0	14.30	041M5B0202
cis-1,2-Dichloroethene	N/A	0	1	5	7.70	7.70	2.320	041M5B0601
Toluene	N/A	0	1	5	3.50	3.50	2.150	041M5B0401
Vinyl chloride	N/A	0	1	5	3.70	3.70	1.770	041M5B0202

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-1-11
Wetland 5B Phase II
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections		Range of Detections		Average Detection	Maximum Detection Location
			Number Detected	Number Analyzed	Minimum Detection	Maximum Detection		
Metals (µg/L)								
Aluminum	1,090.25	1	1	1	2,060.0	2,060.0	2,060.0	041W5B0201
Barium	3.68	1	1	1	27.8	27.8	27.8	041W5B0201
Cadmium	3.00	1	1	1	19.0	19.0	19.0	041W5B0201
Calcium	7,675.00	1	1	1	15,600.0	15,600.0	15,600.0	041W5B0201
Chromium	8.00	1	1	1	40.8	40.8	40.8	041W5B0201
Cobalt	3.00	1	1	1	3.9	3.9	3.9	041W5B0201
Copper	4.00	1	1	1	52.7	52.7	52.7	041W5B0201
Iron	2,360.00	1	1	1	2,890.0	2,890.0	2,890.0	041W5B0201
Lead	3.20	1	1	1	94.1	94.1	94.1	041W5B0201
Magnesium	20,260.00	0	1	1	3,250.0	3,250.0	3,250.0	041W5B0201
Manganese	13.20	1	1	1	109.0	109.0	109.0	041W5B0201
Mercury	0.13	1	1	1	0.1	0.1	0.1	041W5B0201
Potassium	6,995.00	0	1	1	2,160.0	2,160.0	2,160.0	041W5B0201
Sodium	182,200.00	0	1	1	12,600.0	12,600.0	12,600.0	041W5B0201
Vanadium	4.70	1	1	1	5.2	5.2	5.2	041W5B0201
Zinc	5.53	1	1	1	189.0	189.0	189.0	041W5B0201
SVOCs (µg/L)								
2-Chlorophenol	N/A	0	1	1	1.0	1.0	1.0	041W5B0201
4-Chloro-3-methylphenol	N/A	0	1	1	1.0	1.0	1.0	041W5B0201
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	1	1	2.0	2.0	2.0	041W5B0201
N-Nitroso-di-n-propylamine	N/A	0	1	1	1.0	1.0	1.0	041W5B0201
Pyrene	N/A	0	1	1	2.0	2.0	2.0	041W5B0201
Total PAH	N/A	0	1	1	8.0	8.0	8.0	041W5B0201
VOCs (µg/L)								
1,1-Dichloroethane	N/A	0	1	1	3.0	3.0	3.0	041W5B0201
Acetone	N/A	0	1	1	8.0	8.0	8.0	041W5B0201
Trichloroethene	N/A	0	1	1	10.0	10.0	10.0	041W5B0201
Vinyl chloride	N/A	0	1	1	6.0	6.0	6.0	041W5B0201

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-1-12
Wetland 5A Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	7	7			699	18,700	041M5A0101	18,700			N/A		Yes	No SV
Antimony	5	7	0.19	2.2	0.28	10	041M5A0101	10	J	12	2	0.83	No	Max Detect < SV
Arsenic	6	7	0.075	0.075	0.78	3.2	041M5A0501	3.2		7.24	1, 2	0.44	No	Max Detect < SV
Barium	7	7			4.1	150	041M5A0101	150			N/A		Yes	No SV
Beryllium	3	7	0.03	0.22	0.27	0.83	041M5A0101	0.83	J		N/A		Yes	No SV
Cadmium	**7**	**7**			**0.27**	**11.2**	**041M5A0101**	**11.2**		**0.68**	**1**	**16.6**	**Yes**	**Max Detect > SV**
Calcium	7	7			351	71,000	041M5A0701	71,000			N/A		Yes	No SV
Chromium	**7**	**7**			**2.8**	**115**	**041M5A0501**	**115**		**52.3**	**1, 2**	**2.2**	**Yes**	**Max Detect > SV**
Cobalt	6	7	0.65	0.65	0.3	13.4	041M5A0501	13.4	J		N/A		Yes	No SV
Copper	**7**	**7**			**13.1**	**317**	**041M5A0501**	**317**		**18.7**	**1, 2**	**17**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	7	0.3	2.1			ND	2.1	U		N/A		Yes	No SV
Iron	7	7			616	9,830	041M5A0101	9,830			N/A		Yes	No SV
Lead	**7**	**7**			**11.5**	**427**	**041M5A0101**	**427**		**30.2**	**1, 2**	**14.1**	**Yes**	**Max Detect > SV**
Magnesium	7	7			44.4	5,960	041M5A0701	5,960			N/A		Yes	No SV
Manganese	7	7			11.8	205	041M5A0101	205			N/A		Yes	No SV
Mercury	**5**	**7**	**0.025**	**0.085**	**0.25**	**1**	**041M5A0101**	**1**		**0.13**	**1, 2**	**7.69**	**Yes**	**Max Detect > SV**
Nickel	**6**	**7**	**2.65**	**2.65**	**1.3**	**25.2**	**041M5A0501**	**25.2**		**15.9**	**1, 2**	**1.58**	**Yes**	**Max Detect > SV**
Potassium	7	7			20.3	413	041M5A0101	413	J		N/A		Yes	No SV
Selenium	5	7	0.09	0.11	1.5	2.6	041M5A0501	2.6	J		N/A		Yes	No SV
Silver	**2**	**7**	**0.12**	**0.9**	**0.42**	**1.1**	**041M5A0201**	**1.1**	**J**	**0.73**	**1**	**1.5**	**Yes**	**Max Detect > SV**
Sodium	7	7			8.6	122	041M5A0401	122	J		N/A		Yes	No SV
Thallium	1	7	0.09	0.65	1.4	1.4	041M5A0101	1.4	J		N/A		Yes	No SV
Vanadium	6	7	0.55	0.55	2.2	24	041M5A0101	24			N/A		Yes	No SV
Zinc	**7**	**7**			**39.3**	**2,290**	**041M5A0101**	**2,290**		**124**	**1, 2**	**18.5**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	7	20	80			ND	80	U	20.2	1	3.96	Yes	Max SQL> SV
Acenaphthene	0	7	9.5	37.5			ND	37.5	U	6.71	1	5.59	Yes	Max SQL > SV
Acenaphthylene	**1**	**7**	**20**	**70**	**120**	**120**	**041M5A0501**	**120**	**J**	**5.87**	**1**	**20.4**	**Yes**	**Max Detect > SV**
Anthracene	1	7	31.5	225	44	44	041M5A0701	44		46.9	1	0.94	No	Max Detect < SV
Benzo(a)anthracene	**3**	**7**	**22.5**	**70**	**120**	**320**	**041M5A0501**	**320**		**74.8**	**1**	**4.28**	**Yes**	**Max Detect > SV**
Benzo(a)pyrene	**4**	**7**	**22.5**	**70**	**37**	**240**	**041M5A0701**	**240**		**88.8**	**1**	**2.7**	**Yes**	**Max Detect > SV**
Chrysene	**3**	**7**	**22.5**	**70**	**180**	**510**	**041M5A0501**	**510**		**108**	**1**	**4.72**	**Yes**	**Max Detect > SV**
Dibenz(a,h)anthracene	0	7	20	80			ND	80	U	6.22	1	12.9	Yes	Max SQL > SV
Fluoranthene	**5**	**7**	**22.5**	**60**	**71**	**1,100**	**041M5A0501**	**1,100**		**113**	**1**	**9.73**	**Yes**	**Max Detect > SV**
Fluorene	0	7	9.5	37.5			ND	37.5	U	21.2	1	1.77	Yes	Max SQL> SV
Naphthalene	0	7	20	80			ND	80	U	34.6	1	2.31	Yes	Max SQL> SV
Phenanthrene	**3**	**7**	**22.5**	**70**	**110**	**240**	**041M5A0501**	**240**		**86.7**	**1**	**2.77**	**Yes**	**Max Detect > SV**
Pyrene	**5**	**7**	**22.5**	**60**	**71**	**730**	**041M5A0501**	**730**		**153**	**1**	**4.77**	**Yes**	**Max Detect > SV**
Total PAHs	**5**	**7**	**472**	**719**	**462**	**3,660**	**041M5A0501**	**3,660**		**1,684**	**1, 2**	**2.17**	**Yes**	**Max Detect > SV**
TOC Normalized PAHs	**5**	**7**	**7.21**	**73.52**	**2.13**	**1,244.29**	**041M5A0701**	**####**		**290**	**3**	**4.29**	**Yes**	**Max Detect > SV**
PCBs (µg/kg)														
Aroclor-1016	0	7	1	4.05			ND	4.05	U	21.6	1	0.19	No	Max SQL< SV
Aroclor-1221	0	7	2	8			ND	8	U	67	2	0.12	No	Max SQL< SV
Aroclor-1232	0	7	1	4.05			ND	4.05	U	21.6	1	0.19	No	Max SQL< SV
Aroclor-1242	0	7	1	4.05			ND	4.05	U	21.6	1	0.19	No	Max SQL< SV
Aroclor-1248	0	7	1	4.05			ND	4.05	U	21.6	1	0.19	No	Max SQL< SV
Aroclor-1254	1	7	1	4.05	14	14	041M5A0601	14		21.6	1	0.65	No	Max Detect < SV
Aroclor-1260	**3**	**7**	**1.6**	**3.6**	**2.6**	**100**	**041M5A0701**	**100**	**J**	**21.6**	**1**	**4.63**	**Yes**	**Max Detect > SV**
Total PCBs	**4**	**7**	**12.8**	**28.6**	**9.6**	**128**	**041M5A0701**	**128**		**21.6**	**1**	**5.94**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	0	7	0.05	0.195			ND	0.195	UJ		N/A		Yes	No SV
Dieldrin	**2**	**7**	**0.1**	**0.405**	**0.85**	**2.5**	**041M5A0101**	**2.5**	**J**	**0.72**	**1**	**3.49**	**Yes**	**Max Detect > SV**
Endosulfan I	0	7	0.05	0.405			ND	0.405	UJ		N/A		Yes	No SV
Endosulfan II	1	7	0.1	0.36	1.7	1.7	041M5A0501	1.7	J		N/A		Yes	No SV
Endosulfan sulfate	0	7	0.1	0.405			ND	0.405	UJ		N/A		Yes	No SV
Heptachlor	0	7	0.05	0.195			ND	0.195	UJ		N/A		Yes	No SV
Heptachlor epoxide	0	7	0.05	0.195			ND	0.195	UJ		N/A		Yes	No SV
Methoxychlor	0	7	0.5	1.95			ND	1.95	UJ		N/A		Yes	No SV
Toxaphene	0	7	10	37			ND	37	UJ		N/A		Yes	No SV
alpha-Chlordane	2	7	0.05	0.18	0.33	1.6	041M5A0501	1.6	J	1.7	1	0.94	No	Max Detect < SV
gamma-Chlordane	2	7	0.055	0.18	0.23	1.3	041M5A0501	1.3	J	1.7	1	0.77	No	Max Detect < SV
Total Chlordane	**3**	**7**	**0.11**	**0.36**	**0.28**	**2.9**	**041M5A0501**	**2.9**		**1.7**	**1**	**1.71**	**Yes**	**Max Detect > SV**
Endrin	1	7	0.1	0.36	1.1	1.1	041M5A0501	1.1	J	3.3	2	0.33	No	Max Detect < SV
Endrin aldehyde	1	7	0.1	0.36	0.72	0.72	041M5A0501	0.72	J	3.3	2	0.22	No	Max Detect < SV
Endrin ketone	1	7	0.115	0.405	0.26	0.26	041M5A0701	0.26		3.3	2	0.08	No	Max Detect < SV
Total Endrin	2	7	0.345	1.08	0.46	2.23	041M5A0501	2.23		3.3	2	0.67	No	Max Detect < SV
alpha-BHC	2	7	0.08	0.225	0.34	0.64	041M5A0601	0.64	J		N/A		Yes	No SV
beta-BHC	0	7	0.05	0.195			ND	0.195	U	0.32	N/A	0.61	No	Max SQL< SV
delta-BHC	0	7	0.05	0.195			ND	0.195	U	0.32	N/A	0.61	No	Max SQL< SV
gamma-BHC (Lindane)	0	7	0.05	0.195			ND	0.195	U	0.32	1	0.61	No	Max SQL< SV
Total BHC	**2**	**7**	**0.32**	**0.78**	**0.505**	**1.09**	**041M5A0601**	**1.09**		**0.32**	**2**	**3.41**	**Yes**	**Max Detect > SV**
4,4'-DDD	**5**	**7**	**0.115**	**0.405**	**0.23**	**2.3**	**041M5A0401**	**2.3**	**J**	**1.22**	**1**	**1.89**	**Yes**	**Max Detect > SV**
4,4'-DDE	**5**	**7**	**0.1**	**0.305**	**0.87**	**120**	**041M5A0501**	**120**	**D**	**2.07**	**1**	**58**	**Yes**	**Max Detect > SV**
4,4'-DDT	**3**	**7**	**0.1**	**0.305**	**0.78**	**5**	**041M5A0501**	**5**	**J**	**1.19**	**1**	**4.2**	**Yes**	**Max Detect > SV**
Total DDT	**7**	**7**			**0.43**	**125**	**041M5A0501**	**125**		**3.3**	**2**	**38**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	6	225	800			ND	800	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	7	200	800			ND	800	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	7	200	800			ND	800	U		N/A		Yes	No SV
2-Chloronaphthalene	0	7	200	800			ND	800	U		N/A		Yes	No SV
2-Chlorophenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	7	200	800			ND	800	U		N/A		Yes	No SV
2-Nitroaniline	0	7	200	800			ND	800	U		N/A		Yes	No SV
2-Nitrophenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	7	200	800			ND	800	U		N/A		Yes	No SV
3-Nitroaniline	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	7	200	800			ND	800	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
4-Chloroaniline	0	7	200	800			ND	800	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	7	200	800			ND	800	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	3	7	200	600	100	200	041M5A0101	200	J		N/A		Yes	No SV
4-Nitroaniline	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
4-Nitrophenol	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
Benzo(b)fluoranthene	3	7	22.5	80	57	360	041M5A0701	360			N/A		Yes	No SV
Benzo(g,h,i)perylene	3	7	22.5	70	120	280	041M5A0501	280			N/A		Yes	No SV
Benzo(k)fluoranthene	3	7	22.5	80	73	170	041M5A0701	170			N/A		Yes	No SV
bis(2-Chloroethoxy)methane	1	7	200	700	110	110	041M5A0501	110	J		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	7	20	80			ND	80	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**7**	**315**	**700**	**690**	**1,500**	**041M5A0501**	**1,500**	**J**	**182**	**1, 2**	**8.24**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	**1**	**7**	**200**	**700**	**200**	**200**	**041M5A0501**	**200**	**J**	**182**	**1, 2**	**1.1**	**Yes**	**Max Detect > SV**
Carbazole	2	7	225	700	48	96	041M5A0501	96	J		N/A		Yes	No SV
Dibenzofuran	0	7	200	800			ND	800	U		N/A		Yes	No SV
Diethylphthalate	0	7	200	800			ND	800	U	182	1, 2	4.4	Yes	Max SQL > SV
Dimethylphthalate	0	7	200	800			ND	800	U	182	1, 2	4.4	Yes	Max SQL > SV
Di-n-butylphthalate	1	7	200	700	100	100	041M5A0501	100	J	182	1, 2	0.55	No	Max Detect < SV
Di-n-octylphthalate	1	7	225	800	22	22	041M5A0701	22	J	182	1, 2	0.12	No	Max Detect < SV
Hexachlorobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
Hexachlorobutadiene	0	7	200	800			ND	800	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	7	200	800			ND	800	U		N/A		Yes	No SV
Hexachloroethane	0	7	200	800			ND	800	U		N/A		Yes	No SV

Table 11-1-12
Wetland 5A Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Indeno(1,2,3-cd)pyrene	3	7	22.5	70	110	310	041M5A0501	310			N/A		Yes	No SV
Isophorone	0	7	200	800			ND	800	U		N/A		Yes	No SV
Nitrobenzene	0	7	200	800			ND	800	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	7	20	80			ND	80	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	7	200	800			ND	800	U		N/A		Yes	No SV
Pentachlorophenol	0	7	480	1,900			ND	1,900	U		N/A		Yes	No SV
Phenol	0	7	200	800			ND	800	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,1-Dichloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,1-Dichloroethene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,2-Dichloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
1,2-Dichloropropane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
2-Hexanone	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Acetone	5	7	6.5	65	140	5,200	041M5A0201	5,200	J		N/A		Yes	No SV
Benzene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Bromodichloromethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Bromoform	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Bromomethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Carbon disulfide	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Chlorobenzene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Chloroethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Chloroform	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Chloromethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Dibromochloromethane	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Ethylbenzene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Methylene chloride	1	7	6.5	41.5	250	250	041M5A0101	250	J		N/A		Yes	No SV
Styrene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Tetrachloroethene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Toluene	3	7	6.5	26.5	5	280	041M5A0401	280			N/A		Yes	No SV
trans-1,3-Dichloropropene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Trichloroethene	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV
Vinyl chloride	0	7	2	26.5			ND	26.5	U		N/A		Yes	No SV
Xylene (Total)	0	7	6.5	41.5			ND	41.5	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient

D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-1-13
Wetland 5A Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	4-Methylphenol (p-Cresol)	Acetone
Barium	4,4'-DDE	Acenaphthylene	Methylene chloride
Beryllium	4,4'-DDT	Benzo(a)anthracene	Toluene
Cadmium	alpha-BHC	Benzo(a)pyrene	
Calcium	Dieldrin	Benzo(b)fluoranthene	
Chromium	Endosulfan II	Benzo(g,h,i)perylene	
Cobalt	Total BHC	Benzo(k)fluoranthene	
Copper	Total Chlordane	Butylbenzylphthalate	
Iron	Total DDT	Carbazole	
Lead	Aroclor-1260	Chrysene	
Magnesium	Total PCBs	Fluoranthene	
Manganese		Indeno(1,2,3-cd)pyrene	
Mercury		Indeno(1,2,3-cd)pyrene	
Nickel		Phenanthrene	
Potassium		Pyrene	
Selenium		TOC Normalized PAHs	
Silver		Total PAHs	
Sodium			
Thallium			
Vanadium			
Zinc			
		Not Detected Parameters	
Cyanide (CN)	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
	Endosulfan I	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	Endosulfan sulfate	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Heptachlor	1,4-Dichlorobenzene	1,1-Dichloroethane
	Heptachlor epoxide	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Methoxychlor	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Toxaphene	2,4,6-Trichlorophenol	1,2-Dichloroethene (total)
		2,4-Dichlorophenol	1,2-Dichloropropane
		2,4-Dimethylphenol	2-Butanone (MEK)
		2,4-Dinitrophenol	2-Hexanone
		2,4-Dinitrotoluene	4-Methyl-2-Pentanone (MIBK)
		2,6-Dinitrotoluene	Benzene
		2-Chloronaphthalene	Bromodichloromethane
		2-Chlorophenol	Bromoform
		2-Methyl-4,6-Dinitrophenol	Bromomethane
		2-Methylnaphthalene	Carbon disulfide
		2-Methylphenol (o-Cresol)	Carbon tetrachloride
		2-Nitroaniline	Chlorobenzene
		2-Nitrophenol	Chloroethane
		3,3'-Dichlorobenzidine	Chloroform
		3-Nitroaniline	Chloromethane
		4-Bromophenyl-phenylether	cis-1,3-Dichloropropene
		4-Chloro-3-methylphenol	Dibromochloromethane
		4-Chloroaniline	Ethylbenzene
		4-Chlorophenylphenyl ether	Styrene
		4-Nitroaniline	Tetrachloroethene
		4-Nitrophenol	trans-1,3-Dichloropropene
		Acenaphthene	Trichloroethene
		bis(2-Chloroethyl)ether	Vinyl chloride
		Dibenz(a,h)anthracene	Xylene (Total)
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Fluorene	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Naphthalene	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 11-1-14
Wetland 5A Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	7	7				8,120	699	18,700	18,700		041M5A0101			NA					0	13,610	1	Yes	EPC > RC and no RV
Barium	7	7				40.1	4.1	150	150		041M5A0101			NA					0	14	4	Yes	EPC > RC and no RV
Beryllium	3	7	0.0963	0.03	0.22	0.276	0.27	0.83	0.83	J	041M5A0101			NA					0	0.84	0	No	EPC < RC
Cadmium	**7**	**7**				**5.95**	**0.27**	**11.2**	**11.2**		**041M5A0101**	**0.68**	**4.21**	**PEL**	**16.6**	**8.8**	**2.66**	**1.41**	**4**	**1.8**	**5**	**Yes**	**EPC > RV and RC**
Calcium	7	7				14,000	351	71,000	71,000		041M5A0701			NA					0	10,757	1	No	Essential Nutrient
Chromium	7	7				51.6	2.8	115	115		041M5A0501	52.3	160	PEL	2.2	0.99	0.72	0.32	0	39.37	3	No	EPC > RC, but < RV
Cobalt	6	7	0.65	0.65	0.65	4.31	0.3	13.4	13.4	J	041M5A0501			NA					0	2.8	3	Yes	EPC > RC and no RV
Copper	**7**	**7**				**87.5**	**13.1**	**317**	**317**		**041M5A0501**	**18.7**	**108**	**PEL**	**17**	**4.68**	**2.94**	**0.81**	**2**	**19.5**	**4**	**Yes**	**EPC > RV and RC**
Cyanide (CN)	0	7	1.06	0.3	2.1	1.06			2.1	U	ND			NA					0	5.22	0	No	Parameter Not Detected
Iron	7	7				4,680	616	9,830	9,830		041M5A0101			NA					0	11,912	0	No	EPC < RC
Lead	**7**	**7**				**174**	**11.5**	**427**	**427**		**041M5A0101**	**30.2**	**112**	**PEL**	**14.1**	**5.75**	**3.81**	**1.55**	**3**	**82.47**	**4**	**Yes**	**EPC > RV and RC**
Magnesium	7	7				1,330	44.4	5,960	5,960		041M5A0701			NA					0	7,513	0	No	EPC < RC; Essential Nutrient
Manganese	7	7				59.7	11.8	205	205		041M5A0101			NA					0	37.97	3	Yes	EPC > RC and no RV
Mercury	**5**	**7**	**0.055**	**0.025**	**0.085**	**0.444**	**0.25**	**1**	**1**		**041M5A0101**	**0.13**	**0.696**	**PEL**	**7.69**	**3.42**	**1.44**	**0.64**	**2**	**0.55**	**2**	**Yes**	**EPC > RV and RC**
Nickel	6	7	2.65	2.65	2.65	10.9	1.3	25.2	25.2		041M5A0501	15.9	42.8	PEL	1.58	0.69	0.59	0.26	0	9.28	3	No	EPC > RC, but < RV
Potassium	7	7				185	20.3	413	413	J	041M5A0101			NA					0	1,629	0	No	EPC < RC; Essential Nutrient
Selenium	5	7	0.1	0.09	0.11	1.34	1.5	2.6	2.6	J	041M5A0501			NA					0	3.45	0	No	EPC < RC
Silver	2	7	0.51	0.12	0.9	0.581	0.42	1.1	1.1	J	041M5A0201	0.733	1.77	PEL	1.5	0.79	0.62	0.33	0	2.1	0	No	EPC < RC and RV
Sodium	7	7				55.3	8.6	122	122	J	041M5A0401			NA					0	18,993	0	No	EPC < RC; Essential Nutrient
Thallium	1	7	0.309	0.09	0.65	0.465	1.4	1.4	1.4	J	041M5A0101			NA					0	1.57	0	No	EPC < RC
Vanadium	6	7	0.55	0.55	0.55	11.7	2.2	24	24		041M5A0101			NA					0	28.67	0	No	EPC < RC
Zinc	**7**	**7**				**459**	**39.3**	**2,290**	**2,290**		**041M5A0101**	**124**	**271**	**PEL**	**18.5**	**3.7**	**8.45**	**1.69**	**2**	**36.73**	**7**	**Yes**	**EPC > RV and RC**
PAHs (µg/kg)																							
2-Methylnaphthalene	0	7	49.1	20	80	49.1			80	U	ND	20.2	201	PEL	3.96	2.43	0.40	0.24	0		0	No	Parameter Not Detected
Acenaphthene	0	7	23.7	9.5	37.5	23.7			37.5	U	ND	6.71	88.9	PEL	5.59	3.53	0.42	0.27	0		0	No	Parameter Not Detected
Acenaphthylene	1	7	44	20	70	54.9	120	120	120	J	041M5A0501	5.87	128	PEL	20.4	9.35	0.94	0.43	0		0	No	RV HQ <1 and no RC
Anthracene	1	7	87.8	31.5	225	81.5	44	44	44		041M5A0701	46.9	245	PEL	0.94	1.74	0.18	0.33	0		0	No	RV HQ <1 and no RC
Benzo(a)anthracene	3	7	46	22.5	70	123	120	320	320		041M5A0501	74.8	693	PEL	4.28	1.65	0.46	0.18	0		0	No	RV HQ <1 and no RC
Benzo(a)pyrene	4	7	50.8	22.5	70	116	37	240	240		041M5A0701	88.8	763	PEL	2.7	1.3	0.32	0.15	0		0	No	RV HQ <1 and no RC
Chrysene	3	7	46	22.5	70	181	180	510	510		041M5A0501	108	846	PEL	4.72	1.67	0.60	0.21	0		0	No	RV HQ <1 and no RC
Dibenz(a,h)anthracene	0	7	49.1	20	80	49.1			80	U	ND	6.22	135	PEL	12.9	7.9	0.59	0.36	0		0	No	Parameter Not Detected
Fluoranthene	5	7	41.3	22.5	60	339	71	1,100	1,100		041M5A0501	113	1,494	PEL	9.73	3	0.74	0.23	0		0	No	RV HQ <1 and no RC
Fluorene	0	7	23.7	9.5	37.5	23.7			37.5	U	ND	21.2	144	PEL	1.77	1.12	0.26	0.17	0		0	No	Parameter Not Detected
Naphthalene	0	7	49.1	20	80	49.1			80	U	ND	34.6	391	PEL	2.31	1.42	0.21	0.13	0		0	No	Parameter Not Detected
Phenanthrene	3	7	46	22.5	70	109	110	240	240		041M5A0501	86.7	544	PEL	2.77	1.26	0.44	0.20	0		0	No	RV HQ <1 and no RC
Pyrene	5	7	41.3	22.5	60	258	71	730	730		041M5A0501	153	1,398	PEL	4.77	1.69	0.52	0.19	0		0	No	RV HQ <1 and no RC
Total PAHs	5	7	596	472	719	1,460	462	3,660	3,660		041M5A0501	1,684	16,770	PEL	2.17	0.87	0.22	0.09	0		0	No	RV HQ <1 and no RC
TOC Normalized PAHs	5	7	40.37	7.21	73.52	195.56	2.13	1,244.29	1,244.29		041M5A0701	290	1,800	MEC	4.29	0.67	0.69	0.11	0		0	No	RV HQ <1 and no RC
PCBs (µg/kg)																							
Aroclor-1016	0	7	2.64	1	4.05	2.64			4.05	U	ND	21.6	189	PEL	0.19	0.12	0.02	0.01	0		0	No	Parameter Not Detected
Aroclor-1221	0	7	5.26	2	8	5.26			8	U	ND	67	189	PEL	0.12	0.08	0.04	0.03	0		0	No	Parameter Not Detected
Aroclor-1232	0	7	2.64	1	4.05	2.64			4.05	U	ND	21.6	189	PEL	0.19	0.12	0.02	0.01	0		0	No	Parameter Not Detected
Aroclor-1242	0	7	2.64	1	4.05	2.64			4.05	U	ND	21.6	189	PEL	0.19	0.12	0.02	0.01	0		0	No	Parameter Not Detected
Aroclor-1248	0	7	2.64	1	4.05	2.64			4.05	U	ND	21.6	189	PEL	0.19	0.12	0.02	0.01	0		0	No	Parameter Not Detected
Aroclor-1254	1	7	2.71	1	4.05	4.32	14	14	14		041M5A0601	21.6	189	PEL	0.65	0.2	0.07	0.02	0		0	No	RV HQ <1 and no RC
Aroclor-1260	3	7	2.63	1.6	3.6	18.4	2.6	100	100	J	041M5A0701	21.6	189	PEL	4.63	0.85	0.53	0.10	0		0	No	RV HQ <1 and no RC
Total PCBs	4	7	21.9	12.8	28.6	38.6	9.6	128	128		041M5A0701	21.6	189	PEL	5.94	1.79	0.68	0.20	0		0	No	RV HQ <1 and no RC
Pesticides (µg/kg)																							
Aldrin	0	7	0.124	0.05	0.195	0.124			0.195	UJ	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	2	7	0.266	0.1	0.405	0.669	0.85	2.5	2.5	J	041M5A0101	0.716	4.3	PEL	3.49	0.93	0.58	0.16	0		0	No	RV HQ <1 and no RC
Endosulfan I	0	7	0.174	0.05	0.405	0.174			0.405	UJ	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	1	7	0.223	0.1	0.36	0.434	1.7	1.7	1.7	J	041M5A0501			NA					0		0	Yes	No SV, no RV, and no RC
Endosulfan sulfate	0	7	0.249	0.1	0.405	0.249			0.405	UJ	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	0	7	0.124	0.05	0.195	0.124			0.195	UJ	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	7	0.124	0.05	0.195	0.124			0.195	UJ	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	7	1.24	0.5	1.95	1.24			1.95	UJ	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	7	22.4	10	37	22.4			37	UJ	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	2	7	0.104	0.05	0.18	0.35	0.33	1.6	1.6	J	041M5A0501	1.7	4.79	PEL	0.94	0.21	0.33	0.07	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	2	7	0.124	0.055	0.18	0.307	0.23	1.3	1.3	J	041M5A0501	1.7	4.79	PEL	0.77	0.18	0.27	0.06	0		0	No	RV HQ <1 and no RC
Total Chlordane	3	7	0.235	0.11	0.36	0.657	0.28	2.9	2.9		041M5A0501	1.7	4.79	PEL	1.71	0.39	0.61	0.14	0		0	No	RV HQ <1 and no RC
alpha-BHC	2	7	0.167	0.08	0.225	0.259	0.34	0.64	0.64	J	041M5A0601		0.99	PEL			0.65	0.26	0		0	No	RV HQ <1 and no RC
beta-BHC	0	7	0.124	0.05	0.195	0.124			0.195	U	ND	0.32	0.99	PEL	0.61	0.39	0.20	0.13	0		0	No	Parameter Not Detected
delta-BHC	0	7	0.124	0.05	0.195	0.124			0.195	U	ND	0.32	0.99	PEL	0.61	0.39	0.20	0.13	0		0	No	Parameter Not Detected
gamma-BHC (Lindane)	0	7	0.124	0.05	0.195	0.124			0.195	U	ND	0.32	0.99	PEL	0.61	0.39	0.20	0.13	0		0	No	Parameter Not Detected
Total BHC	**2**	**7**	**0.563**	**0.32**	**0.78**	**0.63**	**0.505**	**1.09**	**1.09**		**041M5A0601**	**0.32**	**0.99**	**PEL**	**3.41**	**1.97**	**1.1**	**0.64**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	5	7	0.26	0.115	0.405	0.861	0.23	2.3	2.3	J	041M5A0401	1.22	7.81	PEL	1.89	0.71	0.29	0.11	0	50	0	No	EPC < RC and RV
4,4'-DDE	5	7	0.203	0.1	0.305	17.9	0.87	120	120	D	041M5A0501	2.07	374	PEL	58	8.67	0.32	0.05	0	40	1	No	EPC > RC, but < RV
4,4'-DDT	**3**	**7**	**0.17**	**0.1**	**0.305**	**1.11**	**0.78**	**5**	**5**	**J**	**041M5A0501**	**1.19**	**4.77**	**PEL**	**4.2**	**0.93**	**1.05**	**0.23**	**1**	**20**	**0**	**No**	**EPC > RV, but < RC**
Total DDT	**7**	**7**				**19.9**	**0.43**	**125**	**125**		**041M5A0501**	**3.3**	**51.7**	**PEL**	**38**	**6.03**	**2.43**	**0.39**	**1**	**110**	**1**	**Yes**	**EPC > RV and RC**
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	6	540	225	800	540			800	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	7	491	200	800	491			800	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-1-14
Wetland 5A Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result HQ	SV	Average Result SV HQ	Maximum Result HQ	RV	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
2,4-Dinitrotoluene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2-Chlorophenol	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA							0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2-Nitroaniline	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
2-Nitrophenol	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
3-Nitroaniline	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA							0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
4-Chloroaniline	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	3	7	335	200	600	256	100	200	200	J	041M5A0101			NA							0		0	Yes	No SV, no RV, and no RC
4-Nitroaniline	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA							0		0	No	Parameter Not Detected
4-Nitrophenol	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA							0		0	No	Parameter Not Detected
Benzo(b)fluoranthene	3	7	58.1	22.5	80	124	57	360	360		041M5A0701			NA							0		0	No	TOC Normalized PAHs < MEC
Benzo(g,h,i)perylene	3	7	46	22.5	70	111	120	280	280		041M5A0501			NA							0		0	No	TOC Normalized PAHs < MEC
Benzo(k)fluoranthene	3	7	48.5	22.5	80	75	73	170	170		041M5A0701			NA							0		0	No	TOC Normalized PAHs < MEC
bis(2-Chloroethoxy)methane	1	7	440	200	700	393	110	110	110	J	041M5A0501			NA							0		0	Yes	No SV, no RV, and no RC
bis(2-Chloroethyl)ether	0	7	49.1	20	80	49.1			80	U	ND			NA							0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	3	7	554	315	700	815	690	1500	1,500	J	041M5A0501	182	2647	PEL	8.24		4.48	0.57		0.31	0		0	No	RV HQ <1 and no RC
Butylbenzylphthalate	1	7	440	200	700	406	200	200	200	J	041M5A0501	182	2647	PEL	1.1		2.23	0.08		0.15	0		0	No	RV HQ <1 and no RC
Carbazole	2	7	488	225	700	369	48	96	96	J	041M5A0501			NA							0		0	Yes	No SV, no RV, and no RC
Dibenzofuran	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Diethylphthalate	0	7	491	200	800	491			800	U	ND	182	2647	PEL	4.4		2.7	0.30		0.19	0		0	No	Parameter Not Detected
Dimethylphthalate	0	7	491	200	800	491			800	U	ND	182	2647	PEL	4.4		2.7	0.30		0.19	0		0	No	Parameter Not Detected
Hexachlorobenzene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Hexachloroethane	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	3	7	46	22.5	70	113	110	310	310		041M5A0501			NA							0		0	No	TOC Normalized PAHs < MEC
Isophorone	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Nitrobenzene	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	7	49.1	20	80	49.1			80	U	ND			NA							0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
Pentachlorophenol	0	7	1,180	480	1,900	1,180			1,900	U	ND			NA							0		0	No	Parameter Not Detected
Phenol	0	7	491	200	800	491			800	U	ND			NA							0		0	No	Parameter Not Detected
VOCs (µg/kg)																									
1,1,1-Trichloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
2-Hexanone	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Acetone	5	7	35.8	6.5	65	1,690	140	5,200	5,200	J	041M5A0201			NA							0		0	Yes	No SV, no RV, and no RC
Benzene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Bromodichloromethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Bromoform	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Bromomethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Carbon disulfide	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Carbon tetrachloride	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Chlorobenzene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Chloroethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Chloroform	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Chloromethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Dibromochloromethane	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Ethylbenzene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Methylene chloride	1	7	18.2	6.5	41.5	51.3	250	250	250	J	041M5A0101			NA							0		0	Yes	No SV, no RV, and no RC
Styrene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Tetrachloroethene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Toluene	3	7	12.5	6.5	26.5	63.6	5	280	280		041M5A0401			NA							0		0	Yes	No SV, no RV, and no RC
trans-1,3-Dichloropropene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Trichloroethene	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected
Vinyl chloride	0	7	8.07	2	26.5	8.07			26.5	U	ND			NA							0		0	No	Parameter Not Detected
Xylene (Total)	0	7	18	6.5	41.5	18			41.5	U	ND			NA							0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result
Parameters in bold were detected and exceeded screening values.

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-1-15
Wetland 5A Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Endosulfan II	4-Methylphenol (p-Cresol)	None
Barium	Total BHC	bis(2-Chloroethoxy)methane	
Cadmium	Total DDT	Carbazole	
Cobalt			
Copper			
Lead			
Manganese			
Mercury			
Zinc			

Table 11-1-16
Wetland 5A Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5A0101	11/16/1995	mg/kg	2.5	J	Arsenic	8.2	70	0.04
041M5A0101	**11/16/1995**	**mg/kg**	**11.2**		**Cadmium**	**1.2**	**9.6**	**1.17**
041M5A0101	11/16/1995	mg/kg	81.1		Chromium	81	370	0.22
041M5A0101	11/16/1995	mg/kg	156		Copper	34	270	0.58
041M5A0101	**11/16/1995**	**mg/kg**	**427**		**Lead**	**46.7**	**218**	**1.96**
041M5A0101	**11/16/1995**	**mg/kg**	**1**		**Mercury**	**0.15**	**0.71**	**1.41**
041M5A0101	11/16/1995	mg/kg	23.5		Nickel	20.9	51.6	0.46
041M5A0101	11/16/1995	mg/kg	0.6	U	Silver	1	3.7	0.16
041M5A0101	**11/16/1995**	**mg/kg**	**2,290**		**Zinc**	**150**	**410**	**5.59**
041M5A0101	11/16/1995	µg/kg	0.87	J	4,4'-DDE	2.2	27	0.03
041M5A0101	11/16/1995	µg/kg	0.78	J	4,4'-DDT	1.58	46.1	0.02
041M5A0101	11/16/1995	µg/kg	36.75		Total PCBs	22.7	180	0.20
041M5A0101	11/16/1995	µg/kg	60	U	2-Methylnaphthalene	70	670	0.09
041M5A0101	11/16/1995	µg/kg	28.5	U	Acenaphthene	16	500	0.06
041M5A0101	11/16/1995	µg/kg	60	U	Acenaphthylene	44	640	0.09
041M5A0101	11/16/1995	µg/kg	60	U	Anthracene	85.3	1,100	0.05
041M5A0101	11/16/1995	µg/kg	120		Benzo(a)anthracene	261	1,600	0.08
041M5A0101	11/16/1995	µg/kg	140		Benzo(a)pyrene	430	1,600	0.09
041M5A0101	11/16/1995	µg/kg	180		Chrysene	384	2,800	0.06
041M5A0101	11/16/1995	µg/kg	60	U	Dibenz(a,h)anthracene	63.4	260	0.23
041M5A0101	11/16/1995	µg/kg	280		Fluoranthene	600	5,100	0.05
041M5A0101	11/16/1995	µg/kg	28.5	U	Fluorene	19	540	0.05
041M5A0101	11/16/1995	µg/kg	60	U	Naphthalene	160	2,100	0.03
041M5A0101	11/16/1995	µg/kg	110	J	Phenanthrene	240	1,500	0.07
041M5A0101	11/16/1995	µg/kg	220		Pyrene	665	2,600	0.08
041M5A0101	11/16/1995				ERM Quotient Sum			12.87
041M5A0101	11/16/1995				Mean ERM Quotient			0.51
041M5A0101	11/16/1995				Mean ERM Quotient without ND			0.48
041M5A0101	11/16/1995				Mean ERM Quotient Category			2
041M5A0201	11/16/1995	mg/kg	2.5		Arsenic	8.2	70	0.04
041M5A0201	11/16/1995	mg/kg	7.6		Cadmium	1.2	9.6	0.79
041M5A0201	11/16/1995	mg/kg	38.9		Chromium	81	370	0.11
041M5A0201	11/16/1995	mg/kg	13.1		Copper	34	270	0.05
041M5A0201	11/16/1995	mg/kg	64.6		Lead	46.7	218	0.30
041M5A0201	11/16/1995	mg/kg	0.085	U	Mercury	0.15	0.71	0.12
041M5A0201	11/16/1995	mg/kg	5.8	J	Nickel	20.9	51.6	0.11
041M5A0201	11/16/1995	mg/kg	1.1	J	Silver	1	3.7	0.30
041M5A0201	11/16/1995	mg/kg	39.3		Zinc	150	410	0.10
041M5A0201	11/16/1995	µg/kg	1.4	J	4,4'-DDE	2.2	27	0.05
041M5A0201	11/16/1995	µg/kg	0.16	UJ	4,4'-DDT	1.58	46.1	0.00
041M5A0201	11/16/1995	µg/kg	12.8	U	Total PCBs	22.7	180	0.07
041M5A0201	11/16/1995	µg/kg	31.5	U	2-Methylnaphthalene	70	670	0.05
041M5A0201	11/16/1995	µg/kg	15.5	U	Acenaphthene	16	500	0.03
041M5A0201	11/16/1995	µg/kg	31.5	U	Acenaphthylene	44	640	0.05
041M5A0201	11/16/1995	µg/kg	31.5	U	Anthracene	85.3	1,100	0.03
041M5A0201	11/16/1995	µg/kg	31.5	U	Benzo(a)anthracene	261	1,600	0.02
041M5A0201	11/16/1995	µg/kg	37	J	Benzo(a)pyrene	430	1,600	0.02
041M5A0201	11/16/1995	µg/kg	31.5	U	Chrysene	384	2,800	0.01
041M5A0201	11/16/1995	µg/kg	31.5	U	Dibenz(a,h)anthracene	63.4	260	0.12
041M5A0201	11/16/1995	µg/kg	71		Fluoranthene	600	5,100	0.01
041M5A0201	11/16/1995	µg/kg	15.5	U	Fluorene	19	540	0.03
041M5A0201	11/16/1995	µg/kg	31.5	U	Naphthalene	160	2,100	0.02
041M5A0201	11/16/1995	µg/kg	31.5	U	Phenanthrene	240	1,500	0.02
041M5A0201	11/16/1995	µg/kg	71		Pyrene	665	2,600	0.03
041M5A0201	11/16/1995				ERM Quotient Sum			2.47
041M5A0201	11/16/1995				Mean ERM Quotient			0.10
041M5A0201	11/16/1995				Mean ERM Quotient without ND			0.08
041M5A0201	11/16/1995				Mean ERM Quotient Category			2
041M5A0301	11/16/1995	mg/kg	2.6		Arsenic	8.2	70	0.04
041M5A0301	11/16/1995	mg/kg	7.7		Cadmium	1.2	9.6	0.80
041M5A0301	11/16/1995	mg/kg	69.3		Chromium	81	370	0.19
041M5A0301	11/16/1995	mg/kg	28.5		Copper	34	270	0.11
041M5A0301	11/16/1995	mg/kg	111		Lead	46.7	218	0.51
041M5A0301	11/16/1995	mg/kg	0.37		Mercury	0.15	0.71	0.52
041M5A0301	11/16/1995	mg/kg	16		Nickel	20.9	51.6	0.31
041M5A0301	11/16/1995	mg/kg	0.38	U	Silver	1	3.7	0.10
041M5A0301	11/16/1995	mg/kg	96.9		Zinc	150	410	0.24
041M5A0301	11/16/1995	µg/kg	0.305	UJ	4,4'-DDE	2.2	27	0.01
041M5A0301	11/16/1995	µg/kg	0.305	UJ	4,4'-DDT	1.58	46.1	0.01
041M5A0301	11/16/1995	µg/kg	24.3	U	Total PCBs	22.7	180	0.14
041M5A0301	11/16/1995	µg/kg	60	U	2-Methylnaphthalene	70	670	0.09
041M5A0301	11/16/1995	µg/kg	29.5	U	Acenaphthene	16	500	0.06
041M5A0301	11/16/1995	µg/kg	60	U	Acenaphthylene	44	640	0.09
041M5A0301	11/16/1995	µg/kg	60	U	Anthracene	85.3	1,100	0.05
041M5A0301	11/16/1995	µg/kg	60	U	Benzo(a)anthracene	261	1,600	0.04
041M5A0301	11/16/1995	µg/kg	60	U	Benzo(a)pyrene	430	1,600	0.04
041M5A0301	11/16/1995	µg/kg	60	U	Chrysene	384	2,800	0.02
041M5A0301	11/16/1995	µg/kg	60	U	Dibenz(a,h)anthracene	63.4	260	0.23
041M5A0301	11/16/1995	µg/kg	60	U	Fluoranthene	600	5,100	0.01
041M5A0301	11/16/1995	µg/kg	29.5	U	Fluorene	19	540	0.05
041M5A0301	11/16/1995	µg/kg	60	UJ	Naphthalene	160	2,100	0.03
041M5A0301	11/16/1995	µg/kg	60	U	Phenanthrene	240	1,500	0.04
041M5A0301	11/16/1995	µg/kg	60	U	Pyrene	665	2,600	0.02
041M5A0301	11/16/1995				ERM Quotient Sum			3.75
041M5A0301	11/16/1995				Mean ERM Quotient			0.15
041M5A0301	11/16/1995				Mean ERM Quotient without ND			0.11
041M5A0301	11/16/1995				Mean ERM Quotient Category			2

Table 11-1-16
Wetland 5A Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5A0401	11/16/1995	mg/kg	1.2	J	Arsenic	8.2	70	0.02
041M5A0401	11/16/1995	mg/kg	4.2		Cadmium	1.2	9.6	0.44
041M5A0401	11/16/1995	mg/kg	33.7		Chromium	81	370	0.09
041M5A0401	11/16/1995	mg/kg	68.9		Copper	34	270	0.26
041M5A0401	11/16/1995	mg/kg	169		Lead	46.7	218	0.78
041M5A0401	11/16/1995	mg/kg	0.54	J	Mercury	0.15	0.71	0.76
041M5A0401	11/16/1995	mg/kg	2.65	U	Nickel	20.9	51.6	0.05
041M5A0401	11/16/1995	mg/kg	0.9	U	Silver	1	3.7	0.24
041M5A0401	11/16/1995	mg/kg	91.7		Zinc	150	410	0.22
041M5A0401	11/16/1995	µg/kg	1.7	J	4,4'-DDE	2.2	27	0.06
041M5A0401	11/16/1995	µg/kg	1.3	J	4,4'-DDT	1.58	46.1	0.03
041M5A0401	11/16/1995	µg/kg	28.6	U	Total PCBs	22.7	180	0.16
041M5A0401	11/16/1995	µg/kg	70	U	2-Methylnaphthalene	70	670	0.10
041M5A0401	11/16/1995	µg/kg	34.5	U	Acenaphthene	16	500	0.07
041M5A0401	11/16/1995	µg/kg	70	U	Acenaphthylene	44	640	0.11
041M5A0401	11/16/1995	µg/kg	70	U	Anthracene	85.3	1,100	0.06
041M5A0401	11/16/1995	µg/kg	70	U	Benzo(a)anthracene	261	1,600	0.04
041M5A0401	11/16/1995	µg/kg	70	U	Benzo(a)pyrene	430	1,600	0.04
041M5A0401	11/16/1995	µg/kg	70	U	Chrysene	384	2,800	0.03
041M5A0401	11/16/1995	µg/kg	70	U	Dibenz(a,h)anthracene	63.4	260	0.27
041M5A0401	11/16/1995	µg/kg	88	J	Fluoranthene	600	5,100	0.02
041M5A0401	11/16/1995	µg/kg	34.5	U	Fluorene	19	540	0.06
041M5A0401	11/16/1995	µg/kg	70	U	Naphthalene	160	2,100	0.03
041M5A0401	11/16/1995	µg/kg	70	U	Phenanthrene	240	1,500	0.05
041M5A0401	11/16/1995	µg/kg	83	J	Pyrene	665	2,600	0.03
041M5A0401	11/16/1995				ERM Quotient Sum			4.03
041M5A0401	11/16/1995				Mean ERM Quotient			0.16
041M5A0401	11/16/1995				Mean ERM Quotient without ND			0.11
041M5A0401	11/16/1995				Mean ERM Quotient Category			2
041M5A0501	11/27/1995	mg/kg	3.2		Arsenic	8.2	70	0.05
041M5A0501	**11/27/1995**	**mg/kg**	**10.1**		**Cadmium**	**1.2**	**9.6**	**1.05**
041M5A0501	11/27/1995	mg/kg	115		Chromium	81	370	0.31
041M5A0501	**11/27/1995**	**mg/kg**	**317**		**Copper**	**34**	**270**	**1.17**
041M5A0501	**11/27/1995**	**mg/kg**	**383**	**J**	**Lead**	**46.7**	**218**	**1.76**
041M5A0501	**11/27/1995**	**mg/kg**	**0.84**		**Mercury**	**0.15**	**0.71**	**1.18**
041M5A0501	11/27/1995	mg/kg	25.2		Nickel	20.9	51.6	0.49
041M5A0501	11/27/1995	mg/kg	0.55	UJ	Silver	1	3.7	0.15
041M5A0501	**11/27/1995**	**mg/kg**	**591**		**Zinc**	**150**	**410**	**1.44**
041M5A0501	**11/27/1995**	**µg/kg**	**120**	**D**	**4,4'-DDE**	**2.2**	**27**	**4.44**
041M5A0501	11/27/1995	µg/kg	5	J	4,4'-DDT	1.58	46.1	0.11
041M5A0501	11/27/1995	µg/kg	128.25		Total PCBs	22.7	180	0.71
041M5A0501	11/27/1995	µg/kg	80	U	2-Methylnaphthalene	70	670	0.12
041M5A0501	11/27/1995	µg/kg	37.5	U	Acenaphthene	16	500	0.08
041M5A0501	11/27/1995	µg/kg	120	J	Acenaphthylene	44	640	0.19
041M5A0501	11/27/1995	µg/kg	80	U	Anthracene	85.3	1,100	0.07
041M5A0501	11/27/1995	µg/kg	320		Benzo(a)anthracene	261	1,600	0.20
041M5A0501	11/27/1995	µg/kg	240		Benzo(a)pyrene	430	1,600	0.15
041M5A0501	11/27/1995	µg/kg	510		Chrysene	384	2,800	0.18
041M5A0501	11/27/1995	µg/kg	80	U	Dibenz(a,h)anthracene	63.4	260	0.31
041M5A0501	11/27/1995	µg/kg	1,100		Fluoranthene	600	5,100	0.22
041M5A0501	11/27/1995	µg/kg	37.5	U	Fluorene	19	540	0.07
041M5A0501	11/27/1995	µg/kg	80	U	Naphthalene	160	2,100	0.04
041M5A0501	11/27/1995	µg/kg	240		Phenanthrene	240	1,500	0.16
041M5A0501	11/27/1995	µg/kg	730		Pyrene	665	2,600	0.28
041M5A0501	11/27/1995				ERM Quotient Sum			14.93
041M5A0501	11/27/1995				Mean ERM Quotient			0.60
041M5A0501	11/27/1995				Mean ERM Quotient without ND			0.56
041M5A0501	11/27/1995				Mean ERM Quotient Category			3
041M5A0601	11/17/1995	mg/kg	0.075	UJ	Arsenic	8.2	70	0.00
041M5A0601	11/17/1995	mg/kg	0.56		Cadmium	1.2	9.6	0.06
041M5A0601	11/17/1995	mg/kg	20.6		Chromium	81	370	0.06
041M5A0601	11/17/1995	mg/kg	16.2		Copper	34	270	0.06
041M5A0601	11/17/1995	mg/kg	48.6	J	Lead	46.7	218	0.22
041M5A0601	11/17/1995	mg/kg	0.25		Mercury	0.15	0.71	0.35
041M5A0601	11/17/1995	mg/kg	1.3	J	Nickel	20.9	51.6	0.03
041M5A0601	11/17/1995	mg/kg	0.42	J	Silver	1	3.7	0.11
041M5A0601	11/17/1995	mg/kg	51.3		Zinc	150	410	0.13
041M5A0601	11/17/1995	µg/kg	1.2		4,4'-DDE	2.2	27	0.04
041M5A0601	11/17/1995	µg/kg	0.115	U	4,4'-DDT	1.58	46.1	0.00
041M5A0601	11/17/1995	µg/kg	29.85		Total PCBs	22.7	180	0.17
041M5A0601	11/17/1995	µg/kg	22.5	U	2-Methylnaphthalene	70	670	0.03
041M5A0601	11/17/1995	µg/kg	11	U	Acenaphthene	16	500	0.02
041M5A0601	11/17/1995	µg/kg	22.5	U	Acenaphthylene	44	640	0.04
041M5A0601	11/17/1995	µg/kg	225	U	Anthracene	85.3	1,100	0.20
041M5A0601	11/17/1995	µg/kg	22.5	U	Benzo(a)anthracene	261	1,600	0.01
041M5A0601	11/17/1995	µg/kg	22.5	U	Benzo(a)pyrene	430	1,600	0.01
041M5A0601	11/17/1995	µg/kg	22.5	U	Chrysene	384	2,800	0.01
041M5A0601	11/17/1995	µg/kg	22.5	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M5A0601	11/17/1995	µg/kg	22.5	U	Fluoranthene	600	5,100	0.00
041M5A0601	11/17/1995	µg/kg	11	U	Fluorene	19	540	0.02
041M5A0601	11/17/1995	µg/kg	22.5	U	Naphthalene	160	2,100	0.01
041M5A0601	11/17/1995	µg/kg	22.5	U	Phenanthrene	240	1,500	0.02
041M5A0601	11/17/1995	µg/kg	22.5	U	Pyrene	665	2,600	0.01
041M5A0601	11/17/1995				ERM Quotient Sum			1.70
041M5A0601	11/17/1995				Mean ERM Quotient			0.07
041M5A0601	11/17/1995				Mean ERM Quotient without ND			0.05
041M5A0601	11/17/1995				Mean ERM Quotient Category			2

Table 11-1-16
Wetland 5A Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5A0701	11/16/1995	mg/kg	0.78		Arsenic	8.2	70	0.01
041M5A0701	11/16/1995	mg/kg	0.27	J	Cadmium	1.2	9.6	0.03
041M5A0701	11/16/1995	mg/kg	2.8		Chromium	81	370	0.01
041M5A0701	11/16/1995	mg/kg	13.1		Copper	34	270	0.05
041M5A0701	11/16/1995	mg/kg	11.5		Lead	46.7	218	0.05
041M5A0701	11/16/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M5A0701	11/16/1995	mg/kg	2	J	Nickel	20.9	51.6	0.04
041M5A0701	11/16/1995	mg/kg	0.12	U	Silver	1	3.7	0.03
041M5A0701	11/16/1995	mg/kg	54.7		Zinc	150	410	0.13
041M5A0701	11/16/1995	µg/kg	0.1	U	4,4'-DDE	2.2	27	0.00
041M5A0701	11/16/1995	µg/kg	0.1	U	4,4'-DDT	1.58	46.1	0.00
041M5A0701	11/16/1995	µg/kg	9.6		Total PCBs	22.7	180	0.05
041M5A0701	11/16/1995	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M5A0701	11/16/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M5A0701	11/16/1995	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M5A0701	11/16/1995	µg/kg	44		Anthracene	85.3	1,100	0.04
041M5A0701	11/16/1995	µg/kg	240		Benzo(a)anthracene	261	1,600	0.15
041M5A0701	11/16/1995	µg/kg	240		Benzo(a)pyrene	430	1,600	0.15
041M5A0701	11/16/1995	µg/kg	390		Chrysene	384	2,800	0.14
041M5A0701	11/16/1995	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M5A0701	11/16/1995	µg/kg	750		Fluoranthene	600	5,100	0.15
041M5A0701	11/16/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M5A0701	11/16/1995	µg/kg	20	UJ	Naphthalene	160	2,100	0.01
041M5A0701	11/16/1995	µg/kg	230		Phenanthrene	240	1,500	0.15
041M5A0701	11/16/1995	µg/kg	620		Pyrene	665	2,600	0.24
041M5A0701	11/16/1995				ERM Quotient Sum			1.65
041M5A0701	11/16/1995				Mean ERM Quotient			0.07
041M5A0701	11/16/1995				Mean ERM Quotient without ND			0.06
041M5A0701	11/16/1995				Mean ERM Quotient Category			2

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-1-17
Wetland 5A Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**5**	**6**	**70**	**70**	**70**	**376**	**153**	**945**	**041W5A0201**	**945**		**13**	**FDEP**	**72.7**	**Yes**	**Max Detect > SV**
Antimony	1	6	1	1	1	1.35	3.1	3.1	041W5A0501	3.1	J	160	EPA	0.02	No	Max Detect < SV
Arsenic	0	6	1	1	1	1			ND	1	U	50	FDEP	0.02	No	Max SQL< SV
Barium	6	6				26.6	13.6	41.4	041W5A0101	41.4	J		NA		Yes	No SV
Beryllium	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	3.85	Yes	Max SQL > SV
Cadmium	**1**	**6**	**1.5**	**1.5**	**1.5**	**1.78**	**3.2**	**3.2**	**041W5A0201**	**3.2**	**J**	**0.66**	**EPA**	**4.85**	**Yes**	**Max Detect > SV**
Calcium	6	6				15,600	5,460	28,600	041W5A0501	28,600			NA		Yes	No SV
Chromium	**1**	**6**	**4**	**4**	**4**	**5.23**	**11.4**	**11.4**	**041W5A0501**	**11.4**		**11**	**EPA**	**1.04**	**Yes**	**Max Detect > SV**
Cobalt	1	6	1.5	1.5	1.5	1.75	3	3	041W5A0101	3			NA		Yes	No SV
Copper	**3**	**6**	**5.62**	**2.2**	**9.25**	**10.8**	**7.2**	**21.3**	**041W5A0701**	**21.3**	**J**	**6.54**	**EPA**	**3.26**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U	5.2	EPA	0.48	No	Max SQL< SV
Iron	6	6				1,110	357	1,710	041W5A0501	1,710			NA		Yes	No SV
Lead	**5**	**6**	**0.7**	**0.7**	**0.7**	**9.6**	**2.8**	**20.3**	**041W5A0401**	**20.3**	**J**	**1.32**	**EPA**	**15.4**	**Yes**	**Max Detect > SV**
Magnesium	6	6				3,300	2,090	6,710	041W5A0501	6,710			NA		Yes	No SV
Manganese	6	6				48.6	20.5	80	041W5A0101	80			NA		Yes	No SV
Mercury	0	6	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	Yes	Max SQL > SV
Nickel	0	6	6	6	6	6			ND	6	U	87.71	EPA	0.07	No	Max SQL< SV
Potassium	6	6				2,670	1,050	5,580	041W5A0501	5,580			NA		Yes	No SV
Selenium	0	6	1.5	1.5	1.5	1.5			ND	1.5	U	5	EPA	0.3	No	Max SQL< SV
Silver	0	6	2	2	2	2			ND	2	U	0.012	EPA	167	Yes	Max SQL > SV
Sodium	6	6				12,200	7,710	21,300	041W5A0501	21,300			NA		Yes	No SV
Thallium	1	6	1.5	1.5	1.5	1.83	3.5	3.5	041W5A0101	3.5	J	4	EPA	0.88	No	Max Detect < SV
Vanadium	1	6	1.27	1	1.7	1.86	4.8	4.8	041W5A0601	4.8	J		NA		Yes	No SV
Zinc	**4**	**6**	**18.2**	**13.6**	**22.85**	**88.3**	**55.8**	**236**	**041W5A0601**	**236**		**58.91**	**EPA**	**4.01**	**Yes**	**Max Detect > SV**
Pesticides (µg/L)																
Aldrin	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Dieldrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan I	1	6	0.025	0.025	0.025	0.0257	0.029	0.029	041W5A0101	0.029	J	0.056	EPA	0.52	No	Max Detect < SV
Endosulfan II	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan sulfate	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Heptachlor	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	6.58	Yes	Max SQL > SV
Heptachlor epoxide	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	6	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Toxaphene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
alpha-Chlordane	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-Chlordane	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Total Chlordane	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	11.6	Yes	Max SQL > SV
Endrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin aldehyde	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin ketone	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	Yes	Max SQL > SV
Total Endrin	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
alpha-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
beta-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
delta-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-BHC (Lindane)	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.08	EPA	0.31	No	Max SQL< SV
Total BHC	0	6	0.1	0.1	0.1	0.1			ND	0.1	U		NA		Yes	No SV
4,4'-DDD	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	Yes	Max SQL > SV
Total DDT	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
PCBs (µg/L)																
Aroclor-1016	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1221	0	6	1	1	1	1			ND	1	U		NA		Yes	No SV
Aroclor-1232	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1242	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1248	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1254	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1260	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	35.7	Yes	Max SQL > SV
Total PCB	0	6	4	4	4	4			ND	4	U		NA		Yes	No SV

Table 11-1-17
Wetland 5A Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
SVOCs (µg/L)																
1,2,4-Trichlorobenzene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dimethylphenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4-Dinitrotoluene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chloronaphthalene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U	43.8	EPA	0.06	No	Max SQL< SV
2-Methyl-4,6-Dinitrophenol	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitroaniline	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitrophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3-Nitroaniline	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloroaniline	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methylphenol (p-Cresol)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Nitroaniline	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Nitrophenol	0	6	10	10	10	10			ND	10	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**4**	**6**	**2.5**	**2.5**	**2.5**	**2.83**	**2**	**5**	**041W5A0401**	**5**		**0.3**	**EPA**	**16.7**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dibenzofuran	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Diethylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dimethylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Di-n-butylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U	9.4	EPA	0.27	No	Max SQL< SV
Di-n-octylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Hexachlorobutadiene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachloroethane	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Isophorone	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Nitrobenzene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitrosodiphenylamine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pentachlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Phenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
PAHs (µg/L)																
2-Methylnaphthalene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthylene	0	6	0.833	0.5	2.5	0.833			ND	2.5	U		NA		Yes	No SV
Anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chrysene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluorene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Naphthalene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	No	Max SQL< SV

Table 11-1-17
Wetland 5A Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
PAHs (µg/L) - cont.																
Phenanthrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Pyrene	0	6	1.33	0.5	5.5	1.33			ND	5.5	U		NA		Yes	No SV
Total PAH	0	6	7.67	6.5	11.5	7.67			ND	11.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	270	FDEP	0.00	No	Max SQL< SV
1,1,2,2-Tetrachloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethane	1	6	0.5	0.5	0.5	0.583	1	1	041W5A0101	1			NA		Yes	No SV
1,1-Dichloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	3.2	FDEP	0.16	No	Max SQL< SV
1,2-Dibromo-3-Chloropropane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dibromoethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	15.8	EPA	0.03	No	Max SQL< SV
1,2-Dichloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichloropropane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,3-Dichlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	3	FDEP	0.17	No	Max SQL< SV
2-Hexanone	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acetone	1	1				9	9	9	041W5A0601	9	J		NA		Yes	No SV
Benzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	53	EPA	0.01	No	Max SQL< SV
Bromochloromethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromodichloromethane	1	6	0.5	0.5	0.5	0.75	2	2	041W5A0601	2			NA		Yes	No SV
Bromoform	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromomethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon disulfide	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon tetrachloride	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	17	FDEP	0.03	No	Max SQL< SV
Chloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chloroform	1	6	0.5	0.5	0.5	0.583	1	1	041W5A0601	1		289	EPA	0.00	No	Max Detect < SV
Chloromethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
cis-1,2-Dichloroethene	1	6	0.5	0.5	0.5	0.583	1	1	041W5A0601	1			NA		Yes	No SV
cis-1,3-Dichloropropene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibromochloromethane	1	6	0.5	0.5	0.5	0.75	2	2	041W5A0601	2			NA		Yes	No SV
Ethylbenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	0	6	3.17	2.5	3.5	3.17			ND	3.5	U	1,580	FDEP	0.00	No	Max SQL< SV
Styrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Tetrachloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Toluene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	175	EPA	0.00	No	Max SQL< SV
trans-1,2-Dichloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Vinyl chloride	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Xylene (Total)	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening Value (detailed explanation for SVs provided in Section 8).
RV = Refinement Value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
N/R = No Refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value

Table 11-1-18
Wetland 5A Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	bis(2-Ethylhexyl)phthalate (BEHP)	1,1-Dichloroethane
Barium			Acetone
Cadmium			Bromodichloromethane
Calcium			cis-1,2-Dichloroethene
Chromium			Dibromochloromethane
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Mercury	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1,2-Trichloroethane
Silver	Endosulfan II	2,4,5-Trichlorophenol	1,2-Dibromo-3-Chloropropane
	Endosulfan sulfate	2,4,6-Trichlorophenol	1,2-Dibromoethane
	Heptachlor	2,4-Dichlorophenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4-Dimethylphenol	1,2-Dichloropropane
	Methoxychlor	2,4-Dinitrophenol	1,3-Dichlorobenzene
	Toxaphene	2,4-Dinitrotoluene	2-Hexanone
	alpha-Chlordane	2,6-Dinitrotoluene	4-Methyl-2-Pentanone (MIBK)
	gamma-Chlordane	2-Chloronaphthalene	Bromochloromethane
	Total Chlordane	2-Methyl-4,6-Dinitrophenol	Bromoform
	Endrin	2-Methylphenol (o-Cresol)	Bromomethane
	Endrin aldehyde	2-Nitroaniline	Carbon disulfide
	Endrin ketone	2-Nitrophenol	Carbon tetrachloride
	Total Endrin	3,3'-Dichlorobenzidine	Chloroethane
	alpha-BHC	3-Nitroaniline	Chloromethane
	beta-BHC	4-Bromophenyl-phenylether	cis-1,3-Dichloropropene
	delta-BHC	4-Chloro-3-methylphenol	Styrene
	Total BHC	4-Chloroaniline	Tetrachloroethene
	4,4'-DDD	4-Chlorophenylphenyl ether	trans-1,2-Dichloroethene
	4,4'-DDE	4-Methylphenol (p-Cresol)	trans-1,3-Dichloropropene
	4,4'-DDT	4-Nitroaniline	Trichloroethene
	Total DDT	4-Nitrophenol	Vinyl chloride
	Aroclor-1016	Benzo(b)fluoranthene	Xylene (Total)
	Aroclor-1221	Benzo(g,h,i)perylene	
	Aroclor-1232	Benzo(k)fluoranthene	
	Aroclor-1242	bis(2-Chloroethoxy)methane	
	Aroclor-1248	bis(2-Chloroethyl)ether	
	Aroclor-1254	Butylbenzylphthalate	
	Aroclor-1260	Dibenzofuran	
	Total PCBs	Diethylphthalate	
		Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	
		2-Methylnaphthalene	

Table 11-1-18
Wetland 5A Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Not Detected Parameters - cont.	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	
		Pyrene	
		Total PAHs	

Table 11-1-19
Wetland 5A Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	**5**	**6**	**70**	**70**	**70**	**376**	**153**	**945**	**041W5A0201**	**945**		**13**	**FDEP**	**73**	**28.9**	**1,090**	**0**	**6**	**No**	**Max Result < Ref. Conc.**
Barium	6	6				26.6	13.6	41.4	041W5A0101	41.4	J		NA			3.67	6	6	Yes	Max Result > Ref. Conc.
Beryllium	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	4	3.85	1	0	6	No	Max Result < Ref. Conc.
Cadmium	**1**	**6**	**1.5**	**1.5**	**1.5**	**1.78**	**3.2**	**3.2**	**041W5A0201**	**3.2**	**J**	**0.66**	**EPA**	**5**	**2.7**	**3**	**1**	**6**	**Yes**	**Max Result > Ref. Conc.**
Calcium	6	6				15,600	5,460	28,600	041W5A0501	28,600			NA			7,680	5	6	No	Essential Nutrient
Chromium	**1**	**6**	**4**	**4**	**4**	**5.23**	**11.4**	**11.4**	**041W5A0501**	**11.4**		**11**	**EPA**	**1.04**	**0.48**	**8**	**1**	**6**	**Yes**	**Max Result > Ref. Conc.**
Cobalt	1	6	1.5	1.5	1.5	1.75	3	3	041W5A0101	3			NA			3	0	6	No	Max Result < Ref. Conc.
Copper	**3**	**6**	**5.62**	**2.2**	**9.25**	**10.8**	**7.2**	**21.3**	**041W5A0701**	**21.3**	**J**	**6.54**	**EPA**	**3.26**	**1.66**	**4**	**5**	**6**	**Yes**	**Max Result > Ref. Conc.**
Iron	6	6				1,110	357	1,710	041W5A0501	1,710			NA			2,360	0	6	No	Max Result < Ref. Conc.
Lead	**5**	**6**	**0.7**	**0.7**	**0.7**	**9.6**	**2.8**	**20.3**	**041W5A0401**	**20.3**	**J**	**1.32**	**EPA**	**15.38**	**7.27**	**3.2**	**4**	**6**	**Yes**	**Max Result > Ref. Conc.**
Magnesium	6	6				3,300	2,090	6,710	041W5A0501	6,710			NA			20,300	0	6	No	Max Result < Ref. Conc.
Manganese	6	6				48.6	20.5	80	041W5A0101	80			NA			13.2	6	6	Yes	Max Result > Ref. Conc.
Mercury	0	6	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	5.42	0.13	0	6	No	Max Result < Ref. Conc.
Potassium	6	6				2,670	1,050	5,580	041W5A0501	5,580			NA			7,000	0	6	No	Max Result < Ref. Conc.
Silver	0	6	2	2	2	2			ND	2	U	0.012	EPA	167	167	4	0	6	No	Max Result < Ref. Conc.
Sodium	6	6				12,200	7,710	21,300	041W5A0501	21,300			NA			182,000	0	6	No	Max Result < Ref. Conc.
Vanadium	1	6	1.27	1	1.7	1.86	4.8	4.8	041W5A0601	4.8	J		NA			4.7	1	6	Yes	Max Result > Ref. Conc.
Zinc	**4**	**6**	**18.2**	**13.6**	**22.85**	**88.3**	**55.8**	**236**	**041W5A0601**	**236**		**58.91**	**EPA**	**4.01**	**1.5**	**5.53**	**6**	**6**	**Yes**	**Max Result > Ref. Conc.**
Pesticides (µg/L)																				
Aldrin	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Dieldrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Endosulfan II	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Endosulfan sulfate	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Heptachlor	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	7	6.58		0	6	No	No Ref. Conc.; Parameter Not Detected
Heptachlor epoxide	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	6	No	No Ref. Conc.; Parameter Not Detected
Methoxychlor	0	6	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Toxaphene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
alpha-Chlordane	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
gamma-Chlordane	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Total Chlordane	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	12	11.6		0	6	No	No Ref. Conc.; Parameter Not Detected
Endrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Endrin aldehyde	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Endrin ketone	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	22	21.7		0	6	No	No Ref. Conc.; Parameter Not Detected
Total Endrin	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
alpha-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
beta-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
delta-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
gamma-BHC (Lindane)	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.08	EPA	0.31	0.31		0	6	No	No Ref. Conc.; Parameter Not Detected
Total BHC	0	6	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDD	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	6	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDE	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	6	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDT	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	6	No	No Ref. Conc.; Parameter Not Detected
Total DDT	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
PCBs (µg/L)																				
Aroclor-1016	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1221	0	6	1	1	1	1			ND	1	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1232	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1242	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1248	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1254	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1260	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	36	35.7		0	6	No	No Ref. Conc.; Parameter Not Detected
Total PCB	0	6	4	4	4	4			ND	4	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
SVOCs (µg/L)																				
1,2,4-Trichlorobenzene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4,5-Trichlorophenol	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4,6-Trichlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4-Dichlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4-Dimethylphenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrophenol	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrotoluene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2,6-Dinitrotoluene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Chloronaphthalene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Methylphenol (o-Cresol)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Nitroaniline	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Nitrophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
3,3'-Dichlorobenzidine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
3-Nitroaniline	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Bromophenyl-phenylether	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Chloro-3-methylphenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Chloroaniline	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Chlorophenylphenyl ether	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Methylphenol (p-Cresol)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Nitroaniline	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Nitrophenol	0	6	10	10	10	10			ND	10	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected

Table 11-1-19
Wetland 5A Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
SVOCs (µg/L) - cont.																				
Benzo(b)fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Benzo(g,h,i)perylene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Benzo(k)fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
bis(2-Chloroethoxy)methane	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
bis(2-Chloroethyl)ether	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	**4**	**6**	**2.5**	**2.5**	**2.5**	**2.83**	**2**	**5**	**041W5A0401**	**5**		**0.3**	**EPA**	**17**	**9.44**		**0**	**6**	**Yes**	**No Ref. Conc.**
Butylbenzylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Dibenzofuran	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Diethylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Dimethylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Di-n-octylphthalate	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobutadiene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Hexachlorocyclopentadiene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Hexachloroethane	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Isophorone	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Nitrobenzene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
N-Nitroso-di-n-propylamine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
N-Nitrosodiphenylamine	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Pentachlorophenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Phenol	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
PAHs (µg/L)																				
2-Methylnaphthalene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Acenaphthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Acenaphthylene	0	6	0.833	0.5	2.5	0.833			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)pyrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Chrysene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Dibenz(a,h)anthracene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Fluoranthene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Fluorene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Naphthalene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	0.02		0	6	No	No Ref. Conc.; Parameter Not Detected
Phenanthrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Pyrene	0	6	1.33	0.5	5.5	1.33			ND	5.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Total PAH	0	6	7.67	6.5	11.5	7.67			ND	11.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
VOCs (µg/L)																				
1,1,2,2-Tetrachloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,1,2-Trichloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,1-Dichloroethane	1	6	0.5	0.5	0.5	0.583	1	1	041W5A0101	1			NA				0	6	Yes	No Ref. Conc.
1,2-Dibromo-3-Chloropropane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,2-Dibromoethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloropropane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
1,3-Dichlorobenzene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
2-Hexanone	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Acetone	1	1				9	9	9	041W5A0601	9	J		NA				0	1	Yes	No Ref. Conc.
Bromochloromethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Bromodichloromethane	1	6	0.5	0.5	0.5	0.75	2	2	041W5A0601	2			NA				0	6	Yes	No Ref. Conc.
Bromoform	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Bromomethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Carbon disulfide	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Carbon tetrachloride	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Chloroethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Chloromethane	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
cis-1,2-Dichloroethene	1	6	0.5	0.5	0.5	0.583	1	1	041W5A0601	1			NA				0	6	Yes	No Ref. Conc.
cis-1,3-Dichloropropene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Dibromochloromethane	1	6	0.5	0.5	0.5	0.75	2	2	041W5A0601	2			NA				0	6	Yes	No Ref. Conc.
Styrene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Tetrachloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
trans-1,2-Dichloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
trans-1,3-Dichloropropene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Trichloroethene	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Vinyl chloride	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected
Xylene (Total)	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	No Ref. Conc.; Parameter Not Detected

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
UJ = Not detected. SQL is estimated.
D = Diluted Result
J = Estimated Value

Supporting Information:
SV = Screening Value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
PEL = Probable effects level.
N/R = No Refinement value available.

N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the Max detections
Parameters in bold were detected and exceeded Ref. Conc.s.

Table 11-1-20
Wetland 5A Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Lead	None	bis(2-Ethylhexyl)phthalate (BEHP)	Dibromochloromethane
Manganese			cis-1,2-Dichloroethene
Barium			Acetone
Cadmium			Bromodichloromethane
Chromium			1,1-Dichloroethane
Copper			
Vanadium			
Zinc			

Table 11-1-21
Wetland 5A Phase III
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	3	3			821	2,480	041M5A0401	2,480			N/A		Yes	No SV
Antimony	**2**	**3**	**0.75**	**0.75**	**2**	**27.7**	**041M5A0501**	**27.7**	**J**	**12**	**2**	**2.31**	**Yes**	**Max Detect > SV**
Arsenic	1	3	0.225	0.23	0.52	0.52	041M5A0401	0.52	J	7.24	1, 2	0.07	No	Max Detect < SV
Barium	3	3			6.9	17.2	041M5A0501	17.2			N/A		Yes	No SV
Beryllium	2	3	0.025	0.025	0.13	0.2	041M5A0401	0.2			N/A		Yes	No SV
Cadmium	**3**	**3**			**0.42**	**3.2**	**041M5A0501**	**3.2**		**0.676**	**1**	**4.73**	**Yes**	**Max Detect > SV**
Calcium	3	3			495	3,660	041M5A0501	3,660			N/A		Yes	No SV
Chromium	3	3			4.1	50.1	041M5A0501	50.1		52.3	1, 2	0.96	No	Max Detect < SV
Cobalt	3	3			0.94	1.6	041M5A0501	1.6	J		N/A		Yes	No SV
Copper	**3**	**3**			**21.5**	**108**	**041M5A0501**	**108**		**18.7**	**1, 2**	**5.78**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	3	0.45	0.48			ND	0.48	UJ		N/A		Yes	No SV
Iron	3	3			546	3,020	041M5A0501	3,020			N/A		Yes	No SV
Lead	**3**	**3**			**54.5**	**258**	**041M5A0501**	**258**		**30.2**	**1, 2**	**8.54**	**Yes**	**Max Detect > SV**
Magnesium	3	3			56.1	690	041M5A0501	690			N/A		Yes	No SV
Manganese	3	3			8.6	21.3	041M5A0501	21.3			N/A		Yes	No SV
Mercury	**3**	**3**			**0.06**	**0.13**	**041M5A0401**	**0.13**		**0.13**	**1, 2**	**1**	**Yes**	**Max Detect = SV**
Nickel	3	3			1.8	7.5	041M5A0501	7.5		15.9	1, 2	0.47	No	Max Detect < SV
Potassium	2	3	8.4	8.4	54	93.2	041M5A0401	93.2			N/A		Yes	No SV
Selenium	1	3	0.13	0.14	0.6	0.6	041M5A0501	0.6	J		N/A		Yes	No SV
Silver	1	3	0.045	0.05	0.15	0.15	041M5A0501	0.15	J	0.733	1	0.21	No	Max Detect < SV
Sodium	3	3			14.6	35	041M5A0401	35	J		N/A		Yes	No SV
Thallium	0	3	0.295	0.315			ND	0.315	U		N/A		Yes	No SV
Vanadium	3	3			1.8	4.2	041M5A0401	4.2			N/A		Yes	No SV
Zinc	**3**	**3**			**77.1**	**394**	**041M5A0501**	**394**		**124**	**1, 2**	**3.18**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	3	250	270			ND	270	U	20.2	1	13.4	Yes	Max SQL > SV
Acenaphthene	0	3	250	270			ND	270	U	6.71	1	40.2	Yes	Max SQL > SV
Acenaphthylene	0	3	250	270			ND	270	U	5.87	1	46	Yes	Max SQL > SV
Anthracene	1	3	260	270	16	16	041M5A0401	16	J	46.9	1	0.34	No	Max Detect < SV
Benzo(a)anthracene	**2**	**3**	**270**	**270**	**41**	**100**	**041M5A0401**	**100**	**J**	**74.8**	**1**	**1.34**	**Yes**	**Max Detect > SV**
Benzo(a)pyrene	**2**	**3**	**270**	**270**	**52**	**140**	**041M5A0401**	**140**	**J**	**88.8**	**1**	**1.58**	**Yes**	**Max Detect > SV**
Chrysene	**2**	**3**	**270**	**270**	**58**	**170**	**041M5A0401**	**170**	**J**	**108**	**1**	**1.57**	**Yes**	**Max Detect > SV**
Dibenz(a,h)anthracene	0	3	250	270			ND	270	U	6.22	1	43.4	Yes	Max SQL > SV
Fluoranthene	**3**	**3**			**16**	**260**	**041M5A0401**	**260**	**J**	**113**	**1**	**2.3**	**Yes**	**Max Detect > SV**
Fluorene	0	3	250	270			ND	270	U	21.2	1	12.7	Yes	Max SQL > SV
Naphthalene	0	3	250	270			ND	270	U	34.6	1	7.8	Yes	Max SQL > SV
Phenanthrene	**2**	**3**	**270**	**270**	**28**	**97**	**041M5A0401**	**97**	**J**	**86.7**	**1**	**1.12**	**Yes**	**Max Detect > SV**
Pyrene	**2**	**3**	**270**	**270**	**87**	**300**	**041M5A0401**	**300**	**J**	**153**	**1**	**1.96**	**Yes**	**Max Detect > SV**
Total PAHs	**3**	**3**			**2,160**	**3,260**	**041M5A0601**	**3,260**		**1,684**	**1, 2**	**1.93**	**Yes**	**Max Detect > SV**
TOC Normalized PAHs	**3**	**3**			**291.62**	**369**	**041M5A0401**	**369**		**290**	**3**	**1.27**	**Yes**	**Max Detect > SV**
PCBs (µg/kg)														
Aroclor-1016	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Aroclor-1221	0	3	50	1,050			ND	1,050	U	67	2	15.7	Yes	Max SQL > SV
Aroclor-1232	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Aroclor-1242	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Aroclor-1248	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Aroclor-1254	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Aroclor-1260	0	3	25	500			ND	500	U	21.6	N/A	23.1	Yes	Max SQL > SV
Total PCBs	0	3	200	4,050			ND	4,050	U	21.6	1	188	Yes	Max SQL > SV
Pesticides (µg/kg)														
Aldrin	0	3	1.3	27			ND	27	U		N/A		Yes	No SV
Dieldrin	**1**	**3**	**1.45**	**50**	**1.4**	**1.4**	**041M5A0601**	**1.4**	**J**	**0.716**	**1**	**1.96**	**Yes**	**Max Detect > SV**
Endosulfan I	1	3	0.15	27	5.2	5.2	041M5A0401	5.2			N/A		Yes	No SV
Endosulfan II	0	3	2.5	50			ND	50	U		N/A		Yes	No SV
Endosulfan sulfate	2	3	50	50	0.66	2.3	041M5A0401	2.3	J		N/A		Yes	No SV
Heptachlor	0	3	1.3	27			ND	27	U		N/A		Yes	No SV
Heptachlor epoxide	0	3	1.3	27			ND	27	U		N/A		Yes	No SV
Methoxychlor	0	3	0.33	270			ND	270	U		N/A		Yes	No SV
Toxaphene	0	3	130	2,700			ND	2,700	U		N/A		Yes	No SV
alpha-Chlordane	**1**	**3**	**0.13**	**27**	**4.5**	**4.5**	**041M5A0401**	**4.5**		**1.7**	**1**	**2.65**	**Yes**	**Max Detect > SV**
gamma-Chlordane	**1**	**3**	**0.07**	**27**	**7.9**	**7.9**	**041M5A0401**	**7.9**	**J**	**1.7**	**1**	**4.65**	**Yes**	**Max Detect > SV**
Total Chlordane	**1**	**3**	**0.2**	**54**	**12.4**	**12.4**	**041M5A0401**	**12.4**		**1.7**	**1**	**7.29**	**Yes**	**Max Detect > SV**
Endrin	1	3	0.345	1.2	1.1	1.1	041M5A0601	1.1	J	3.3	2	0.33	No	Max Detect < SV
Endrin aldehyde	0	3	0.28	50			ND	50	U	3.3	2	15.2	Yes	Max SQL > SV
Endrin ketone	0	3	2.5	50			ND	50	U	3.3	2	15.2	Yes	Max SQL > SV
Total Endrin	**1**	**3**	**3.13**	**101**	**6.5**	**6.5**	**041M5A0601**	**6.5**		**3.3**	**2**	**1.97**	**Yes**	**Max Detect > SV**
alpha-BHC	0	3	1.3	27			ND	27	U		N/A		Yes	No SV
beta-BHC	0	3	1.3	27			ND	27	U	0.32	N/A	84.4	Yes	Max SQL > SV
delta-BHC	0	3	1.3	27			ND	27	U	0.32	N/A	84.4	Yes	Max SQL > SV
gamma-BHC (Lindane)	1	3	1.4	27	0.24	0.24	041M5A0401	0.24	J	0.32	1	0.75	No	Max Detect < SV
Total BHC	**1**	**3**	**5.6**	**108**	**4.14**	**4.14**	**041M5A0401**	**4.14**		**0.32**	**2**	**12.9**	**Yes**	**Max Detect > SV**
4,4'-DDD	**2**	**3**	**50**	**50**	**1.3**	**100**	**041M5A0401**	**100**	**D**	**1.22**	**1**	**82**	**Yes**	**Max Detect > SV**
4,4'-DDE	**2**	**3**	**50**	**50**	**3.6**	**57**	**041M5A0401**	**57**	**D**	**2.07**	**1**	**27.5**	**Yes**	**Max Detect > SV**
4,4'-DDT	**2**	**3**	**50**	**50**	**3.2**	**7.2**	**041M5A0401**	**7.2**		**1.19**	**1**	**6.05**	**Yes**	**Max Detect > SV**
Total DDT	**2**	**3**	**150**	**150**	**8.1**	**164**	**041M5A0401**	**164**		**3.3**	**2**	**49.8**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	3	600	650			ND	650	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	3	250	270			ND	270	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	3	250	270			ND	270	U		N/A		Yes	No SV
2-Chloronaphthalene	0	3	250	270			ND	270	U		N/A		Yes	No SV
2-Chlorophenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	3	600	650			ND	650	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	3	250	270			ND	270	U		N/A		Yes	No SV
2-Nitroaniline	0	3	600	650			ND	650	U		N/A		Yes	No SV
2-Nitrophenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	3	500	550			ND	550	U		N/A		Yes	No SV
3-Methylphenol/4-Methylphenol	0	3	250	270			ND	270	U				Yes	No SV
3-Nitroaniline	0	3	600	650			ND	650	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	3	250	270			ND	270	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	3	250	270			ND	270	U		N/A		Yes	No SV
4-Chloroaniline	0	3	250	270			ND	270	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	3	250	270			ND	270	U		N/A		Yes	No SV
4-Nitroaniline	0	3	600	650			ND	650	U		N/A		Yes	No SV
4-Nitrophenol	0	3	600	650			ND	650	U		N/A		Yes	No SV
Benzo(b)fluoranthene	2	3	270	270	62	120	041M5A0401	120	J		N/A		Yes	No SV
Benzo(g,h,i)perylene	0	3	250	270			ND	270	U		N/A		Yes	No SV
Benzo(k)fluoranthene	1	3	260	270	110	110	041M5A0401	110	J		N/A		Yes	No SV
bis(2-Chloroethoxy)methane	0	3	250	270			ND	270	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	3	250	270			ND	270	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**2**	**3**	**270**	**270**	**210**	**950**	**041M5A0501**	**950**		**182**	**1, 2**	**5.22**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	1	3	250	270	140	140	041M5A0501	140	J	182	1, 2	0.77	No	Max Detect < SV
Carbazole	0	3	250	270			ND	270	U		N/A		Yes	No SV
Dibenzofuran	0	3	250	270			ND	270	U		N/A		Yes	No SV
Diethylphthalate	0	3	250	270			ND	270	U	182	1, 2	1.48	Yes	Max SQL > SV
Dimethylphthalate	0	3	250	270			ND	270	U	182	1, 2	1.48	Yes	Max SQL > SV
Di-n-butylphthalate	0	3	250	270			ND	270	U	182	1, 2	1.48	Yes	Max SQL > SV
Di-n-octylphthalate	**1**	**3**	**250**	**270**	**290**	**290**	**041M5A0501**	**290**	**J**	**182**	**1, 2**	**1.59**	**Yes**	**Max Detect > SV**
Hexachlorobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
Hexachlorobutadiene	0	3	250	270			ND	270	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	3	250	270			ND	270	U		N/A		Yes	No SV
Hexachloroethane	0	3	250	270			ND	270	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	3	250	270			ND	270	U		N/A		Yes	No SV
Isophorone	0	3	250	270			ND	270	U		N/A		Yes	No SV
Nitrobenzene	0	3	250	270			ND	270	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	3	250	270			ND	270	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	3	250	270			ND	270	U		N/A		Yes	No SV
Pentachlorophenol	0	3	600	650			ND	650	U		N/A		Yes	No SV
Phenol	0	3	250	270			ND	270	U		N/A		Yes	No SV

Table 11-1-21
Wetland 5A Phase III
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,1-Dichloroethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,1-Dichloroethene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,2-Dichloroethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
1,2-Dichloropropane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
2-Butanone (MEK)	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
2-Hexanone	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
Acetone	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
Benzene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Bromodichloromethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Bromoform	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Bromomethane	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
Carbon disulfide	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Carbon tetrachloride	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Chlorobenzene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Chloroethane	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
Chloroform	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Chloromethane	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Dibromochloromethane	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Ethylbenzene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Methylene chloride	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Styrene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Tetrachloroethene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Toluene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Trichloroethene	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV
Vinyl chloride	0	3	7.5	8			ND	8	U		N/A		Yes	No SV
Xylene (Total)	0	3	3.8	4.1			ND	4.1	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient
D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-1-22
Wetland 5A Phase III
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	Benzo(b)fluoranthene	None
Antimony	4,4'-DDE	Benzo(k)fluoranthene	
Barium	4,4'-DDT	bis(2-Ethylhexyl)phthalate (BEHP)	
Beryllium	alpha-Chlordane	Di-n-octylphthalate	
Cadmium	Dieldrin	Benzo(a)anthracene	
Calcium	Endosulfan I	Benzo(a)pyrene	
Cobalt	Endosulfan sulfate	Chrysene	
Copper	gamma-Chlordane	Fluoranthene	
Iron	Total BHC	Phenanthrene	
Lead	Total Chlordane	Pyrene	
Magnesium	Total DDT	Total PAHs	
Manganese	Total Endrin	TOC Normalized PAHs	
Mercury			
Potassium			
Selenium			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Cyanide (CN)	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Thallium	alpha-BHC	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	beta-BHC	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	delta-BHC	1,4-Dichlorobenzene	1,1-Dichloroethane
	Endosulfan II	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Endrin aldehyde	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Endrin ketone	2,4,6-Trichlorophenol	1,2-Dichloroethene (total)
	Heptachlor	2,4-Dichlorophenol	1,2-Dichloropropane
	Heptachlor epoxide	2,4-Dimethylphenol	2-Butanone (MEK)
	Methoxychlor	2,4-Dinitrophenol	2-Hexanone
	Toxaphene	2,4-Dinitrotoluene	4-Methyl-2-Pentanone (MIBK)
	Aroclor-1016	2,6-Dinitrotoluene	Acetone
	Aroclor-1221	2-Chloronaphthalene	Benzene
	Aroclor-1232	2-Chlorophenol	Bromodichloromethane
	Aroclor-1242	2-Methyl-4,6-Dinitrophenol	Bromoform
	Aroclor-1248	2-Methylnaphthalene	Bromomethane
	Aroclor-1254	2-Methylphenol (o-Cresol)	Carbon disulfide
	Aroclor-1260	2-Nitroaniline	Carbon tetrachloride
	Total PCBs	2-Nitrophenol	Chlorobenzene
		3,3'-Dichlorobenzidine	Chloroethane
		3-Methylphenol/4-Methylphenol	Chloroform
		3-Nitroaniline	Chloromethane
		4-Bromophenyl-phenylether	cis-1,3-Dichloropropene
		4-Chloro-3-methylphenol	Dibromochloromethane
		4-Chloroaniline	Ethylbenzene
		4-Chlorophenylphenyl ether	Methylene chloride
		4-Nitroaniline	Styrene
		4-Nitrophenol	Tetrachloroethene
		Acenaphthene	Toluene
		Acenaphthylene	trans-1,3-Dichloropropene
		Benzo(g,h,i)perylene	Trichloroethene
		bis(2-Chloroethoxy)methane	Vinyl chloride
		bis(2-Chloroethyl)ether	Xylene (Total)
		Carbazole	
		Dibenz(a,h)anthracene	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-butylphthalate	
		Fluorene	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Naphthalene	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	

Table 11-1-23
Wetland 5A Phase III
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	3	3				1,630	821	2,480	2,480		041M5A0401			NA					0	13,610	0	No	EPC < RC
Antimony	2	3	0.75	0.75	0.75	10.2	2	27.7	27.7	J	041M5A0501	12		NA	2.31	0.85			0	4.43	1	Yes	EPC > RC and no RV
Barium	3	3				12.2	6.9	17.2	17.2		041M5A0501			NA					0	14	1	Yes	EPC > RC and no RV
Beryllium	2	3	0.025	0.025	0.025	0.118	0.13	0.2	0.2		041M5A0401			NA					0	0.84	0	No	EPC < RC
Cadmium	3	3				1.61	0.42	3.2	3.2		041M5A0501	0.676	4.21	PEL	4.73	2.38	0.76	0.38	0	1.8	1	No	EPC > RC, but < RV
Calcium	3	3				2,430	495	3,660	3,660		041M5A0501			NA					0	10,756.67	0	No	EPC < RC
Cobalt	3	3				1.38	0.94	1.6	1.6	J	041M5A0501			NA					0	2.8	0	No	EPC < RC
Copper	**3**	**3**				**51.7**	**21.5**	**108**	**108**		**041M5A0501**	**18.7**	**108**	**PEL**	**5.78**	**2.76**	**1**	**0.48**	**0**	**19.5**	**3**	**Yes**	**EPC > RC, but = RV**
Cyanide (CN)	0	3	0.467	0.45	0.48	0.467			0.48	UJ	ND			NA					0	5.22	0	No	Parameter Not Detected
Iron	3	3				1,550	546	3,020	3,020		041M5A0501			NA					0	11,911.67	0	No	EPC < RC
Lead	**3**	**3**				**129**	**54.5**	**258**	**258**		**041M5A0501**	**30.2**	**112**	**PEL**	**8.54**	**4.28**	**2.3**	**1.15**	**1**	**82.47**	**1**	**Yes**	**EPC > RV and RC**
Magnesium	3	3				466	56.1	690	690		041M5A0501			NA					0	7,513.33	0	No	EPC < RC
Manganese	3	3				15.1	8.6	21.3	21.3		041M5A0501			NA					0	37.97	0	No	EPC < RC
Mercury	3	3				0.09	0.06	0.13	0.13		041M5A0401	0.13	0.696	PEL	1	0.69	0.19	0.13	0	0.55	0	No	EPC < RC and RC
Potassium	2	3	8.4	8.4	8.4	51.9	54	93.2	93.2		041M5A0401			NA					0	1,628.67	0	No	EPC < RC
Selenium	1	3	0.135	0.13	0.14	0.29	0.6	0.6	0.6	J	041M5A0501			NA					0	3.45	0	No	EPC < RC
Sodium	3	3				25	14.6	35	35	J	041M5A0401			NA					0	18,993.33	0	No	EPC < RC
Thallium	0	3	0.307	0.295	0.315	0.307			0.315	U	ND			NA					0	1.57	0	No	Parameter Not Detected
Vanadium	3	3				3.2	1.8	4.2	4.2		041M5A0401			NA					0	28.67	0	No	EPC < RC
Zinc	**3**	**3**				**191**	**77.1**	**394**	**394**		**041M5A0501**	**124**	**271**	**PEL**	**3.18**	**1.54**	**1.45**	**0.71**	**1**	**36.73**	**3**	**Yes**	**EPC > RV and RC**
PAHs (µg/kg)																							
2-Methylnaphthalene	0	3	260	250	270	260			270	U	ND	20.2	201	PEL	13.4	12.9	1.34	1.29	0		0	No	Parameter Not Detected; Max SQL > RV
Acenaphthene	0	3	260	250	270	260			270	U	ND	6.71	88.9	PEL	40.2	38.7	3.04	2.92	0		0	No	Parameter Not Detected; Max SQL > RV
Acenaphthylene	0	3	260	250	270	260			270	U	ND	5.87	128	PEL	46	44.3	2.11	2.03	0		0	No	Parameter Not Detected; Max SQL > RV
Anthracene	1	3	265	260	270	182	16	16	16	J	041M5A0401	46.9	245	PEL	0.34	3.88	0.07	0.74	0		0	No	RV HQ <1 and no RC
Benzo(a)anthracene	2	3	270	270	270	137	41	100	100	J	041M5A0401	74.8	693	PEL	1.34	1.83	0.14	0.20	0		0	No	RV HQ <1 and no RC
Benzo(a)pyrene	2	3	270	270	270	154	52	140	140	J	041M5A0401	88.8	763	PEL	1.58	1.73	0.18	0.20	0		0	No	RV HQ <1 and no RC
Chrysene	2	3	270	270	270	166	58	170	170	J	041M5A0401	108	846	PEL	1.57	1.54	0.20	0.20	0		0	No	RV HQ <1 and no RC
Dibenz(a,h)anthracene	0	3	260	250	270	260			270	U	ND	6.22	135	PEL	43.4	41.8	2	1.93	0		0	No	Parameter Not Detected; Max SQL > RV
Fluoranthene	3	3				116	16	260	260	J	041M5A0401	113	1,494	PEL	2.3	1.03	0.17	0.08	0		0	No	RV HQ <1 and no RC
Fluorene	0	3	260	250	270	260			270	U	ND	21.2	144	PEL	12.7	12.3	1.88	1.81	0		0	No	Parameter Not Detected; Max SQL > RV
Naphthalene	0	3	260	250	270	260			270	U	ND	34.6	391	PEL	7.8	7.51	0.69	0.67	0		0	No	Parameter Not Detected
Phenanthrene	2	3	270	270	270	132	28	97	97	J	041M5A0401	86.7	544	PEL	1.12	1.52	0.18	0.24	0		0	No	RV HQ <1 and no RC
Pyrene	2	3	270	270	270	219	87	300	300	J	041M5A0401	153	1,398	PEL	1.96	1.43	0.22	0.16	0		0	No	RV HQ <1 and no RC
Total PAHs	3	3				2,670	2,160	3,260	3,260		041M5A0601	1,684	16,770	PEL	1.93	1.58	0.19	0.16	0		0	No	RV HQ <1 and no RC
TOC Normalized PAHs	3	3				328.74	291.62	369	369		041M5A0401	290	1,800	MEC	1.27	1.13	0.21	0.18	0		0	No	RV HQ <1 and no RC
PCBs (µg/kg)																							
Aroclor-1016	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1221	0	3	385	50	1,050	385			1,050	U	ND	21.6	189	PEL	15.7	5.75	5.56	2.04	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1232	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1242	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1248	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1254	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1260	0	3	184	25	500	184			500	U	ND	21.6	189	PEL	23.1	8.52	2.65	0.97	0		0	No	Parameter Not Detected; Max SQL > RV
Total PCBs	0	3	1,490	200	4,050	1,490			4,050	U	ND	21.6	189	PEL	188	68.9	21.4	7.88	0		0	No	Parameter Not Detected; Max SQL > RV
Pesticides (µg/kg)																							
Aldrin	0	3	9.9	1.3	27	9.9			27	U	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	1	3	25.7	1.45	50	17.6	1.4	1.4	1.4	J	041M5A0601	0.716	4.3	PEL	1.96	24.6	0.33	4.1	0		0	No	RV HQ <1 and no RC
Endosulfan I	1	3	13.6	0.15	27	10.8	5.2	5.2	5.2		041M5A0401			NA					0		0	Yes	No SV, no RV, and no RC
Endosulfan II	0	3	18.4	2.5	50	18.4			50	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	2	3	50	50	50	17.7	0.66	2.3	2.3	J	041M5A0401			NA					0		0	Yes	No SV, no RV, and no RC
Heptachlor	0	3	9.9	1.3	27	9.9			27	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	3	9.9	1.3	27	9.9			27	U	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	3	90.3	0.33	270	90.3			270	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	3	990	130	2,700	990			2,700	U	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	1	3	13.6	0.13	27	10.5	4.5	4.5	4.5		041M5A0401	1.7	4.79	PEL	2.65	6.2	0.94	2.2	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	**1**	**3**	**13.5**	**0.07**	**27**	**11.7**	**7.9**	**7.9**	**7.9**	**J**	**041M5A0401**	**1.7**	**4.79**	**PEL**	**4.65**	**6.86**	**1.65**	**2.43**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Total Chlordane	**1**	**3**	**27.1**	**0.2**	**54**	**22.2**	**12.4**	**12.4**	**12.4**		**041M5A0401**	**1.7**	**4.79**	**PEL**	**7.29**	**13.1**	**2.59**	**4.63**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endrin	1	3	0.772	0.345	1.2	0.882	1.1	1.1	1.1	J	041M5A0601	3.3		NA	0.33	0.27			0		0	Yes	No RV or RC and EPC > SV
Endrin aldehyde	0	3	17.7	0.28	50	17.7			50	U	ND	3.3		NA	15.2	5.35			0		0	No	Parameter Not Detected
Endrin ketone	0	3	18.4	2.5	50	18.4			50	U	ND	3.3		NA	15.2	5.58			0		0	No	Parameter Not Detected
Total Endrin	**1**	**3**	**52.2**	**3.13**	**101**	**36.9**	**6.5**	**6.5**	**6.5**		**041M5A0601**	**3.3**		**NA**	**1.97**	**11.2**			**0**		**0**	**Yes**	**No RV or RC and EPC > SV**
alpha-BHC	0	3	9.9	1.3	27	9.9			27	U	ND		0.99	PEL			27.3	10	0		0	No	Parameter Not Detected; Max SQL > RV
beta-BHC	0	3	9.9	1.3	27	9.9			27	U	ND	0.32	0.99	PEL	84.4	30.9	27.3	10	0		0	No	Parameter Not Detected; Max SQL > RV
delta-BHC	0	3	9.9	1.3	27	9.9			27	U	ND	0.32	0.99	PEL	84.4	30.9	27.3	10	0		0	No	Parameter Not Detected; Max SQL > RV
gamma-BHC (Lindane)	1	3	14.2	1.4	27	9.55	0.24	0.24	0.24	J	041M5A0401	0.32	0.99	PEL	0.75	29.8	0.24	9.64	0		0	No	RV HQ <1 and no RC
Total BHC	**1**	**3**	**56.8**	**5.6**	**108**	**39.2**	**4.14**	**4.14**	**4.14**		**041M5A0401**	**0.32**	**0.99**	**PEL**	**12.9**	**123**	**4.18**	**39.6**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	**2**	**3**	**50**	**50**	**50**	**50.4**	**1.3**	**100**	**100**	**D**	**041M5A0401**	**1.22**	**7.81**	**PEL**	**82**	**41.3**	**12.8**	**6.46**	**1**	**50**	**1**	**Yes**	**EPC > RV and RC**
4,4'-DDE	2	3	50	50	50	36.9	3.6	57	57	D	041M5A0401	2.07	374	PEL	27.5	17.8	0.15	0.10	0	40	2	No	EPC > RC, but < RV
4,4'-DDT	**2**	**3**	**50**	**50**	**50**	**20.1**	**3.2**	**7.2**	**7.2**		**041M5A0401**	**1.19**	**4.77**	**PEL**	**6.05**	**16.9**	**1.51**	**4.22**	**1**	**20**	**1**	**Yes**	**EPC > RV and RC**
Total DDT	**2**	**3**	**150**	**150**	**150**	**107**	**8.1**	**164**	**164**		**041M5A0401**	**3.3**	**51.7**	**PEL**	**49.8**	**32.6**	**3.18**	**2.08**	**1**	**110**	**2**	**Yes**	**EPC > RV and RC**
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-1-23
Wetland 5A Phase III
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
2-Methyl-4,6-Dinitrophenol	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
SVOCs (µg/kg) - cont.																							
2-Methylphenol (o-Cresol)	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	3	517	500	550	517			550	U	ND			NA					0		0	No	Parameter Not Detected
3-Methylphenol/4-Methylphenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
Benzo(b)fluoranthene	2	3	270	270	270	151	62	120	120	J	041M5A0401			NA					0		0	No	TOC normalized PAHs <MEC
Benzo(g,h,i)perylene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Benzo(k)fluoranthene	1	3	265	260	270	213	110	110	110	J	041M5A0401			NA					0		0	No	TOC normalized PAHs <MEC
bis(2-Chloroethoxy)methane	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	2	3	270	270	270	477	210	950	950		041M5A0501	182	2,647	PEL	5.22	2.62	0.36	0.18	0		0	No	RV HQ <1 and no RC
Carbazole	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Diethylphthalate	0	3	260	250	270	260			270	U	ND	182	2,647	PEL	1.48	1.43	0.10	0.10	0		0	No	Parameter Not Detected
Dimethylphthalate	0	3	260	250	270	260			270	U	ND	182	2,647	PEL	1.48	1.43	0.10	0.10	0		0	No	Parameter Not Detected
Di-n-butylphthalate	0	3	260	250	270	260			270	U	ND	182	2,647	PEL	1.48	1.43	0.10	0.10	0		0	No	Parameter Not Detected
Di-n-octylphthalate	1	3	260	250	270	270	290	290	290	J	041M5A0501	182	2,647	PEL	1.59	1.48	0.11	0.10	0		0	No	RV HQ <1 and no RC
Hexachlorobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	3	633	600	650	633			650	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	3	260	250	270	260			270	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
Benzene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Chloroethane	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Toluene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	0	3	7.83	7.5	8	7.83			8	U	ND			NA					0		0	No	Parameter Not Detected
Xylene (Total)	0	3	3.95	3.8	4.1	3.95			4.1	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result
Parameters in bold were detected and exceeded screening values.

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8)
RV = Refinement value (detailed explanation of RVs provided in Section 8)
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detection
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT

Table 11-1-24
Wetland 5A Phase III
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Antimony	Endosulfan I	None	None
Barium	Endosulfan sulfate		
Copper	gamma-Chlordane		
Lead	Total Chlordane		
Zinc	Endrin		
	Total Endrin		
	Total BHC		
	4,4'-DDD		
	4,4'-DDT		
	Total DDT		

Table 11-1-25
Wetland 5A Phase III
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5A0401	8/28/1997	mg/kg	0.52	J	Arsenic	8.2	70	0.01
041M5A0401	8/28/1997	mg/kg	0.42	J	Cadmium	1.2	9.6	0.04
041M5A0401	8/28/1997	mg/kg	4.1		Chromium	81	370	0.01
041M5A0401	8/28/1997	mg/kg	21.5		Copper	34	270	0.08
041M5A0401	8/28/1997	mg/kg	54.5		Lead	46.7	218	0.25
041M5A0401	8/28/1997	mg/kg	0.13		Mercury	0.15	0.71	0.18
041M5A0401	8/28/1997	mg/kg	2.5		Nickel	20.9	51.6	0.05
041M5A0401	8/28/1997	mg/kg	0.045	UJ	Silver	1	3.7	0.01
041M5A0401	8/28/1997	mg/kg	77.1		Zinc	150	410	0.19
041M5A0401	**8/28/1997**	**µg/kg**	**57**	**D**	**4,4'-DDE**	**2.2**	**27**	**2.11**
041M5A0401	8/28/1997	µg/kg	7.2		4,4'-DDT	1.58	46.1	0.16
041M5A0401	8/28/1997	µg/kg	200	U	Total PCBs	22.7	180	1.11
041M5A0401	8/28/1997	µg/kg	250	U	2-Methylnaphthalene	70	670	0.37
041M5A0401	8/28/1997	µg/kg	250	U	Acenaphthene	16	500	0.50
041M5A0401	8/28/1997	µg/kg	250	U	Acenaphthylene	44	640	0.39
041M5A0401	8/28/1997	µg/kg	16	J	Anthracene	85.3	1,100	0.01
041M5A0401	8/28/1997	µg/kg	100	J	Benzo(a)anthracene	261	1,600	0.06
041M5A0401	8/28/1997	µg/kg	140	J	Benzo(a)pyrene	430	1,600	0.09
041M5A0401	8/28/1997	µg/kg	170	J	Chrysene	384	2,800	0.06
041M5A0401	8/28/1997	µg/kg	250	U	Dibenz(a,h)anthracene	63.4	260	0.96
041M5A0401	8/28/1997	µg/kg	260	J	Fluoranthene	600	5,100	0.05
041M5A0401	8/28/1997	µg/kg	250	U	Fluorene	19	540	0.46
041M5A0401	8/28/1997	µg/kg	250	U	Naphthalene	160	2,100	0.12
041M5A0401	8/28/1997	µg/kg	97	J	Phenanthrene	240	1,500	0.06
041M5A0401	8/28/1997	µg/kg	300	J	Pyrene	665	2,600	0.12
041M5A0401	8/28/1997				ERM Quotient Sum			7.47
041M5A0401	8/28/1997				Mean ERM Quotient			0.30
041M5A0401	8/28/1997				Mean ERM Quotient without ND			0.14
041M5A0401	8/28/1997				Mean ERM Quotient Category			2
041M5A0501	8/28/1997	mg/kg	0.225	UJ	Arsenic	8.2	70	0.00
041M5A0501	8/28/1997	mg/kg	3.2		Cadmium	1.2	9.6	0.33
041M5A0501	8/28/1997	mg/kg	50.1		Chromium	81	370	0.14
041M5A0501	8/28/1997	mg/kg	108		Copper	34	270	0.40
041M5A0501	**8/28/1997**	**mg/kg**	**258**		**Lead**	**46.7**	**218**	**1.18**
041M5A0501	8/28/1997	mg/kg	0.09		Mercury	0.15	0.71	0.13
041M5A0501	8/28/1997	mg/kg	7.5		Nickel	20.9	51.6	0.15
041M5A0501	8/28/1997	mg/kg	0.15	J	Silver	1	3.7	0.04
041M5A0501	8/28/1997	mg/kg	394		Zinc	150	410	0.96
041M5A0501	8/28/1997	µg/kg	50	U	4,4'-DDE	2.2	27	1.85
041M5A0501	8/28/1997	µg/kg	50	U	4,4'-DDT	1.58	46.1	1.08
041M5A0501	8/28/1997	µg/kg	4,050	U	Total PCBs	22.7	180	22.50
041M5A0501	8/28/1997	µg/kg	260	U	2-Methylnaphthalene	70	670	0.39
041M5A0501	8/28/1997	µg/kg	260	U	Acenaphthene	16	500	0.52
041M5A0501	8/28/1997	µg/kg	260	U	Acenaphthylene	44	640	0.41
041M5A0501	8/28/1997	µg/kg	260	U	Anthracene	85.3	1,100	0.24
041M5A0501	8/28/1997	µg/kg	41	J	Benzo(a)anthracene	261	1,600	0.03
041M5A0501	8/28/1997	µg/kg	52	J	Benzo(a)pyrene	430	1,600	0.03
041M5A0501	8/28/1997	µg/kg	58	J	Chrysene	384	2,800	0.02
041M5A0501	8/28/1997	µg/kg	260	U	Dibenz(a,h)anthracene	63.4	260	1
041M5A0501	8/28/1997	µg/kg	72	J	Fluoranthene	600	5,100	0.01
041M5A0501	8/28/1997	µg/kg	260	U	Fluorene	19	540	0.48
041M5A0501	8/28/1997	µg/kg	260	U	Naphthalene	160	2,100	0.12
041M5A0501	8/28/1997	µg/kg	28	J	Phenanthrene	240	1,500	0.02
041M5A0501	8/28/1997	µg/kg	87	J	Pyrene	665	2,600	0.03
041M5A0501	8/28/1997				ERM Quotient Sum			32.07
041M5A0501	8/28/1997				Mean ERM Quotient			1.28
041M5A0501	8/28/1997				Mean ERM Quotient without ND			0.14
041M5A0501	8/28/1997				Mean ERM Quotient Category			2
041M5A0601	8/28/1997	mg/kg	0.23	UJ	Arsenic	8.2	70	0.00
041M5A0601	8/28/1997	mg/kg	1.2		Cadmium	1.2	9.6	0.13
041M5A0601	8/28/1997	mg/kg	24.4		Chromium	81	370	0.07
041M5A0601	8/28/1997	mg/kg	25.6		Copper	34	270	0.09
041M5A0601	8/28/1997	mg/kg	75.5		Lead	46.7	218	0.35
041M5A0601	8/28/1997	mg/kg	0.06		Mercury	0.15	0.71	0.08
041M5A0601	8/28/1997	mg/kg	1.8		Nickel	20.9	51.6	0.03
041M5A0601	8/28/1997	mg/kg	0.05	UJ	Silver	1	3.7	0.01
041M5A0601	8/28/1997	mg/kg	103		Zinc	150	410	0.25
041M5A0601	8/28/1997	µg/kg	3.6	J	4,4'-DDE	2.2	27	0.13
041M5A0601	8/28/1997	µg/kg	3.2	J	4,4'-DDT	1.58	46.1	0.07
041M5A0601	8/28/1997	µg/kg	217	U	Total PCBs	22.7	180	1.21
041M5A0601	8/28/1997	µg/kg	270	U	2-Methylnaphthalene	70	670	0.40
041M5A0601	8/28/1997	µg/kg	270	U	Acenaphthene	16	500	0.54
041M5A0601	8/28/1997	µg/kg	270	U	Acenaphthylene	44	640	0.42
041M5A0601	8/28/1997	µg/kg	270	U	Anthracene	85.3	1,100	0.25
041M5A0601	8/28/1997	µg/kg	270	U	Benzo(a)anthracene	261	1,600	0.17
041M5A0601	8/28/1997	µg/kg	270	U	Benzo(a)pyrene	430	1,600	0.17
041M5A0601	8/28/1997	µg/kg	270	U	Chrysene	384	2,800	0.10
041M5A0601	8/28/1997	µg/kg	270	U	Dibenz(a,h)anthracene	63.4	260	1.04
041M5A0601	8/28/1997	µg/kg	16	J	Fluoranthene	600	5,100	0.00
041M5A0601	8/28/1997	µg/kg	270	U	Fluorene	19	540	0.50
041M5A0601	8/28/1997	µg/kg	270	U	Naphthalene	160	2,100	0.13
041M5A0601	8/28/1997	µg/kg	270	U	Phenanthrene	240	1,500	0.18
041M5A0601	8/28/1997	µg/kg	270	U	Pyrene	665	2,600	0.10
041M5A0601	8/28/1997				ERM Quotient Sum			6.43
041M5A0601	8/28/1997				Mean ERM Quotient			0.26
041M5A0601	8/28/1997				Mean ERM Quotient without ND			0.05
041M5A0601	8/28/1997				Mean ERM Quotient Category			2

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-1-26
Wetland 5A Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**3**	**3**				**305**	**124**	**668**	**041W5A0501**	**668**		**13**	**FDEP**	**51.4**	**Yes**	**Max Detect > SV**
Antimony	1	3	1.3	1.3	1.3	32.3	94.3	94.3	041W5A0501	94.3		160	EPA	0.59	No	Max Detect < SV
Arsenic	0	3	1.1	1.1	1.1	1.1			ND	1.1	UJ	50	FDEP	0.02	No	Max SQL< SV
Barium	3	3				24.7	22.3	28	041W5A0501	28			NA		Yes	No SV
Beryllium	0	3	0.113	0.095	0.13	0.113			ND	0.13	U	0.13	FDEP	1	Yes	Max SQL > SV
Cadmium	**1**	**3**	**0.29**	**0.29**	**0.29**	**0.593**	**1.2**	**1.2**	**041W5A0501**	**1.2**		**0.66**	**EPA**	**1.82**	**Yes**	**Max Detect > SV**
Calcium	3	3				10,600	9,160	12,600	041W5A0401	12,600			NA		Yes	No SV
Chromium	**1**	**3**	**0.44**	**0.44**	**0.44**	**4.29**	**12**	**12**	**041W5A0501**	**12**		**11**	**EPA**	**1.09**	**Yes**	**Max Detect > SV**
Cobalt	2	3	0.265	0.265	0.265	1.82	2	3.2	041W5A0501	3.2	J		NA		Yes	No SV
Copper	**2**	**3**	**0.85**	**0.85**	**0.85**	**15.9**	**4.1**	**42.8**	**041W5A0501**	**42.8**		**6.54**	**EPA**	**6.54**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	3	0.7	0.7	0.7	0.7			ND	0.7	UJ	5.2	EPA	0.14	No	Max SQL< SV
Iron	3	3				1,450	756	2,500	041W5A0601	2,500			NA		Yes	No SV
Lead	**2**	**3**	**2.75**	**2.75**	**2.75**	**34.4**	**9**	**91.4**	**041W5A0501**	**91.4**		**1.32**	**EPA**	**69.2**	**Yes**	**Max Detect > SV**
Magnesium	3	3				2,580	1,520	3,940	041W5A0401	3,940			NA		Yes	No SV
Manganese	3	3				166	124	198	041W5A0501	198			NA		Yes	No SV
Mercury	0	3	0.0317	0.025	0.045	0.0317			ND	0.045	U	0.012	EPA	3.75	Yes	Max SQL > SV
Nickel	0	3	1.28	0.6	2.65	1.28			ND	2.65	U	87.71	EPA	0.03	No	Max SQL< SV
Potassium	3	3				1,970	1,190	3,400	041W5A0401	3,400			NA		Yes	No SV
Selenium	0	3	1.3	1.3	1.3	1.3			ND	1.3	U	5	EPA	0.26	No	Max SQL< SV
Silver	**1**	**3**	**0.015**	**0.015**	**0.015**	**0.0433**	**0.1**	**0.1**	**041W5A0501**	**0.1**	**J**	**0.012**	**EPA**	**8.33**	**Yes**	**Max Detect > SV**
Sodium	3	3				7,670	4,450	9,590	041W5A0401	9,590			NA		Yes	No SV
Thallium	0	3	0.6	0.6	0.6	0.6			ND	0.6	U	4	EPA	0.15	No	Max SQL< SV
Vanadium	2	3	0.385	0.385	0.385	1.63	1.1	3.4	041W5A0501	3.4	J		NA		Yes	No SV
Zinc	**3**	**3**				**126**	**15.4**	**338**	**041W5A0501**	**338**		**58.91**	**EPA**	**5.74**	**Yes**	**Max Detect > SV**
Pesticides (µg/L)																
Aldrin	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Dieldrin	0	3	0.0338	0.0014	0.05	0.0338			ND	0.05	U		NA		Yes	No SV
Endosulfan I	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.056	EPA	0.45	No	Max SQL< SV
Endosulfan II	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan sulfate	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Heptachlor	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	6.58	Yes	Max SQL > SV
Heptachlor epoxide	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	3	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Toxaphene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
alpha-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-Chlordane	0	3	0.0179	0.00365	0.025	0.0179			ND	0.025	U		NA		Yes	No SV
Total Chlordane	0	3	0.0429	0.02865	0.05	0.0429			ND	0.05	U	0.0043	EPA	11.6	Yes	Max SQL > SV
Endrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin aldehyde	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin ketone	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	Yes	Max SQL > SV
Total Endrin	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
alpha-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
beta-BHC	0	3	0.0177	0.0031	0.025	0.0177			ND	0.025	U		NA		Yes	No SV
delta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-BHC (Lindane)	0	3	0.0175	0.00235	0.025	0.0175			ND	0.025	U	0.08	EPA	0.31	No	Max SQL< SV
Total BHC	0	3	0.0852	0.05545	0.1	0.0852			ND	0.1	U		NA		Yes	No SV
4,4'-DDD	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	Yes	Max SQL > SV
Total DDT	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
PCBs (µg/L)																
Aroclor-1016	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1221	0	3	1	1	1	1			ND	1	U		NA		Yes	No SV
Aroclor-1232	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1242	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1248	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1254	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1260	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	35.7	Yes	Max SQL > SV
Total PCB	0	3	4	4	4	4			ND	4	U		NA		Yes	No SV

Table 11-1-26
Wetland 5A Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
SVOCs (µg/L)																
1,2,4-Trichlorobenzene	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	3	5	5	5	5			ND	5	U	15.8	EPA	0.32	No	Max SQL< SV
1,3-Dichlorobenzene	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	3	5	5	5	5			ND	5	U	3	FDEP	1.67	Yes	Max SQL > SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dimethylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	3	10	10	10	10			ND	10	UJ		NA		Yes	No SV
2,4-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chloronaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	43.8	EPA	0.06	No	Max SQL< SV
2-Methyl-4,6-Dinitrophenol	0	3	10	10	10	10			ND	10	UJ		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Nitrophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
3-Methylphenol/4-Methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Nitrophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	0.3	EPA	8.33	Yes	Max SQL > SV
Butylbenzylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Carbazole	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
Dibenzofuran	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Diethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dimethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Di-n-butylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	9.4	EPA	0.27	No	Max SQL< SV
Di-n-octylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobutadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachloroethane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Isophorone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Nitrobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitrosodiphenylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pentachlorophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
Phenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV

Table 11-1-26
Wetland 5A Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
PAHs (µg/L)																
2-Methylnaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acenaphthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acenaphthylene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Chrysene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Fluorene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Naphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	26	FDEP	0.10	No	Max SQL< SV
Phenanthrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Total PAH	0	3	32.5	32.5	32.5	32.5			ND	32.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	270	FDEP	0.00	No	Max SQL< SV
1,1,2,2-Tetrachloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	3.2	FDEP	0.16	No	Max SQL< SV
1,2-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichloroethene (total)	1	3	0.5	0.5	0.5	0.7	1.1	1.1	041W5A0601	1.1			NA		Yes	No SV
1,2-Dichloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
2-Butanone (MEK)	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
2-Hexanone	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
Acetone	1	3	12.5	12.5	12.5	16	23	23	041W5A0601	23	J		NA		Yes	No SV
Benzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	53	EPA	0.01	No	Max SQL< SV
Bromodichloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromoform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromomethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon disulfide	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon tetrachloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	17	FDEP	0.03	No	Max SQL< SV
Chloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chloroform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	289	EPA	0.00	No	Max SQL< SV
Chloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
cis-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Ethylbenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	1,580	FDEP	0.00	No	Max SQL< SV
Styrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Tetrachloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Toluene	1	3	0.5	0.5	0.5	0.47	0.41	0.41	041W5A0501	0.41	J	175	EPA	0.00	No	Max Detect < SV
trans-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Vinyl chloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Xylene (Total)	0	3	1	1	1	1			ND	1	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
N/R = No refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value.

Table 11-1-27
Wetland 5A Phase III
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	None	1,2-Dichloroethene (total)
Barium			Acetone
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Silver			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Mercury	Dieldrin	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan II	1,4-Dichlorobenzene	1,1-Dichloroethane
	Endosulfan sulfate	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,2-Dichloroethane
	Heptachlor	2,4,5-Trichlorophenol	1,2-Dichloropropane
	Heptachlor epoxide	2,4,6-Trichlorophenol	2-Butanone (MEK)
	Methoxychlor	2,4-Dichlorophenol	2-Hexanone
	Toxaphene	2,4-Dimethylphenol	4-Methyl-2-Pentanone (MIBK)
	alpha-Chlordane	2,4-Dinitrophenol	Bromodichloromethane
	gamma-Chlordane	2,4-Dinitrotoluene	Bromoform
	Total Chlordane	2,6-Dinitrotoluene	Bromomethane
	Endrin	2-Chloronaphthalene	Carbon disulfide
	Endrin aldehyde	2-Methyl-4,6-Dinitrophenol	Carbon tetrachloride
	Endrin ketone	2-Methylphenol (o-Cresol)	Chloroethane
	Total Endrin	2-Nitroaniline	Chloromethane
	alpha-BHC	2-Nitrophenol	cis-1,3-Dichloropropene
	beta-BHC	3,3'-Dichlorobenzidine	Dibromochloromethane
	delta-BHC	3-Methylphenol/4-Methylphenol	Styrene
	Total BHC	3-Nitroaniline	Tetrachloroethene
	4,4'-DDD	4-Bromophenyl-phenylether	trans-1,3-Dichloropropene
	4,4'-DDE	4-Chloro-3-methylphenol	Trichloroethene
	4,4'-DDT	4-Chloroaniline	Vinyl chloride
	Total DDT	4-Chlorophenylphenyl ether	Xylene (Total)
	Aroclor-1016	4-Nitroaniline	
	Aroclor-1221	4-Nitrophenol	
	Aroclor-1232	Benzo(b)fluoranthene	
	Aroclor-1242	Benzo(g,h,i)perylene	
	Aroclor-1248	Benzo(k)fluoranthene	
	Aroclor-1254	bis(2-Chloroethoxy)methane	
	Aroclor-1260	bis(2-Chloroethyl)ether	
	Total PCBs	bis(2-Ethylhexyl)phthalate (BEHP)	
		Butylbenzylphthalate	
		Carbazole	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	
		2-Methylnaphthalene	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	
		Pyrene	
		Total PAHs	

Table 11-1-28
Wetland 5A Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	**3**	**3**				**305**	**124**	**668**	**041W5A0501**	**668**		**13**	**FDEP**	**51.38**	**23.5**	**1,090**	**0**	**3**	**No**	**Max Result < Ref. Conc.**
Barium	3	3				24.7	22.3	28	041W5A0501	28			NA			3.67	3	3	Yes	Max Result > Ref. Conc.
Beryllium	0	3	0.113	0.095	0.13	0.113			ND	0.13	U	0.13	FDEP	1	0.87	1	0	3	No	Max Result < Ref. Conc.
Cadmium	**1**	**3**	**0.29**	**0.29**	**0.29**	**0.593**	**1.2**	**1.2**	**041W5A0501**	**1.2**		**0.66**	**EPA**	**2**	**0.90**	**3**	**0**	**3**	**No**	**Max Result < Ref. Conc.**
Calcium	3	3				10,600	9,160	12,600	041W5A0401	12,600			NA			7,680	3	3	No	Essential Nutrient
Chromium	**1**	**3**	**0.44**	**0.44**	**0.44**	**4.29**	**12**	**12**	**041W5A0501**	**12**		**11**	**EPA**	**1.09**	**0.39**	**8**	**1**	**3**	**Yes**	**Max Result > Ref. Conc.**
Cobalt	2	3	0.265	0.265	0.265	1.82	2	3.2	041W5A0501	3.2	J		NA			3	1	3	Yes	Max Result > Ref. Conc.
Copper	**2**	**3**	**0.85**	**0.85**	**0.85**	**15.9**	**4.1**	**42.8**	**041W5A0501**	**42.8**		**6.54**	**EPA**	**6.54**	**2.43**	**4**	**2**	**3**	**Yes**	**Max Result > Ref. Conc.**
Iron	3	3				1,450	756	2,500	041W5A0601	2,500			NA			2,360	1	3	Yes	Max Result > Ref. Conc.
Lead	**2**	**3**	**2.75**	**2.75**	**2.75**	**34.4**	**9**	**91.4**	**041W5A0501**	**91.4**		**1.32**	**EPA**	**69.24**	**26**	**3.2**	**2**	**3**	**Yes**	**Max Result > Ref. Conc.**
Magnesium	3	3				2,580	1,520	3,940	041W5A0401	3,940			NA			20,300	0	3	No	Max Result < Ref. Conc.
Manganese	3	3				166	124	198	041W5A0501	198			NA			13.2	3	3	Yes	Max Result > Ref. Conc.
Mercury	0	3	0.0317	0.025	0.045	0.0317			ND	0.045	U	0.012	EPA	4	2.64	0.13	0	3	No	Max Result < Ref. Conc.
Potassium	3	3				1,970	1,190	3,400	041W5A0401	3,400			NA			7,000	0	3	No	Max Result < Ref. Conc.
Silver	**1**	**3**	**0.015**	**0.015**	**0.015**	**0.0433**	**0.1**	**0.1**	**041W5A0501**	**0.1**	**J**	**0.012**	**EPA**	**8.33**	**3.61**	**4**	**0**	**3**	**No**	**Max Result < Ref. Conc.**
Sodium	3	3				7,670	4,450	9,590	041W5A0401	9,590			NA			182,000	0	3	No	Max Result < Ref. Conc.
Vanadium	2	3	0.385	0.385	0.385	1.63	1.1	3.4	041W5A0501	3.4	J		NA			4.7	0	3	No	Max Result < Ref. Conc.
Zinc	**3**	**3**				**126**	**15.4**	**338**	**041W5A0501**	**338**		**58.91**	**EPA**	**6**	**2.13**	**5.53**	**3**	**3**	**Yes**	**Max Result > Ref. Conc.**
Pesticides (µg/L)																				
Aldrin	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Dieldrin	0	3	0.0338	0.0014	0.05	0.0338			ND	0.05	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Endosulfan II	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Endosulfan sulfate	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Heptachlor	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	7	6.58		0	3	No	No Ref. Conc.; Parameter Not Detected
Heptachlor epoxide	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	3	No	No Ref. Conc.; Parameter Not Detected
Methoxychlor	0	3	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Toxaphene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
alpha-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
gamma-Chlordane	0	3	0.0179	0.00365	0.025	0.0179			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Total Chlordane	0	3	0.0429	0.02865	0.05	0.0429			ND	0.05	U	0.0043	EPA	12	9.97		0	3	No	No Ref. Conc.; Parameter Not Detected
Endrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Endrin aldehyde	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Endrin ketone	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	22	21.7		0	3	No	No Ref. Conc.; Parameter Not Detected
Total Endrin	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
alpha-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
beta-BHC	0	3	0.0177	0.0031	0.025	0.0177			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
delta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
gamma-BHC (Lindane)	0	3	0.0175	0.00235	0.025	0.0175			ND	0.025	U	0.08	EPA	0.31	0.22		0	3	No	No Ref. Conc.; Parameter Not Detected
Total BHC	0	3	0.0852	0.05545	0.1	0.0852			ND	0.1	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDD	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	3	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDE	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	3	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDT	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	3	No	No Ref. Conc.; Parameter Not Detected
Total DDT	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
PCBs (µg/L)																				
Aroclor-1016	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1221	0	3	1	1	1	1			ND	1	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1232	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1242	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1248	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1254	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1260	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	36	35.7		0	3	No	No Ref. Conc.; Parameter Not Detected
Total PCB	0	3	4	4	4	4			ND	4	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
SVOCs (µg/L)																				
1,2,4-Trichlorobenzene	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,3-Dichlorobenzene	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,4-Dichlorobenzene	0	3	5	5	5	5			ND	5	U	3	FDEP	2	1.67		0	3	No	No Ref. Conc.; Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chl	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4,5-Trichlorophenol	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4,6-Trichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4-Dichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4-Dimethylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrophenol	0	3	10	10	10	10			ND	10	UJ		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2,6-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Chloronaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	3	10	10	10	10			ND	10	UJ		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Methylphenol (o-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Nitrophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
3,3'-Dichlorobenzidine	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
3-Methylphenol/4-Methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
3-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Bromophenyl-phenylether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Chloro-3-methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected

Table 11-1-28
Wetland 5A Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
4-Chloroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Chlorophenylphenyl ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Nitrophenol	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Benzo(b)fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
SVOCs (µg/L) - cont.																				
Benzo(g,h,i)perylene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Benzo(k)fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
bis(2-Chloroethoxy)methane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
bis(2-Chloroethyl)ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	0.3	EPA	8.33	8.33		0	3	No	No Ref. Conc.; Parameter Not Detected
Butylbenzylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Carbazole	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Dibenzofuran	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Diethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Dimethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Di-n-octylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobutadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Hexachlorocyclopentadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Hexachloroethane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Isophorone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Nitrobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
N-Nitroso-di-n-propylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
N-Nitrosodiphenylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Pentachlorophenol	0	3	10	10	10	10			ND	10	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Phenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
PAHs (µg/L)																				
2-Methylnaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Acenaphthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Acenaphthylene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Chrysene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Dibenz(a,h)anthracene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Fluoranthene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Fluorene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Naphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	26	FDEP	0.10	0.10		0	3	No	No Ref. Conc.; Parameter Not Detected
Phenanthrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Pyrene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Total PAH	0	3	32.5	32.5	32.5	32.5			ND	32.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
VOCs (µg/L)																				
1,1,2,2-Tetrachloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,1,2-Trichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,1-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloroethene (total)	1	3	0.5	0.5	0.5	0.7	1.1	1.1	041W5A0601	1.1			NA				0	3	Yes	No Ref. Conc.
1,2-Dichloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Butanone (MEK)	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
2-Hexanone	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	3	5	5	5	5			ND	5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Acetone	1	3	12.5	12.5	12.5	16	23	23	041W5A0601	23	J		NA				0	3	Yes	No Ref. Conc.
Bromodichloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Bromoform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Bromomethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Carbon disulfide	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Carbon tetrachloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Chloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Chloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
cis-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Dibromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Styrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Tetrachloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
trans-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Trichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Vinyl chloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected
Xylene (Total)	0	3	1	1	1	1			ND	1	U		NA				0	3	No	No Ref. Conc.; Parameter Not Detected

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available

UJ = Not detected. SQL is estimated.
D = Diluted Result
J = Estimated Value

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
PEL = Probable effects level.

N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the Max detections.

Table 11-1-28
Wetland 5A Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale

U or ND = Not Detected at or above the SQL

N/R = No refinement value available.

Parameters in bold were detected and exceeded Ref. Conc.s.

Table 11-1-29
Wetland 5A Phase III
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Iron	None	None	1,2-Dichloroethene (total)
Lead			Acetone
Manganese			
Barium			
Chromium			
Cobalt			
Copper			
Zinc			

Table 11-1-30
Wetland 5B Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	2	2			491	10,500	041M5B0201	10,500			N/A		Yes	No SV
Arsenic	1	2	0.07	0.07	1.3	1.3	041M5B0201	1.3	J	7.24	1, 2	0.18	No	Max Detect < SV
Barium	2	2			1.3	30.2	041M5B0201	30.2	J		N/A		Yes	No SV
Beryllium	1	2	0.035	0.035	0.48	0.48	041M5B0201	0.48	J		N/A		Yes	No SV
Cadmium	**2**	**2**			**0.3**	**220**	**041M5B0201**	**220**		**0.676**	**1**	**325**	**Yes**	**Max Detect > SV**
Calcium	2	2			109	4,400	041M5B0201	4,400	J		N/A		Yes	No SV
Chromium	**2**	**2**			**7.9**	**416**	**041M5B0201**	**416**		**52.3**	**1, 2**	**7.95**	**Yes**	**Max Detect > SV**
Cobalt	1	2	0.1	0.1	5.3	5.3	041M5B0201	5.3	J		N/A		Yes	No SV
Copper	**1**	**2**	**1.55**	**1.55**	**268**	**268**	**041M5B0201**	**268**		**18.7**	**1, 2**	**14.3**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	2	0.325	1.85			ND	1.85	U		N/A		Yes	No SV
Iron	2	2			306	3,290	041M5B0201	3,290			N/A		Yes	No SV
Lead	**2**	**2**			**17.9**	**481**	**041M5B0201**	**481**	**J**	**30.2**	**1, 2**	**15.9**	**Yes**	**Max Detect > SV**
Magnesium	2	2			27.1	668	041M5B0201	668	J		N/A		Yes	No SV
Manganese	2	2			1.4	42.7	041M5B0201	42.7			N/A		Yes	No SV
Mercury	**1**	**2**	**0.025**	**0.025**	**0.68**	**0.68**	**041M5B0201**	**0.68**		**0.13**	**1, 2**	**5.23**	**Yes**	**Max Detect > SV**
Nickel	**2**	**2**			**2.2**	**93.9**	**041M5B0201**	**93.9**		**15.9**	**1, 2**	**5.91**	**Yes**	**Max Detect > SV**
Potassium	2	2			10.5	247	041M5B0201	247	J		N/A		Yes	No SV
Selenium	1	2	0.1	0.1	3.6	3.6	041M5B0201	3.6			N/A		Yes	No SV
Silver	**1**	**2**	**0.135**	**0.135**	**5.2**	**5.2**	**041M5B0201**	**5.2**	**J**	**0.733**	**1**	**7.09**	**Yes**	**Max Detect > SV**
Sodium	1	2	1.3	1.3	95.2	95.2	041M5B0201	95.2	J		N/A		Yes	No SV
Thallium	0	2	0.1	0.6			ND	0.6	U		N/A		Yes	No SV
Vanadium	1	2	0.415	0.415	18.8	18.8	041M5B0201	18.8	J		N/A		Yes	No SV
Zinc	**2**	**2**			**9.8**	**1,160**	**041M5B0201**	**1,160**		**124**	**1, 2**	**9.35**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	2	20.5	70			ND	70	U	20.2	1	3.47	No	TOC normalized PAHs<TEC
Acenaphthene	0	2	10	34.5			ND	34.5	U	6.71	1	5.14	No	TOC normalized PAHs<TEC
Acenaphthylene	0	2	20.5	70			ND	70	U	5.87	1	11.9	No	TOC normalized PAHs<TEC
Anthracene	0	2	205	700			ND	700	U	46.9	1	14.9	No	TOC normalized PAHs<TEC
Benzo(a)anthracene	0	2	20.5	70			ND	70	U	74.8	1	0.94	No	Max SQL< SV
Benzo(a)pyrene	0	2	20.5	70			ND	70	U	88.8	1	0.79	No	Max SQL< SV
Chrysene	0	2	20.5	70			ND	70	U	108	1	0.65	No	Max SQL< SV
Dibenz(a,h)anthracene	0	2	20.5	70			ND	70	U	6.22	1	11.3	No	TOC normalized PAHs<TEC
Fluoranthene	1	2	20.5	20.5	110	110	041M5B0201	110	J	113	1	0.97	No	Max Detect < SV
Fluorene	0	2	10	34.5			ND	34.5	U	21.2	1	1.63	No	TOC normalized PAHs<TEC
Naphthalene	0	2	20.5	70			ND	70	U	34.6	1	2.02	No	TOC normalized PAHs<TEC
Phenanthrene	0	2	20.5	70			ND	70	U	86.7	1	0.81	No	Max SQL< SV
Pyrene	1	2	20.5	20.5	88	88	041M5B0201	88	J	153	1	0.58	No	Max Detect < SV
Total PAHs	1	2	430	430	1,530	1,530	041M5B0201	1,530		1,684	1, 2	0.91	No	Max Detect < SV
TOC Normalized PAHs	1	2	240.22	240.22	20.5	20.5	041M5B0201	20.5		290	3	0.07	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	2	2.05	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1221	0	2	4.2	14.5			ND	14.5	U	67	2	0.22	No	Max SQL< SV
Aroclor-1232	0	2	2.05	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1242	0	2	2.05	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1248	0	2	2.05	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1254	**2**	**2**			**8.7**	**53**	**041M5B0201**	**53**		**21.6**	**N/A**	**2.45**	**Yes**	**Max Detect > SV**
Aroclor-1260	0	2	2.05	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Total PCBs	**2**	**2**			**23.2**	**103**	**041M5B0201**	**103**		**21.6**	**1**	**4.75**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	0	2	0.05	0.18			ND	0.18	U		N/A		Yes	No SV
Dieldrin	**2**	**2**			**0.42**	**7.1**	**041M5B0201**	**7.1**	**J**	**0.716**	**1**	**9.92**	**Yes**	**Max Detect > SV**
Endosulfan I	0	2	0.105	0.365			ND	0.365	U		N/A		Yes	No SV
Endosulfan II	0	2	0.105	0.365			ND	0.365	U		N/A		Yes	No SV
Endosulfan sulfate	0	2	0.105	0.365			ND	0.365	U		N/A		Yes	No SV
Heptachlor	0	2	0.05	0.18			ND	0.18	U		N/A		Yes	No SV
Heptachlor epoxide	0	2	0.05	0.18			ND	0.18	U		N/A		Yes	No SV
Methoxychlor	0	2	0.5	1.8			ND	1.8	U		N/A		Yes	No SV
Toxaphene	0	2	10.5	36.5			ND	36.5	U		N/A		Yes	No SV
alpha-Chlordane	2	2			0.19	1.2	041M5B0201	1.2	J	1.7	1	0.71	No	Max Detect < SV
gamma-Chlordane	1	2	0.05	0.05	1	1	041M5B0201	1	J	1.7	1	0.59	No	Max Detect < SV
Total Chlordane	**2**	**2**			**0.24**	**2.2**	**041M5B0201**	**2.2**		**1.7**	**1**	**1.29**	**Yes**	**Max Detect > SV**
Endrin	0	2	0.105	0.365			ND	0.365	U	3.3	2	0.11	No	Max SQL< SV
Endrin aldehyde	0	2	0.105	0.365			ND	0.365	U	3.3	2	0.11	No	Max SQL< SV
Endrin ketone	0	2	0.105	0.365			ND	0.365	U	3.3	2	0.11	No	Max SQL< SV
Total Endrin	0	2	0.315	1.1			ND	1.1	U	3.3	2	0.33	No	Max SQL< SV
alpha-BHC	**2**	**2**			**0.3**	**1.8**	**041M5B0201**	**1.8**		**0.32**	**1**	**5.63**	**Yes**	**Max Detect > SV**
beta-BHC	0	2	0.05	0.18			ND	0.18	U	0.32	1	0.56	No	Max SQL< SV
delta-BHC	0	2	0.05	0.18			ND	0.18	U	0.32	1	0.56	No	Max SQL< SV
gamma-BHC (Lindane)	0	2	0.05	0.18			ND	0.18	U	0.32	1	0.56	No	Max SQL< SV
Total BHC	**2**	**2**			**0.45**	**2.34**	**041M5B0201**	**2.34**		**0.32**	**2**	**7.31**	**Yes**	**Max Detect > SV**
4,4'-DDD	**1**	**2**	**0.105**	**0.105**	**2.2**	**2.2**	**041M5B0201**	**2.2**	**J**	**1.22**	**1**	**1.8**	**Yes**	**Max Detect > SV**
4,4'-DDE	**2**	**2**			**0.32**	**3.9**	**041M5B0201**	**3.9**		**2.07**	**1**	**1.88**	**Yes**	**Max Detect > SV**
4,4'-DDT	0	2	0.105	0.365			ND	0.365	U	1.19	1	0.31	No	Max SQL< SV
Total DDT	**2**	**2**			**0.53**	**6.46**	**041M5B0201**	**6.46**		**3.3**	**2**	**1.96**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	2	205	700			ND	700	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	2	205	700			ND	700	U		N/A		Yes	No SV
2-Chloronaphthalene	0	2	205	700			ND	700	U		N/A		Yes	No SV
2-Chlorophenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	1	2	205	205	200	200	041M5B0201	200	J		N/A		Yes	No SV
2-Nitroaniline	0	2	205	700			ND	700	U		N/A		Yes	No SV
2-Nitrophenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	2	205	700			ND	700	U		N/A		Yes	No SV
3-Nitroaniline	0	2	500	1,700			ND	1,700	UJ		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	2	205	700			ND	700	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
4-Chloroaniline	0	2	205	700			ND	700	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	2	205	700			ND	700	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	1	2	205	205	150	150	041M5B0201	150	J		N/A		Yes	No SV
4-Nitroaniline	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
4-Nitrophenol	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
Benzo(b)fluoranthene	1	2	20.5	20.5	83	83	041M5B0201	83	J		N/A		No	TOC normalized PAHs<TEC
Benzo(g,h,i)perylene	0	2	20.5	70			ND	70	U		N/A		No	TOC normalized PAHs<TEC
Benzo(k)fluoranthene	0	2	20.5	70			ND	70	U		N/A		No	TOC normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	2	205	700			ND	700	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	2	20.5	70			ND	70	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	205	700			ND	700	U	182	1, 2	3.85	Yes	Max SQL > SV
Butylbenzylphthalate	2	2			38	80	041M5B0201	80	J	182	1, 2	0.44	No	Max Detect < SV
Carbazole	0	2	205	700			ND	700	UJ		N/A		Yes	No SV
Dibenzofuran	0	2	205	700			ND	700	U		N/A		Yes	No SV
Diethylphthalate	0	2	205	700			ND	700	U	182	1, 2	3.85	Yes	Max SQL > SV
Dimethylphthalate	0	2	205	700			ND	700	U	182	1, 2	3.85	Yes	Max SQL > SV
Di-n-butylphthalate	0	2	205	700			ND	700	U	182	1, 2	3.85	Yes	Max SQL > SV
Di-n-octylphthalate	0	2	205	700			ND	700	U	182	1, 2	3.85	Yes	Max SQL > SV
Hexachlorobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV

Table 11-1-30
Wetland 5B Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Hexachlorobutadiene	0	2	205	700			ND	700	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	2	205	700			ND	700	UJ		N/A		Yes	No SV
Hexachloroethane	0	2	205	700			ND	700	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	2	20.5	70			ND	70	U		N/A		No	TOC normalized PAHs<TEC
Isophorone	0	2	205	700			ND	700	U		N/A		Yes	No SV
Nitrobenzene	0	2	205	700			ND	700	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	2	20.5	70			ND	70	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	2	205	700			ND	700	U		N/A		Yes	No SV
Pentachlorophenol	0	2	500	1,700			ND	1,700	U		N/A		Yes	No SV
Phenol	0	2	205	700			ND	700	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,1-Dichloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,1-Dichloroethene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,2-Dichloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	1	2	6	6	11	11	041M5B0201	11	J		N/A		Yes	No SV
1,2-Dichloropropane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
2-Hexanone	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Acetone	2	2			66	180	041M5B0101	180			N/A		Yes	No SV
Benzene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Bromodichloromethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Bromoform	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Bromomethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Carbon disulfide	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Chlorobenzene	1	2	6	6	7	7	041M5B0201	7	J		N/A		Yes	No SV
Chloroethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Chloroform	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Chloromethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Dibromochloromethane	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Ethylbenzene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Methylene chloride	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Styrene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Tetrachloroethene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Toluene	1	2	6	6	13	13	041M5B0201	13	J		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Trichloroethene	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV
Vinyl chloride	1	2	2	2	42	42	041M5B0201	42			N/A		Yes	No SV
Xylene (Total)	0	2	6	15.5			ND	15.5	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient

D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-1-31
Wetland 5B Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	2-Methylphenol (o-Cresol)	1,2-Dichloroethene (total)
Barium	4,4'-DDE	4-Methylphenol (p-Cresol)	Acetone
Beryllium	alpha-BHC		Chlorobenzene
Cadmium	Dieldrin		Toluene
Calcium	Total BHC		Vinyl chloride
Chromium	Total Chlordane		
Cobalt	Total DDT		
Copper	Aroclor-1254		
Iron	Total PCBs		
Lead			
Magnesium			
Manganese			
Mercury			
Nickel			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Cyanide (CN)	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Thallium	Endosulfan I	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	Endosulfan II	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan sulfate	1,4-Dichlorobenzene	1,1-Dichloroethane
	Heptachlor	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Heptachlor epoxide	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Methoxychlor	2,4,6-Trichlorophenol	1,2-Dichloropropane
	Toxaphene	2,4-Dichlorophenol	2-Butanone (MEK)
		2,4-Dimethylphenol	2-Hexanone
		2,4-Dinitrophenol	4-Methyl-2-Pentanone (MIBK)
		2,4-Dinitrotoluene	Benzene
		2,6-Dinitrotoluene	Bromodichloromethane
		2-Chloronaphthalene	Bromoform
		2-Chlorophenol	Bromomethane
		2-Methyl-4,6-Dinitrophenol	Carbon disulfide
		2-Nitroaniline	Carbon tetrachloride
		2-Nitrophenol	Chloroethane
		3,3'-Dichlorobenzidine	Chloroform
		3-Nitroaniline	Chloromethane
		4-Bromophenyl-phenylether	cis-1,3-Dichloropropene
		4-Chloro-3-methylphenol	Dibromochloromethane
		4-Chloroaniline	Ethylbenzene
		4-Chlorophenylphenyl ether	Methylene chloride
		4-Nitroaniline	Styrene
		4-Nitrophenol	Tetrachloroethene
		bis(2-Chloroethoxy)methane	trans-1,3-Dichloropropene
		bis(2-Chloroethyl)ether	Trichloroethene
		bis(2-Ethylhexyl)phthalate (BEHP)	Xylene (Total)
		Carbazole	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-butylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Naphthalene	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 11-1-32
Wetland 5B Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	2	2				5,500	491	10,500	10,500		041M5B0201			NA					0	13,610	0	No	EPC < RC
Barium	2	2				15.8	1.3	30.2	30.2	J	041M5B0201			NA					0	14	1	Yes	EPC > RC and no RV
Beryllium	1	2	0.035	0.035	0.035	0.258	0.48	0.48	0.48	J	041M5B0201			NA					0	0.84	0	No	EPC < RC
Cadmium	**2**	**2**				**110**	**0.3**	**220**	**220**		**041M5B0201**	**0.68**	**4.21**	**PEL**	**325**	**163**	**52.3**	**26.2**	**1**	**1.8**	**1**	**Yes**	**EPC > RV and RC**
Calcium	2	2				2,250	109	4,400	4,400	J	041M5B0201			NA					0	10,756.67	0	No	EPC < RC
Chromium	**2**	**2**				**212**	**7.9**	**416**	**416**		**041M5B0201**	**52.3**	**160**	**PEL**	**7.95**	**4.05**	**2.6**	**1.32**	**1**	**39.37**	**1**	**Yes**	**EPC > RV and RC**
Cobalt	1	2	0.1	0.1	0.1	2.7	5.3	5.3	5.3	J	041M5B0201			NA					0	2.8	1	Yes	EPC > RC and no RV
Copper	**1**	**2**	**1.55**	**1.55**	**1.55**	**135**	**268**	**268**	**268**		**041M5B0201**	**18.7**	**108**	**PEL**	**14.3**	**7.21**	**2.48**	**1.25**	**1**	**19.5**	**1**	**Yes**	**EPC > RV and RC**
Cyanide (CN)	0	2	1.09	0.325	1.85	1.09			1.85	U	ND			NA					0	5.22	0	No	Parameter Not Detected
Iron	2	2				1,800	306	3,290	3,290		041M5B0201			NA					0	11,911.67	0	No	EPC < RC
Lead	**2**	**2**				**249**	**17.9**	**481**	**481**	**J**	**041M5B0201**	**30.2**	**112**	**PEL**	**15.9**	**8.26**	**4.29**	**2.23**	**1**	**82.47**	**1**	**Yes**	**EPC > RV and RC**
Magnesium	2	2				348	27.1	668	668	J	041M5B0201			NA					0	7,513.33	0	No	EPC < RC
Manganese	2	2				22.1	1.4	42.7	42.7		041M5B0201			NA					0	37.97	1	Yes	EPC > RC and no RV
Mercury	1	2	0.025	0.025	0.025	0.353	0.68	0.68	0.68		041M5B0201	0.13	0.696	PEL	5.23	2.71	0.98	0.51	0	0.55	1	No	EPC > RC, but < RV
Nickel	**2**	**2**				**48.1**	**2.2**	**93.9**	**93.9**		**041M5B0201**	**15.9**	**42.8**	**PEL**	**5.91**	**3.02**	**2.19**	**1.12**	**1**	**9.28**	**1**	**Yes**	**EPC > RV and RC**
Potassium	2	2				129	10.5	247	247	J	041M5B0201			NA					0	1,628.67	0	No	EPC < RC
Selenium	1	2	0.1	0.1	0.1	1.85	3.6	3.6	3.6		041M5B0201			NA					0	3.45	1	Yes	EPC > RC and no RV
Silver	**1**	**2**	**0.135**	**0.135**	**0.135**	**2.67**	**5.2**	**5.2**	**5.2**	**J**	**041M5B0201**	**0.73**	**1.77**	**PEL**	**7.09**	**3.64**	**2.94**	**1.51**	**1**	**2.1**	**1**	**Yes**	**EPC > RV and RC**
Sodium	1	2	1.3	1.3	1.3	48.3	95.2	95.2	95.2	J	041M5B0201			NA					0	18,993.33	0	No	EPC < RC
Thallium	0	2	0.35	0.1	0.6	0.35			0.6	U	ND			NA					0	1.57	0	No	Parameter Not Detected
Vanadium	1	2	0.415	0.415	0.415	9.61	18.8	18.8	18.8	J	041M5B0201			NA					0	28.67	0	No	EPC < RC
Zinc	**2**	**2**				**585**	**9.8**	**1,160**	**1,160**		**041M5B0201**	**124**	**271**	**PEL**	**9.35**	**4.72**	**4.28**	**2.16**	**1**	**36.73**	**1**	**Yes**	**EPC > RV and RC**
PCBs (µg/kg)																							
Aroclor-1016	0	2	4.53	2.05	7	4.53			7	U	ND	21.6	189	PEL	0.32	0.21	0.04	0.02	0		0	No	Parameter Not Detected
Aroclor-1221	0	2	9.35	4.2	14.5	9.35			14.5	U	ND	67	189	PEL	0.22	0.14	0.08	0.05	0		0	No	Parameter Not Detected
Aroclor-1232	0	2	4.53	2.05	7	4.53			7	U	ND	21.6	189	PEL	0.32	0.21	0.04	0.02	0		0	No	Parameter Not Detected
Aroclor-1242	0	2	4.53	2.05	7	4.53			7	U	ND	21.6	189	PEL	0.32	0.21	0.04	0.02	0		0	No	Parameter Not Detected
Aroclor-1248	0	2	4.53	2.05	7	4.53			7	U	ND	21.6	189	PEL	0.32	0.21	0.04	0.02	0		0	No	Parameter Not Detected
Aroclor-1254	2	2				30.9	8.7	53	53		041M5B0201	21.6	189	PEL	2.45	1.43	0.28	0.16	0		0	No	RV HQ <1 and no RC
Aroclor-1260	0	2	4.53	2.05	7	4.53			7	U	ND	21.6	189	PEL	0.32	0.21	0.04	0.02	0		0	No	Parameter Not Detected
Total PCBs	2	2				62.8	23.2	103	103		041M5B0201	21.6	189	PEL	4.75	2.91	0.54	0.33	0		0	No	RV HQ <1 and no RC
Pesticides (µg/kg)																							
Aldrin	0	2	0.115	0.05	0.18	0.115			0.18	U	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	**2**	**2**				**3.76**	**0.42**	**7.1**	**7.1**	**J**	**041M5B0201**	**0.72**	**4.3**	**PEL**	**9.92**	**5.25**	**1.65**	**0.87**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endosulfan I	0	2	0.235	0.105	0.365	0.235			0.365	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	0	2	0.235	0.105	0.365	0.235			0.365	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	0	2	0.235	0.105	0.365	0.235			0.365	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	0	2	0.115	0.05	0.18	0.115			0.18	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	2	0.115	0.05	0.18	0.115			0.18	U	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	2	1.15	0.5	1.8	1.15			1.8	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	2	23.5	10.5	36.5	23.5			36.5	U	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	2	2				0.695	0.19	1.2	1.2	J	041M5B0201	1.7	4.79	PEL	0.71	0.41	0.25	0.15	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	1	2	0.05	0.05	0.05	0.525	1	1	1	J	041M5B0201	1.7	4.79	PEL	0.59	0.31	0.21	0.11	0		0	No	RV HQ <1 and no RC
Total Chlordane	2	2				1.22	0.24	2.2	2.2		041M5B0201	1.7	4.79	PEL	1.29	0.72	0.46	0.26	0		0	No	RV HQ <1 and no RC
alpha-BHC	**2**	**2**				**1.05**	**0.3**	**1.8**	**1.8**		**041M5B0201**		**0.99**	**PEL**			**1.82**	**1.06**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
beta-BHC	0	2	0.115	0.05	0.18	0.115			0.18	U	ND	0.32	0.99	PEL	0.56	0.36	0.18	0.12	0		0	No	Parameter Not Detected
delta-BHC	0	2	0.115	0.05	0.18	0.115			0.18	U	ND	0.32	0.99	PEL	0.56	0.36	0.18	0.12	0		0	No	Parameter Not Detected
gamma-BHC (Lindane)	0	2	0.115	0.05	0.18	0.115			0.18	U	ND	0.32	0.99	PEL	0.56	0.36	0.18	0.12	0		0	No	Parameter Not Detected
Total BHC	**2**	**2**				**1.4**	**0.45**	**2.34**	**2.34**		**041M5B0201**	**0.32**	**0.99**	**PEL**	**7.31**	**4.36**	**2.36**	**1.41**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	1	2	0.105	0.105	0.105	1.15	2.2	2.2	2.2	J	041M5B0201	1.22	7.81	PEL	1.8	0.95	0.28	0.15	0	50	0	No	EPC < RC and RV
4,4'-DDE	2	2				2.11	0.32	3.9	3.9		041M5B0201	2.07	374	PEL	1.88	1.02	0.01	0.01	0	40	0	No	EPC < RC and RV
4,4'-DDT	0	2	0.235	0.105	0.365	0.235			0.365	U	ND	1.19	4.77	PEL	0.31	0.20	0.08	0.05	0	20	0	No	Parameter Not Detected
Total DDT	2	2				3.5	0.53	6.46	6.46		041M5B0201	3.3	51.7	PEL	1.96	1.06	0.13	0.07	0	110	0	No	EPC < RC and RV
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	1	2	205	205	205	203	200	200	200	J	041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
2-Nitroaniline	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	2	1,100	500	1,700	1,100			1,700	UJ	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-1-32
Wetland 5B Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
4-Chloro-3-methylphenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
SVOCs (µg/kg) - cont.																							
4-Methylphenol (p-Cresol)	1	2	205	205	205	178	150	150	150	J	041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
4-Nitroaniline	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	2	45.3	20.5	70	45.3			70	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	453	205	700	453			700	U	ND	182	2647	PEL	3.85	2.49	0.26	0.17	0		0	No	Parameter Not Detected
Carbazole	0	2	453	205	700	453			700	UJ	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Diethylphthalate	0	2	453	205	700	453			700	U	ND	182	2647	PEL	3.85	2.49	0.26	0.17	0		0	No	Parameter Not Detected
Dimethylphthalate	0	2	453	205	700	453			700	U	ND	182	2647	PEL	3.85	2.49	0.26	0.17	0		0	No	Parameter Not Detected
Di-n-butylphthalate	0	2	453	205	700	453			700	U	ND	182	2647	PEL	3.85	2.49	0.26	0.17	0		0	No	Parameter Not Detected
Di-n-octylphthalate	0	2	453	205	700	453			700	U	ND	182	2647	PEL	3.85	2.49	0.26	0.17	0		0	No	Parameter Not Detected
Hexachlorobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	2	453	205	700	453			700	UJ	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	2	45.3	20.5	70	45.3			70	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	2	1,100	500	1,700	1,100			1,700	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	2	453	205	700	453			700	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	1	2	6	6	6	8.5	11	11	11	J	041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
1,2-Dichloropropane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	2	2				123	66	180	180		041M5B0101			NA					0		0	Yes	No SV, no RV, and no RC
Benzene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	1	2	6	6	6	6.5	7	7	7	J	041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
Chloroethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Toluene	1	2	6	6	6	9.5	13	13	13	J	041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
trans-1,3-Dichloropropene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	1	2	2	2	2	22	42	42	42		041M5B0201			NA					0		0	Yes	No SV, no RV, and no RC
Xylene (Total)	0	2	10.8	6	15.5	10.8			15.5	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
Parameters in bold were detected and exceeded screening values.

J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-1-33
Wetland 5B Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Dieldrin	2-Methylphenol (o-Cresol)	Vinyl chloride
Cadmium	alpha-BHC	4-Methylphenol (p-Cresol)	
Chromium	Total BHC		
Cobalt			
Copper			
Lead			
Manganese			
Nickel			
Selenium			
Silver			
Zinc			

Table 11-1-34
Wetland 5B Phase II
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5B0101	11/17/1995	mg/kg	0.07	UJ	Arsenic	8.2	70	0.00
041M5B0101	11/17/1995	mg/kg	0.3	J	Cadmium	1.2	9.6	0.03
041M5B0101	11/17/1995	mg/kg	7.9		Chromium	81	370	0.02
041M5B0101	11/17/1995	mg/kg	1.55	U	Copper	34	270	0.01
041M5B0101	11/17/1995	mg/kg	17.9	J	Lead	46.7	218	0.08
041M5B0101	11/17/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M5B0101	11/17/1995	mg/kg	2.2	J	Nickel	20.9	51.6	0.04
041M5B0101	11/17/1995	mg/kg	0.135	UJ	Silver	1	3.7	0.04
041M5B0101	11/17/1995	mg/kg	9.8		Zinc	150	410	0.02
041M5B0101	11/17/1995	µg/kg	0.32	J	4,4'-DDE	2.2	27	0.01
041M5B0101	11/17/1995	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M5B0101	11/17/1995	µg/kg	23.15		Total PCBs	22.7	180	0.13
041M5B0101	11/17/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M5B0101	11/17/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M5B0101	11/17/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M5B0101	11/17/1995	µg/kg	205	U	Anthracene	85.3	1,100	0.19
041M5B0101	11/17/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M5B0101	11/17/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M5B0101	11/17/1995	µg/kg	20.5	U	Chrysene	384	2,800	0.01
041M5B0101	11/17/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M5B0101	11/17/1995	µg/kg	20.5	U	Fluoranthene	600	5,100	0.00
041M5B0101	11/17/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M5B0101	11/17/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01
041M5B0101	11/17/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M5B0101	11/17/1995	µg/kg	20.5	U	Pyrene	665	2,600	0.01
041M5B0101	11/17/1995				ERM Quotient Sum			0.86
041M5B0101	11/17/1995				Mean ERM Quotient			0.03
041M5B0101	11/17/1995				Mean ERM Quotient without ND			0.01
041M5B0101	11/17/1995				Mean ERM Quotient Category			2.00
041M5B0201	11/17/1995	mg/kg	1.3	J	Arsenic	8.2	70	0.02
041M5B0201	**11/17/1995**	**mg/kg**	**220**		**Cadmium**	**1.2**	**9.6**	**22.92**
041M5B0201	**11/17/1995**	**mg/kg**	**416**		**Chromium**	**81**	**370**	**1.12**
041M5B0201	11/17/1995	mg/kg	268		Copper	34	270	0.99
041M5B0201	**11/17/1995**	**mg/kg**	**481**	**J**	**Lead**	**46.7**	**218**	**2.21**
041M5B0201	11/17/1995	mg/kg	0.68		Mercury	0.15	0.71	0.96
041M5B0201	**11/17/1995**	**mg/kg**	**93.9**		**Nickel**	**20.9**	**51.6**	**1.82**
041M5B0201	**11/17/1995**	**mg/kg**	**5.2**	**J**	**Silver**	**1**	**3.7**	**1.41**
041M5B0201	**11/17/1995**	**mg/kg**	**1,160**		**Zinc**	**150**	**410**	**2.83**
041M5B0201	11/17/1995	µg/kg	3.9		4,4'-DDE	2.2	27	0.14
041M5B0201	11/17/1995	µg/kg	0.365	U	4,4'-DDT	1.58	46.1	0.01
041M5B0201	11/17/1995	µg/kg	102.5		Total PCBs	22.7	180	0.57
041M5B0201	11/17/1995	µg/kg	70	U	2-Methylnaphthalene	70	670	0.10
041M5B0201	11/17/1995	µg/kg	34.5	U	Acenaphthene	16	500	0.07
041M5B0201	11/17/1995	µg/kg	70	U	Acenaphthylene	44	640	0.11
041M5B0201	11/17/1995	µg/kg	700	U	Anthracene	85.3	1,100	0.64
041M5B0201	11/17/1995	µg/kg	70	U	Benzo(a)anthracene	261	1,600	0.04
041M5B0201	11/17/1995	µg/kg	70	U	Benzo(a)pyrene	430	1,600	0.04
041M5B0201	11/17/1995	µg/kg	70	U	Chrysene	384	2,800	0.03
041M5B0201	11/17/1995	µg/kg	70	U	Dibenz(a,h)anthracene	63.4	260	0.27
041M5B0201	11/17/1995	µg/kg	110	J	Fluoranthene	600	5,100	0.02
041M5B0201	11/17/1995	µg/kg	34.5	U	Fluorene	19	540	0.06
041M5B0201	11/17/1995	µg/kg	70	U	Naphthalene	160	2,100	0.03
041M5B0201	11/17/1995	µg/kg	70	U	Phenanthrene	240	1,500	0.05
041M5B0201	11/17/1995	µg/kg	88	J	Pyrene	665	2,600	0.03
041M5B0201	11/17/1995				ERM Quotient Sum			36.49
041M5B0201	11/17/1995				Mean ERM Quotient			1.46
041M5B0201	11/17/1995				Mean ERM Quotient without ND			1.40
041M5B0201	11/17/1995				Mean ERM Quotient Category			3.00

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-1-35
Wetland 5B Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**1**	**1**				**2,060**	**2,060**	**2,060**	**041W5B0201**	**2,060**		**13**	**FDEP**	**158**	**Yes**	**Max Detect > SV**
Antimony	0	1	1	1	1	1			ND	1	UJ	160	EPA	0.01	No	Max SQL< SV
Arsenic	0	1	1	1	1	1			ND	1	UJ	50	FDEP	0.02	No	Max SQL< SV
Barium	1	1				27.8	27.8	27.8	041W5B0201	27.8	J		NA		Yes	No SV
Beryllium	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	3.85	Yes	Max SQL > SV
Cadmium	**1**	**1**				**19**	**19**	**19**	**041W5B0201**	**19**		**0.66**	**EPA**	**28.8**	**Yes**	**Max Detect > SV**
Calcium	1	1				15,600	15,600	15,600	041W5B0201	15,600			NA		Yes	No SV
Chromium	**1**	**1**				**40.8**	**40.8**	**40.8**	**041W5B0201**	**40.8**	**J**	**11**	**EPA**	**3.71**	**Yes**	**Max Detect > SV**
Cobalt	1	1				3.9	3.9	3.9	041W5B0201	3.9	J		NA		Yes	No SV
Copper	**1**	**1**				**52.7**	**52.7**	**52.7**	**041W5B0201**	**52.7**		**6.54**	**EPA**	**8.06**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	5.2	EPA	0.48	No	Max SQL< SV
Iron	1	1				2,890	2,890	2,890	041W5B0201	2,890			NA		Yes	No SV
Lead	**1**	**1**				**94.1**	**94.1**	**94.1**	**041W5B0201**	**94.1**		**1.32**	**EPA**	**71.3**	**Yes**	**Max Detect > SV**
Magnesium	1	1				3,250	3,250	3,250	041W5B0201	3,250	J		NA		Yes	No SV
Manganese	1	1				109	109	109	041W5B0201	109			NA		Yes	No SV
Mercury	**1**	**1**				**0.14**	**0.14**	**0.14**	**041W5B0201**	**0.14**	**J**	**0.012**	**EPA**	**11.7**	**Yes**	**Max Detect > SV**
Nickel	0	1	13.1	13.1	13.1	13.1			ND	13.1	U	87.71	EPA	0.15	No	Max SQL< SV
Potassium	1	1				2,160	2,160	2,160	041W5B0201	2,160	J		NA		Yes	No SV
Selenium	0	1	1.5	1.5	1.5	1.5			ND	1.5	U	5	EPA	0.3	No	Max SQL< SV
Silver	0	1	2	2	2	2			ND	2	UJ	0.012	EPA	167	Yes	Max SQL > SV
Sodium	1	1				12,600	12,600	12,600	041W5B0201	12,600			NA		Yes	No SV
Thallium	0	1	1.5	1.5	1.5	1.5			ND	1.5	U	4	EPA	0.38	No	Max SQL< SV
Vanadium	1	1				5.2	5.2	5.2	041W5B0201	5.2	J		NA		Yes	No SV
Zinc	**1**	**1**				**189**	**189**	**189**	**041W5B0201**	**189**		**58.91**	**EPA**	**3.21**	**Yes**	**Max Detect > SV**
Pesticides (µg/L)																
Aldrin	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Dieldrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan I	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.056	EPA	0.45	No	Max SQL< SV
Endosulfan II	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan sulfate	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Heptachlor	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	6.58	Yes	Max SQL > SV
Heptachlor epoxide	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	1	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Toxaphene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
alpha-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Total Chlordane	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	11.6	Yes	Max SQL > SV
Endrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin aldehyde	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin ketone	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	Yes	Max SQL > SV
Total Endrin	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
alpha-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
beta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
delta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-BHC (Lindane)	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.08	EPA	0.31	No	Max SQL< SV
Total BHC	0	1	0.1	0.1	0.1	0.1			ND	0.1	U		NA		Yes	No SV
4,4'-DDD	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	Yes	Max SQL > SV
Total DDT	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
PCBs (µg/L)																
Aroclor-1016	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1221	0	1	1	1	1	1			ND	1	U		NA		Yes	No SV
Aroclor-1232	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1242	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1248	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1254	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1260	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	35.7	Yes	Max SQL > SV
Total PCB	0	1	4	4	4	4			ND	4	U		NA		Yes	No SV

Table 11-1-35
Wetland 5B Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
SVOCs (µg/L)																
1,2,4-Trichlorobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dimethylphenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chloronaphthalene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chlorophenol	1	1				1	1	1	041W5B0201	1	J	43.8	EPA	0.02	No	Max Detect < SV
2-Methyl-4,6-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitrophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	1	1				1	1	1	041W5B0201	1	J		NA		Yes	No SV
4-Chloroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methylphenol (p-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Nitrophenol	0	1	10	10	10	10			ND	10	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**1**				**2**	**2**	**2**	**041W5B0201**	**2**	**J**	**0.3**	**EPA**	**6.67**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dibenzofuran	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Diethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dimethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Di-n-butylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	9.4	EPA	0.27	No	Max SQL< SV
Di-n-octylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Hexachlorobutadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachloroethane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Isophorone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Nitrobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	1	1				1	1	1	041W5B0201	1	J		NA		Yes	No SV
N-Nitrosodiphenylamine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pentachlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Phenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
PAHs (µg/L)																
2-Methylnaphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chrysene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluorene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Naphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	No	Max SQL< SV
Phenanthrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Table 11-1-35
Wetland 5B Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
PAHs (µg/L) - cont.																
Pyrene	1	1				2	2	2	041W5B0201	2			NA		Yes	No SV
Total PAH	1	1				8	8	8	041W5B0201	8			NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	270	FDEP	0.00	No	Max SQL< SV
1,1,2,2-Tetrachloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethane	1	1				3	3	3	041W5B0201	3			NA		Yes	No SV
1,1-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	3.2	FDEP	0.16	No	Max SQL< SV
1,2-Dibromo-3-Chloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dibromoethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	15.8	EPA	0.03	No	Max SQL< SV
1,2-Dichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,3-Dichlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	3	FDEP	0.17	No	Max SQL< SV
2-Hexanone	0	1	2.5	2.5	2.5	2.5			ND	2.5	UJ		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acetone	1	1				8	8	8	041W5B0201	8	J		NA		Yes	No SV
Benzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	53	EPA	0.01	No	Max SQL< SV
Bromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromodichloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromoform	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromomethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon disulfide	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon tetrachloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	17	FDEP	0.03	No	Max SQL< SV
Chloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chloroform	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	289	EPA	0.00	No	Max SQL< SV
Chloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
cis-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Ethylbenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	0	1	4	4	4	4			ND	4	U	1,580	FDEP	0.00	No	Max SQL< SV
Styrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Tetrachloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Toluene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	175	EPA	0.00	No	Max SQL< SV
trans-1,2-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	1	1				10	10	10	041W5B0201	10			NA		Yes	No SV
Vinyl chloride	1	1				6	6	6	041W5B0201	6			NA		Yes	No SV
Xylene (Total)	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
N/R = No refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value.

Table 11-1-36
Wetland 5B Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	4-Chloro-3-methylphenol	1,1-Dichloroethane
Barium		bis(2-Ethylhexyl)phthalate (BEHP)	Acetone
Cadmium		N-Nitroso-di-n-propylamine	Trichloroethene
Calcium		Pyrene	Vinyl chloride
Chromium		Total PAHs	
Cobalt			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Mercury			
Potassium			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Silver	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1,2-Trichloroethane
	Endosulfan II	2,4,5-Trichlorophenol	1,2-Dibromo-3-Chloropropane
	Endosulfan sulfate	2,4,6-Trichlorophenol	1,2-Dibromoethane
	Heptachlor	2,4-Dichlorophenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4-Dimethylphenol	1,2-Dichloropropane
	Methoxychlor	2,4-Dinitrophenol	1,3-Dichlorobenzene
	Toxaphene	2,4-Dinitrotoluene	2-Hexanone
	alpha-Chlordane	2,6-Dinitrotoluene	4-Methyl-2-Pentanone (MIBK)
	gamma-Chlordane	2-Chloronaphthalene	Bromochloromethane
	Total Chlordane	2-Methyl-4,6-Dinitrophenol	Bromodichloromethane
	Endrin	2-Methylphenol (o-Cresol)	Bromoform
	Endrin aldehyde	2-Nitroaniline	Bromomethane
	Endrin ketone	2-Nitrophenol	Carbon disulfide
	Total Endrin	3,3'-Dichlorobenzidine	Carbon tetrachloride
	alpha-BHC	3-Nitroaniline	Chloroethane
	beta-BHC	4-Bromophenyl-phenylether	Chloromethane
	delta-BHC	4-Chloroaniline	cis-1,3-Dichloropropene
	Total BHC	4-Chlorophenylphenyl ether	Dibromochloromethane
	4,4'-DDD	4-Methylphenol (p-Cresol)	Styrene
	4,4'-DDE	4-Nitroaniline	Tetrachloroethene
	4,4'-DDT	4-Nitrophenol	trans-1,2-Dichloroethene
	Total DDT	Benzo(b)fluoranthene	trans-1,3-Dichloropropene
	Aroclor-1016	Benzo(g,h,i)perylene	Xylene (Total)
	Aroclor-1221	Benzo(k)fluoranthene	
	Aroclor-1232	bis(2-Chloroethoxy)methane	
	Aroclor-1242	bis(2-Chloroethyl)ether	
	Aroclor-1248	Butylbenzylphthalate	
	Aroclor-1254	Dibenzofuran	
	Aroclor-1260	Diethylphthalate	
	Total PCBs	Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	
		2-Methylnaphthalene	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	

Table 11-1-37
Wetland 5B Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	**1**	**1**				**2,060**	**2,060**	**2,060**	**041W5B0201**	**2,060**		**13**	**FDEP**	**158**	**158**	**1,090**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Barium	1	1				27.8	27.8	27.8	041W5B0201	27.8	J		NA			3.67	1	1	Yes	Maximum Result exceeds Reference Concentration
Beryllium	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	3.85	3.85	1	0	1	No	Maximum Result below Reference Concentration
Cadmium	**1**	**1**				**19**	**19**	**19**	**041W5B0201**	**19**		**0.66**	**EPA**	**28.8**	**28.8**	**3**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Calcium	1	1				15,600	15,600	15,600	041W5B0201	15,600			NA			7,680	1	1	No	Essential Nutrient
Chromium	**1**	**1**				**40.8**	**40.8**	**40.8**	**041W5B0201**	**40.8**	**J**	**11**	**EPA**	**3.71**	**3.71**	**8**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Cobalt	1	1				3.9	3.9	3.9	041W5B0201	3.9	J		NA			3	1	1	Yes	Maximum Result exceeds Reference Concentration
Copper	**1**	**1**				**52.7**	**52.7**	**52.7**	**041W5B0201**	**52.7**		**6.54**	**EPA**	**8.06**	**8.06**	**4**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Iron	1	1				2,890	2,890	2,890	041W5B0201	2,890			NA			2,360	1	1	Yes	Maximum Result exceeds Reference Concentration
Lead	**1**	**1**				**94.1**	**94.1**	**94.1**	**041W5B0201**	**94.1**		**1.32**	**EPA**	**71.3**	**71.3**	**3.2**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Magnesium	1	1				3,250	3,250	3,250	041W5B0201	3,250	J		NA			20,300	0	1	No	Maximum Result below Reference Concentration
Manganese	1	1				109	109	109	041W5B0201	109			NA			13.2	1	1	Yes	Maximum Result exceeds Reference Concentration
Mercury	**1**	**1**				**0.14**	**0.14**	**0.14**	**041W5B0201**	**0.14**	**J**	**0.012**	**EPA**	**11.7**	**11.7**	**0.13**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Potassium	1	1				2,160	2,160	2,160	041W5B0201	2,160	J		NA			7,000	0	1	No	Maximum Result below Reference Concentration
Silver	0	1	2	2	2	2			ND	2	UJ	0.012	EPA	167	167	4	0	1	No	Maximum Result below Reference Concentration
Sodium	1	1				12,600	12,600	12,600	041W5B0201	12,600			NA			182,000	0	1	No	Maximum Result below Reference Concentration
Vanadium	1	1				5.2	5.2	5.2	041W5B0201	5.2	J		NA			4.7	1	1	Yes	Maximum Result exceeds Reference Concentration
Zinc	**1**	**1**				**189**	**189**	**189**	**041W5B0201**	**189**		**58.91**	**EPA**	**3.21**	**3.21**	**5.53**	**1**	**1**	**Yes**	**Maximum Result exceeds Reference Concentration**
Pesticides (µg/L)																				
Aldrin	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
Dieldrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	Parameter Not Detected
Endosulfan II	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	Parameter Not Detected
Endosulfan sulfate	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	Parameter Not Detected
Heptachlor	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	6.58	6.58		0	1	No	Parameter Not Detected
Heptachlor epoxide	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	1	No	Parameter Not Detected
Methoxychlor	0	1	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	1	No	Parameter Not Detected
Toxaphene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
alpha-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
gamma-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
Total Chlordane	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	11.6	11.6		0	1	No	Parameter Not Detected
Endrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	Parameter Not Detected
Endrin aldehyde	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	Parameter Not Detected
Endrin ketone	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	21.7		0	1	No	Parameter Not Detected
Total Endrin	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	1	No	Parameter Not Detected
alpha-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
beta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
delta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	Parameter Not Detected
Total BHC	0	1	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	1	No	Parameter Not Detected
4,4'-DDD	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	1	No	Parameter Not Detected
4,4'-DDE	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	1	No	Parameter Not Detected
4,4'-DDT	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	84.7		0	1	No	Parameter Not Detected
Total DDT	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	1	No	Parameter Not Detected
PCBs (µg/L)																				
Aroclor-1016	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Aroclor-1221	0	1	1	1	1	1			ND	1	U		NA				0	1	No	Parameter Not Detected
Aroclor-1232	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Aroclor-1242	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Aroclor-1248	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Aroclor-1254	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Aroclor-1260	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	35.7	35.7		0	1	No	Parameter Not Detected
Total PCB	0	1	4	4	4	4			ND	4	U		NA				0	1	No	Parameter Not Detected
SVOCs (µg/L)																				
1,2,4-Trichlorobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,4-Dichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,4-Dimethylphenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,4-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
2,4-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2,6-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2-Chloronaphthalene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2-Nitroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2-Nitrophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected

Table 11-1-37
Wetland 5B Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
SVOCs (µg/L) - cont.																				
3-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
4-Chloro-3-methylphenol	1	1				1	1	1	041W5B0201	1	J		NA				0	1	Yes	No Reference Concentration
4-Chloroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
4-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
4-Nitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	Parameter Not Detected
Benzo(b)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Benzo(g,h,i)perylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Benzo(k)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**1**				**2**	**2**	**2**	**041W5B0201**	**2**	**J**	**0.3**	**EPA**	**6.67**	**6.67**		**0**	**1**	**Yes**	**No Reference Concentration**
Butylbenzylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Dibenzofuran	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Diethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Dimethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Di-n-octylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Hexachlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Hexachlorobutadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Hexachloroethane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Isophorone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Nitrobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	1	1				1	1	1	041W5B0201	1	J		NA				0	1	Yes	No Reference Concentration
N-Nitrosodiphenylamine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Pentachlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Phenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
PAHs (µg/L)																				
2-Methylnaphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Acenaphthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Acenaphthylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Benzo(a)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Benzo(a)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Chrysene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Dibenz(a,h)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Fluorene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Phenanthrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Pyrene	1	1				2	2	2	041W5B0201	2			NA				0	1	Yes	No Reference Concentration
Total PAH	1	1				8	8	8	041W5B0201	8			NA				0	1	Yes	No Reference Concentration
VOCs (µg/L)																				
1,1,2,2-Tetrachloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,1,2-Trichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,1-Dichloroethane	1	1				3	3	3	041W5B0201	3			NA				0	1	Yes	No Reference Concentration
1,2-Dibromo-3-Chloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,2-Dibromoethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,2-Dichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,2-Dichloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
1,3-Dichlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
2-Hexanone	0	1	2.5	2.5	2.5	2.5			ND	2.5	UJ		NA				0	1	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
Acetone	1	1				8	8	8	041W5B0201	8	J		NA				0	1	Yes	No Reference Concentration
Bromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Bromodichloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Bromoform	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Bromomethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Carbon disulfide	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Carbon tetrachloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Chloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Chloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected

Table 11-1-37
Wetland 5B Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
VOCs (µg/L) - cont.																				
cis-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Dibromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Styrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Tetrachloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
trans-1,2-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Trichloroethene	1	1				10	10	10	041W5B0201	10			NA				0	1	Yes	No Reference Concentration
Vinyl chloride	1	1				6	6	6	041W5B0201	6			NA				0	1	Yes	No Reference Concentration
Xylene (Total)	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected

Table 11-1-38
Wetland 5B Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	bis(2-Ethylhexyl)phthalate (BEHP)	Acetone
Iron		Pyrene	Vinyl chloride
Lead		4-Chloro-3-methylphenol	1,1-Dichloroethane
Manganese		N-Nitroso-di-n-propylamine	Trichloroethene
Mercury		Total PAHs	
Barium			
Cadmium			
Chromium			
Cobalt			
Copper			
Vanadium			
Zinc			

Table 11-1-39
Wetland 5B Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	5	5			300	3,400	041M5B0202	3,400			N/A		Yes	No SV
Antimony	5	5			1.1	3.6	041M5B0202	3.6	I	12	2	0.3	No	Max Detect < SV
Arsenic	1	5	0.23	0.33	0.84	0.84	041M5B0202	0.84	I	7.24	1, 2	0.12	No	Max Detect < SV
Barium	5	5			1.5	18	041M5B0202	18			N/A		Yes	No SV
Beryllium	5	5			0.036	0.15	041M5B0202	0.15	I		N/A		Yes	No SV
Cadmium	**5**	**5**			**0.95**	**31**	**041M5B0202**	**31**		**0.676**	**1**	**45.9**	**Yes**	**Max Detect > SV**
Calcium	5	5			100	1,100	041M5B0202	1,100			N/A		Yes	No SV
Chromium	**5**	**5**			**14**	**470**	**041M5B0202**	**470**		**52.3**	**1, 2**	**8.99**	**Yes**	**Max Detect > SV**
Cobalt	5	5			0.3	4.1	041M5B0202	4.1			N/A		Yes	No SV
Copper	**5**	**5**			**5.3**	**90**	**041M5B0202**	**90**		**18.7**	**1, 2**	**4.81**	**Yes**	**Max Detect > SV**
Iron	5	5			210	1,800	041M5B0202	1,800			N/A		Yes	No SV
Lead	**5**	**5**			**19**	**420**	**041M5B0202**	**420**		**30.2**	**1, 2**	**13.9**	**Yes**	**Max Detect > SV**
Magnesium	5	5			26	210	041M5B0202	210			N/A		Yes	No SV
Manganese	5	5			1.1	21	041M5B0601	21			N/A		Yes	No SV
Mercury	**4**	**5**	**0.0034**	**0.0034**	**0.019**	**0.22**	**041M5B0202**	**0.22**		**0.13**	**1, 2**	**1.69**	**Yes**	**Max Detect > SV**
Nickel	**5**	**5**			**0.61**	**20**	**041M5B0202**	**20**		**15.9**	**1, 2**	**1.26**	**Yes**	**Max Detect > SV**
Potassium	5	5			12	74	041M5B0202	74	I		N/A		Yes	No SV
Selenium	0	5	0.37	0.55			ND	0.55	U		N/A		Yes	No SV
Silver	**2**	**5**	**0.075**	**0.09**	**0.38**	**6.4**	**041M5B0202**	**6.4**		**0.733**	**1**	**8.73**	**Yes**	**Max Detect > SV**
Sodium	5	5			7.5	38	041M5B0202	38	I		N/A		Yes	No SV
Thallium	0	5	0.55	0.75			ND	0.75	U		N/A		Yes	No SV
Vanadium	5	5			0.55	6.7	041M5B0202	6.7			N/A		Yes	No SV
Zinc	**5**	**5**			**19**	**200**	**041M5B0202**	**200**		**124**	**1, 2**	**1.61**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	5	1.55	6			ND	6	U	20.2	1	0.30	No	TOC normalized PAHs<TEC
Acenaphthene	0	5	2.6	10			ND	10	U	6.71	1	1.49	No	TOC normalized PAHs<TEC
Acenaphthylene	0	5	2.5	10			ND	10	U	5.87	1	1.7	No	TOC normalized PAHs<TEC
Anthracene	0	5	2.8	11			ND	11	U	46.9	1	0.24	No	Max SQL< SV
Benzo(a)anthracene	2	5	2.2	8.5	98	120	041M5B0202	120	I	74.8	1	1.6	No	TOC normalized PAHs<TEC
Benzo(a)pyrene	0	5	2.6	10			ND	10	U	88.8	1	0.11	No	Max SQL< SV
Chrysene	3	5	2.9	7.5	56	160	041M5B0202	160		108	1	1.48	No	TOC normalized PAHs<TEC
Dibenz(a,h)anthracene	0	5	2.55	10			ND	10	U	6.22	1	1.61	Yes	Max SQL > SV
Fluoranthene	5	5			15	290	041M5B0202	290		113	1	2.57	No	TOC normalized PAHs<TEC
Fluorene	0	5	2.25	9			ND	9	U	21.2	1	0.43	No	Max SQL< SV
Naphthalene	0	5	2.05	8			ND	8	U	34.6	1	0.23	No	Max SQL< SV
Phenanthrene	0	5	3.95	70			ND	70	U	86.7	1	0.81	No	Max SQL< SV
Pyrene	5	5			13	210	041M5B0202	210		153	1	1.37	No	TOC normalized PAHs<TEC
Total PAHs	5	5			56	923	041M5B0202	923		1,684	1, 2	0.55	No	Max Detect < SV
TOC Normalized PAHs	5	5			10.4	174.54	041M5B0301	174.54		290	3	0.602	No	Max Detect < SV
PCB's (µg/kg)														
Aroclor-1016	0	5	2.8	4.45			ND	4.45	U	21.6	N/A	0.21	No	Max SQL< SV
Aroclor-1221	0	5	12.5	19.5			ND	19.5	U	67	2	0.29	No	Max SQL< SV
Aroclor-1232	0	5	4.85	7.5			ND	7.5	U	21.6	N/A	0.35	No	Max SQL< SV
Aroclor-1242	0	5	4.85	7.5			ND	7.5	U	21.6	N/A	0.35	No	Max SQL< SV
Aroclor-1248	0	5	4.7	7.5			ND	7.5	U	21.6	N/A	0.35	No	Max SQL< SV
Aroclor-1254	0	5	4.85	7.5			ND	7.5	U	21.6	N/A	0.35	No	Max SQL< SV
Aroclor-1260	**4**	**5**	**3.2**	**3.2**	**20**	**150**	**041M5B0202**	**150**		**21.6**	**N/A**	**6.94**	**Yes**	**Max Detect > SV**
Total PCBs	**4**	**5**	**37.8**	**37.8**	**56**	**203**	**041M5B0601**	**203**		**21.6**	**1**	**9.39**	**Yes**	**Max Detect > SV**

Table 11-1-39
Wetland 5B Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Pesticides (µg/kg)														
Aldrin	0	5	0.1	3.5			ND	3.5	U		N/A		Yes	No SV
Dieldrin	**5**	**5**			**8.6**	**100**	**041M5B0601**	**100**		**0.716**	**1**	**140**	**Yes**	**Max Detect > SV**
Endosulfan I	0	5	0.125	0.195			ND	0.195	U		N/A		Yes	No SV
Endosulfan II	0	5	0.16	0.25			ND	0.25	U		N/A		Yes	No SV
Endosulfan sulfate	0	5	0.32	0.5			ND	0.5	U		N/A		Yes	No SV
Heptachlor	0	5	0.2	0.32			ND	0.32	U		N/A		Yes	No SV
Heptachlor epoxide	0	5	0.125	0.195			ND	0.195	U		N/A		Yes	No SV
Methoxychlor	0	5	0.145	0.225			ND	0.225	U		N/A		Yes	No SV
Toxaphene	0	5	24	37.5			ND	37.5	U		N/A		Yes	No SV
alpha-Chlordane	0	5	0.08	0.125			ND	0.125	U	1.7	1	0.07	No	Max SQL< SV
gamma-Chlordane	0	5	0.095	0.15			ND	0.15	U	1.7	1	0.09	No	Max SQL< SV
Total Chlordane	0	5	0.175	0.275			ND	0.275	U	1.7	1	0.16	No	Max SQL< SV
Endrin	0	5	0.31	0.49			ND	0.49	U	3.3	2	0.15	No	Max SQL< SV
Endrin aldehyde	0	5	0.225	0.35			ND	0.35	U	3.3	2	0.11	No	Max SQL< SV
Endrin ketone	0	5	0.275	0.43			ND	0.43	U	3.3	2	0.13	No	Max SQL< SV
Total Endrin	0	5	0.81	1.27			ND	1.27	U	3.3	2	0.39	No	Max SQL< SV
alpha-BHC	0	5	0.175	0.27			ND	0.27	U		N/A		Yes	No SV
beta-BHC	**1**	**5**	**0.21**	**0.32**	**2.9**	**2.9**	**041M5B0601**	**2.9**	**I**	**0.32**	**N/A**	**9.06**	**Yes**	**Max Detect > SV**
delta-BHC	0	5	0.085	0.135			ND	0.135	U	0.32	N/A	0.42	No	Max SQL< SV
gamma-BHC (Lindane)	0	5	0.11	0.17			ND	0.17	U	0.32	1	0.53	No	Max SQL< SV
Total BHC	**1**	**5**	**0.58**	**0.885**	**3.47**	**3.47**	**041M5B0601**	**3.47**		**0.32**	**2**	**10.9**	**Yes**	**Max Detect > SV**
4,4'-DDD	0	5	2.55	4			ND	4	U	1.22	1	3.28	Yes	Max SQL > SV
4,4'-DDE	**3**	**5**	**3.9**	**4.15**	**18**	**24**	**041M5B0601**	**24**	**I**	**2.07**	**1**	**11.6**	**Yes**	**Max Detect > SV**
4,4'-DDT	0	5	2.25	3.5			ND	3.5	U	1.19	1	2.94	Yes	Max SQL > SV
Total DDT	**3**	**5**	**8.7**	**9.25**	**25.3**	**31.5**	**041M5B0601**	**31.5**		**3.3**	**2**	**9.55**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	5	27.5	43			ND	43	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	5	16.5	26			ND	26	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	5	16.5	26			ND	26	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	5	17.5	27			ND	27	U		N/A		Yes	No SV
1-Methyl naphthalene	0	5	1	4			ND	4	U				Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	5	23	36.5			ND	36.5	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	5	22.5	35			ND	35	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	5	23	36.5			ND	36.5	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	5	21	33			ND	33	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	5	20	32			ND	32	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	5	245	385			ND	385	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	5	16	25			ND	25	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	5	21	33			ND	33	U		N/A		Yes	No SV
2-Chloronaphthalene	0	5	27	42			ND	42	U		N/A		Yes	No SV
2-Chlorophenol	0	5	29.5	46.5			ND	46.5	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	5	22.5	35			ND	35	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	5	33.5	50			ND	50	U		N/A		Yes	No SV
2-Nitroaniline	0	5	18	28.5			ND	28.5	U		N/A		Yes	No SV
2-Nitrophenol	0	5	19	29.5			ND	29.5	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	5	19	29.5			ND	29.5	U		N/A		Yes	No SV
3-Methylphenol/4-Methylphenol	2	5	29	44.5	73	200	041M5B0601	200	I				Yes	No SV
3-Nitroaniline	0	5	21.5	34			ND	34	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	5	21.5	34			ND	34	U		N/A		Yes	No SV

Table 11-1-39
Wetland 5B Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
4-Chloro-3-methylphenol	0	5	29	45.5			ND	45.5	U		N/A		Yes	No SV
4-Chloroaniline	0	5	21	33			ND	33	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	5	19	29.5			ND	29.5	U		N/A		Yes	No SV
4-Nitroaniline	0	5	19	29.5			ND	29.5	U		N/A		Yes	No SV
4-Nitrophenol	0	5	18	28.5			ND	28.5	U		N/A		Yes	No SV
Benzo(b)fluoranthene	0	5	2.8	11			ND	11	U		N/A		No	TOC normalized PAHs<TEC
Benzo(g,h,i)perylene	0	5	1.75	7			ND	7	U		N/A		No	TOC normalized PAHs<TEC
Benzo(k)fluoranthene	0	5	2.85	11			ND	11	U		N/A		No	TOC normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	5	23	36.5			ND	36.5	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	5	27	42			ND	42	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**5**	**32**	**34**	**150**	**190**	**041M5B0301**	**190**	**I**	**182**	**1, 2**	**1.04**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	5	23	36.5			ND	36.5	U	182	1, 2	0.20	No	Max SQL< SV
Carbazole	0	5	21.5	34			ND	34	U		N/A		Yes	No SV
Dibenzofuran	0	5	24.5	38.5			ND	38.5	U		N/A		Yes	No SV
Diethylphthalate	0	5	25.5	40			ND	40	U	182	1, 2	0.22	No	Max SQL< SV
Dimethylphthalate	0	5	25.5	40			ND	40	U	182	1, 2	0.22	No	Max SQL< SV
Di-n-butylphthalate	**1**	**5**	**28**	**44.5**	**330**	**330**	**041M5B0301**	**330**	**I**	**182**	**1, 2**	**1.81**	**Yes**	**Max Detect > SV**
Di-n-octylphthalate	0	5	23	36.5			ND	36.5	U	182	1, 2	0.20	No	Max SQL< SV
Hexachlorobenzene	0	5	27.5	43			ND	43	U		N/A		Yes	No SV
Hexachlorobutadiene	0	5	19.5	30.5			ND	30.5	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	5	195	305			ND	305	U		N/A		Yes	No SV
Hexachloroethane	0	5	14	21.5			ND	21.5	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	5	1.9	7.5			ND	7.5	U		N/A		No	TOC normalized PAHs<TEC
Isophorone	0	5	19	29.5			ND	29.5	U		N/A		Yes	No SV
Nitrobenzene	0	5	22.5	35			ND	35	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	5	21.5	34			ND	34	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	5	21.5	34			ND	34	U		N/A		Yes	No SV
Pentachlorophenol	0	5	24.5	38.5			ND	38.5	U		N/A		Yes	No SV
Phenol	0	5	29.5	46.5			ND	46.5	U		N/A		Yes	No SV
TOC Normalized PAHs	5	5			10.4	175	041M5B0301	175		290	3	0.60	No	Max Detect < SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	5	0.6	1			ND	1	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	5	1.5	2.5			ND	2.5	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	5	1.35	2.25			ND	2.25	U		N/A		Yes	No SV
1,1-Dichloroethane	0	5	0.75	1.25			ND	1.25	U		N/A		Yes	No SV
1,1-Dichloroethene	0	5	1.3	2.15			ND	2.15	U		N/A		Yes	No SV
1,2-Dichloroethane	0	5	1.15	1.9			ND	1.9	U		N/A		Yes	No SV
1,2-Dichloropropane	0	5	0.9	1.5			ND	1.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	5	3.55	6			ND	6	U		N/A		Yes	No SV
2-Hexanone	0	5	3.85	6.5			ND	6.5	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	5	3.75	6.5			ND	6.5	U		N/A		Yes	No SV
Acetone	2	5	6	10	21	28	041M5B0202	28	I		N/A		Yes	No SV
Benzene	0	5	0.85	1.4			ND	1.4	U		N/A		Yes	No SV
Bromodichloromethane	0	5	1	1.65			ND	1.65	U		N/A		Yes	No SV
Bromoform	0	5	1.3	2.15			ND	2.15	U		N/A		Yes	No SV
Bromomethane	0	5	2.55	4.3			ND	4.3	U		N/A		Yes	No SV
Carbon disulfide	0	5	1.5	2.5			ND	2.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	5	0.7	1.2			ND	1.2	U		N/A		Yes	No SV
Chlorobenzene	0	5	1	1.65			ND	1.65	U		N/A		Yes	No SV
Chloroethane	0	5	1.3	2.15			ND	2.15	U		N/A		Yes	No SV

Table 11-1-39
Wetland 5B Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
VOCs (µg/kg) - cont.														
Chloroform	0	5	0.9	1.5			ND	1.5	U		N/A		Yes	No SV
Chloromethane	0	5	1.05	1.75			ND	1.75	U		N/A		Yes	No SV
cis-1,2-Dichloroethene	1	5	0.85	1.2	7.7	7.7	041M5B0601	7.7	I				Yes	No SV
cis-1,3-Dichloropropene	0	5	0.9	1.5			ND	1.5	U		N/A		Yes	No SV
Dibromochloromethane	0	5	1.05	1.75			ND	1.75	U		N/A		Yes	No SV
Ethylbenzene	0	5	0.75	1.25			ND	1.25	U		N/A		Yes	No SV
Methylene chloride	0	5	1.8	3.05			ND	3.05	U		N/A		Yes	No SV
Styrene	0	5	0.85	1.4			ND	1.4	U		N/A		Yes	No SV
Tetrachloroethene	0	5	1.15	1.9			ND	1.9	U		N/A		Yes	No SV
Toluene	1	5	1.45	2.25	3.5	3.5	041M5B0401	3.5	I		N/A		Yes	No SV
trans-1,2-Dichloroethene	0	5	0.9	1.5			ND	1.5	U				Yes	No SV
trans-1,3-Dichloropropene	0	5	1.2	2			ND	2	U		N/A		Yes	No SV
Trichloroethene	0	5	0.85	1.4			ND	1.4	U		N/A		Yes	No SV
Vinyl chloride	1	5	1.05	1.75	3.7	3.7	041M5B0202	3.7	I		N/A		Yes	No SV
Xylene (Total)	0	5	2.25	3.8			ND	3.8	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient

D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values

Table 11-1-40
Wetland 5B Phase IV
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Dieldrin	3-Methylphenol/4-Methylphenol	Acetone
Barium	beta-BHC	bis(2-Ethylhexyl)phthalate (BEHP)	cis-1,2-Dichloroethene
Beryllium	Total BHC	Di-n-butylphthalate	Toluene
Cadmium	4,4'-DDE		Vinyl chloride
Calcium	Total DDT		
Chromium	Aroclor-1260		
Cobalt	Total PCBs		
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Mercury			
Nickel			
Potassium			
Silver			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Selenium	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Thallium	Endosulfan I	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	Endosulfan II	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan sulfate	1,4-Dichlorobenzene	1,1-Dichloroethane
	Heptachlor	1-Methyl naphthalene	1,1-Dichloroethene
	Heptachlor epoxide	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,2-Dichloroethane
	Methoxychlor	2,4,5-Trichlorophenol	1,2-Dichloropropane
	Toxaphene	2,4,6-Trichlorophenol	2-Butanone (MEK)
	alpha-BHC	2,4-Dichlorophenol	2-Hexanone
	4,4'-DDD	2,4-Dimethylphenol	4-Methyl-2-Pentanone (MIBK)
	4,4'-DDT	2,4-Dinitrophenol	Benzene
		2,4-Dinitrotoluene	Bromodichloromethane
		2,6-Dinitrotoluene	Bromoform
		2-Chloronaphthalene	Bromomethane
		2-Chlorophenol	Carbon disulfide
		2-Methyl-4,6-Dinitrophenol	Carbon tetrachloride
		2-Methylphenol (o-Cresol)	Chlorobenzene
		2-Nitroaniline	Chloroethane
		2-Nitrophenol	Chloroform
		3,3'-Dichlorobenzidine	Chloromethane
		3-Nitroaniline	cis-1,3-Dichloropropene
		4-Bromophenyl-phenylether	Dibromochloromethane
		4-Chloro-3-methylphenol	Ethylbenzene
		4-Chloroaniline	Methylene chloride
		4-Chlorophenylphenyl ether	Styrene
		4-Nitroaniline	Tetrachloroethene
		4-Nitrophenol	trans-1,2-Dichloroethene
		bis(2-Chloroethoxy)methane	trans-1,3-Dichloropropene
		bis(2-Chloroethyl)ether	Trichloroethene
		Carbazole	Xylene (Total)
		Dibenz(a,h)anthracene	
		Dibenzofuran	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 11-1-41
Wetland 5B Phase IV
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	5	5				1,150	300	3,400	3,400		041M5B0202			NA					0	13,610	0	No	EPC < RC
Barium	5	5				5.82	1.5	18	18		041M5B0202			NA					0	14	1	Yes	EPC > RC and no RV
Beryllium	5	5				0.0716	0.036	0.15	0.15	I	041M5B0202			NA					0	0.84	0	No	EPC < RC
Cadmium	**5**	**5**				**7.83**	**0.95**	**31**	**31**		**041M5B0202**	**0.68**	**4.21**	**PEL**	**45.9**	**11.6**	**7.36**	**1.86**	**2**	**1.8**	**2**	**Yes**	**EPC > RV and RC**
Calcium	5	5				412	100	1,100	1,100		041M5B0202			NA					0	10,756.67	0	No	EPC < RC
Chromium	**5**	**5**				**117**	**14**	**470**	**470**		**041M5B0202**	**52.3**	**160**	**PEL**	**8.99**	**2.24**	**2.94**	**0.73**	**1**	**39.37**	**2**	**Yes**	**EPC > RV and RC**
Cobalt	5	5				1.26	0.3	4.1	4.1		041M5B0202			NA					0	2.8	1	Yes	EPC > RC and no RV
Copper	5	5				26.2	5.3	90	90		041M5B0202	18.7	108	PEL	4.81	1.4	0.83	0.24	0	19.5	1	No	EPC > RC, but < RV
Iron	5	5				714	210	1,800	1,800		041M5B0202			NA					0	11,911.67	0	No	EPC < RC
Lead	**5**	**5**				**110**	**19**	**420**	**420**		**041M5B0202**	**30.2**	**112**	**PEL**	**13.9**	**3.64**	**3.75**	**0.98**	**1**	**82.47**	**1**	**Yes**	**EPC > RV and RC**
Magnesium	5	5				81	26	210	210		041M5B0202			NA					0	7,513.33	0	No	EPC < RC
Manganese	5	5				8.12	1.1	21	21		041M5B0601			NA					0	37.97	0	No	EPC < RC
Mercury	4	5	0.0034	0.0034	0.0034	0.0897	0.019	0.22	0.22		041M5B0202	0.13	0.696	PEL	1.69	0.69	0.32	0.13	0	0.55	0	No	EPC < RC and RV
Nickel	5	5				5.16	0.61	20	20		041M5B0202	15.9	42.8	PEL	1.26	0.32	0.467	0.12	0	9.28	1	No	EPC > RC, but < RV
Potassium	5	5				32	12	74	74	I	041M5B0202			NA					0	1,628.67	0	No	EPC < RC
Selenium	0	5	0.447	0.37	0.55	0.447			0.55	U	ND			NA					0	3.45	0	No	Parameter Not Detected
Silver	**2**	**5**	**0.08**	**0.075**	**0.09**	**1.4**	**0.38**	**6.4**	**6.4**		**041M5B0202**	**0.73**	**1.77**	**PEL**	**8.73**	**1.92**	**3.62**	**0.79**	**1**	**2.1**	**1**	**Yes**	**EPC > RV and RC**
Sodium	5	5				16	7.5	38	38	I	041M5B0202			NA					0	18,993.33	0	No	EPC < RC
Thallium	0	5	0.64	0.55	0.75	0.64			0.75	U	ND			NA					0	1.57	0	No	Parameter Not Detected
Vanadium	5	5				2.08	0.55	6.7	6.7		041M5B0202			NA					0	28.67	0	No	EPC < RC
Zinc	5	5				70.4	19	200	200		041M5B0202	124	271	PEL	1.61	0.57	0.74	0.26	0	36.73	3	No	EPC > RC, but < RV
PCBs (µg/kg)																							
Aroclor-1016	0	5	3.62	2.8	4.45	3.62			4.45	U	ND	21.6	189	PEL	0.21	0.17	0.02	0.02	0		0	No	Parameter Not Detected
Aroclor-1221	0	5	15.8	12.5	19.5	15.8			19.5	U	ND	67	189	PEL	0.29	0.24	0.10	0.08	0		0	No	Parameter Not Detected
Aroclor-1232	0	5	6.17	4.85	7.5	6.17			7.5	U	ND	21.6	189	PEL	0.35	0.29	0.04	0.03	0		0	No	Parameter Not Detected
Aroclor-1242	0	5	6.17	4.85	7.5	6.17			7.5	U	ND	21.6	189	PEL	0.35	0.29	0.04	0.03	0		0	No	Parameter Not Detected
Aroclor-1248	0	5	6.04	4.7	7.5	6.04			7.5	U	ND	21.6	189	PEL	0.35	0.28	0.04	0.03	0		0	No	Parameter Not Detected
Aroclor-1254	0	5	6.17	4.85	7.5	6.17			7.5	U	ND	21.6	189	PEL	0.35	0.29	0.04	0.03	0		0	No	Parameter Not Detected
Aroclor-1260	4	5	3.2	3.2	3.2	65.8	20	150	150		041M5B0202	21.6	189	PEL	6.94	3.05	0.79	0.35	0		0	No	RV HQ <1 and no RC
Total PCBs	**4**	**5**	**37.8**	**37.8**	**37.8**	**110**	**56**	**203**	**203**		**041M5B0601**	**21.6**	**189**	**PEL**	**9.39**	**5.08**	**1.07**	**0.58**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Pesticides (µg/kg)																							
Aldrin	0	5	1.33	0.1	3.5	1.33			3.5	U	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	**5**	**5**				**32.1**	**8.6**	**100**	**100**		**041M5B0601**	**0.72**	**4.3**	**PEL**	**140**	**44.9**	**23.3**	**7.47**	**5**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endosulfan I	0	5	0.158	0.125	0.195	0.158			0.195	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	0	5	0.204	0.16	0.25	0.204			0.25	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	0	5	0.408	0.32	0.5	0.408			0.5	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	0	5	0.259	0.2	0.32	0.259			0.32	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	5	0.158	0.125	0.195	0.158			0.195	U	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	5	0.185	0.145	0.225	0.185			0.225	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	5	30.6	24	37.5	30.6			37.5	U	ND			NA					0		0	No	Parameter Not Detected
alpha-BHC	0	5	0.222	0.175	0.27	0.222			0.27	U	ND		0.99	PEL			0.27	0.22	0		0	No	Parameter Not Detected
beta-BHC	**1**	**5**	**0.254**	**0.21**	**0.32**	**0.783**	**2.9**	**2.9**	**2.9**	**I**	**041M5B0601**	**0.32**	**0.99**	**PEL**	**9.06**	**2.45**	**2.93**	**0.79**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
delta-BHC	0	5	0.11	0.085	0.135	0.11			0.135	U	ND	0.32	0.99	PEL	0.42	0.34	0.14	0.11	0		0	No	Parameter Not Detected
gamma-BHC (Lindane)	0	5	0.139	0.11	0.17	0.139			0.17	U	ND	0.32	0.99	PEL	0.53	0.43	0.17	0.14	0		0	No	Parameter Not Detected
Total BHC	**1**	**5**	**0.699**	**0.58**	**0.885**	**1.25**	**3.47**	**3.47**	**3.47**		**041M5B0601**	**0.32**	**0.99**	**PEL**	**10.9**	**3.92**	**3.51**	**1.27**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	0	5	3.25	2.55	4	3.25			4	U	ND	1.22	7.81	PEL	3.28	2.66	0.51	0.42	0	50	0	No	Parameter Not Detected
4,4'-DDE	3	5	4.03	3.9	4.15	14.6	18	24	24	I	041M5B0601	2.07	374	PEL	11.6	7.06	0.06	0.04	0	40	0	No	EPC < RC and RV
4,4'-DDT	0	5	2.87	2.25	3.5	2.87			3.5	U	ND	1.19	4.77	PEL	2.94	2.41	0.73	0.60	0	20	0	No	Parameter Not Detected
Total DDT	3	5	8.97	8.7	9.25	20.7	25.3	31.5	31.5		041M5B0601	3.3	51.7	PEL	9.55	6.28	0.61	0.40	0	110	0	No	EPC < RC and RV
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	5	35.1	27.5	43	35.1			43	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	5	21.2	16.5	26	21.2			26	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	5	21.2	16.5	26	21.2			26	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	5	22.2	17.5	27	22.2			27	U	ND			NA					0		0	No	Parameter Not Detected
1-Methyl naphthalene	0	5	2.94	1	4	2.94			4	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	5	29.6	23	36.5	29.6			36.5	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	5	28.7	22.5	35	28.7			35	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	5	29.6	23	36.5	29.6			36.5	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	5	26.9	21	33	26.9			33	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	5	25.9	20	32	25.9			32	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	5	315	245	385	315			385	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	5	20.4	16	25	20.4			25	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	5	26.9	21	33	26.9			33	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	5	34.3	27	42	34.3			42	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	5	37.9	29.5	46.5	37.9			46.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	5	28.7	22.5	35	28.7			35	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	5	42	33.5	50	42			50	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	5	23.2	18	28.5	23.2			28.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	5	24.1	19	29.5	24.1			29.5	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	5	24.1	19	29.5	24.1			29.5	U	ND			NA					0		0	No	Parameter Not Detected
3-Methylphenol/4-Methylphenol	2	5	34.8	29	44.5	75.5	73	200	200	I	041M5B0601			NA					0		0	Yes	No SV, no RV, and no RC
3-Nitroaniline	0	5	27.8	21.5	34	27.8			34	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	5	27.8	21.5	34	27.8			34	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-1-41
Wetland 5B Phase IV
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference	COPC Retained (Y/N)	Rationale
SVOCs (µg/kg)																							
4-Chloro-3-methylphenol	0	5	37.1	29	45.5	37.1			45.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	5	26.9	21	33	26.9			33	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	5	24.1	19	29.5	24.1			29.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	5	24.1	19	29.5	24.1			29.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	5	23.2	18	28.5	23.2			28.5	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	5	29.6	23	36.5	29.6			36.5	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	5	34.3	27	42	34.3			42	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	3	5	33	32	34	119	150	190	190	I	041M5B0301	182	2647	PEL	1.04	0.66	0.07	0.05	0		0	No	RV HQ <1 and no RC
Carbazole	0	5	27.8	21.5	34	27.8			34	U	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	5	31.5	24.5	38.5	31.5			38.5	U	ND			NA					0		0	No	Parameter Not Detected
Di-n-butylphthalate	1	5	36.5	28	44.5	95.2	330	330	330	I	041M5B0301	182	2647	PEL	1.81	0.52	0.13	0.04	0		0	No	RV HQ <1 and no RC
Hexachlorobenzene	0	5	35.1	27.5	43	35.1			43	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	5	25	19.5	30.5	25			30.5	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	5	250	195	305	250			305	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	5	17.6	14	21.5	17.6			21.5	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	5	24.1	19	29.5	24.1			29.5	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	5	28.7	22.5	35	28.7			35	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	5	27.8	21.5	34	27.8			34	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	5	27.8	21.5	34	27.8			34	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	5	31.5	24.5	38.5	31.5			38.5	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	5	37.9	29.5	46.5	37.9			46.5	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	5	0.77	0.6	1	0.77			1	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	5	1.92	1.5	2.5	1.92			2.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	5	1.72	1.35	2.25	1.72			2.25	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	5	0.96	0.75	1.25	0.96			1.25	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	5	1.64	1.3	2.15	1.64			2.15	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	5	1.44	1.15	1.9	1.44			1.9	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	5	1.15	0.9	1.5	1.15			1.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	5	4.5	3.55	6	4.5			6	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	5	4.89	3.85	6.5	4.89			6.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	5	4.85	3.75	6.5	4.85			6.5	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	2	5	7.5	6	10	14.3	21	28	28	I	041M5B0202			NA					0		0	Yes	No SV, no RV, and no RC
Benzene	0	5	1.06	0.85	1.4	1.06			1.4	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	5	1.25	1	1.65	1.25			1.65	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	5	1.64	1.3	2.15	1.64			2.15	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	5	3.27	2.55	4.3	3.27			4.3	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	5	1.92	1.5	2.5	1.92			2.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	5	0.89	0.7	1.2	0.89			1.2	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	0	5	1.25	1	1.65	1.25			1.65	U	ND			NA					0		0	No	Parameter Not Detected
Chloroethane	0	5	1.64	1.3	2.15	1.64			2.15	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	5	1.15	0.9	1.5	1.15			1.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	5	1.33	1.05	1.75	1.33			1.75	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,2-Dichloroethene	1	5	0.975	0.85	1.2	2.32	7.7	7.7	7.7	I	041M5B0601			NA					0		0	Yes	No SV, no RV, and no RC
cis-1,3-Dichloropropene	0	5	1.15	0.9	1.5	1.15			1.5	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	5	1.33	1.05	1.75	1.33			1.75	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	5	0.96	0.75	1.25	0.96			1.25	U	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	5	2.3	1.8	3.05	2.3			3.05	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	5	1.06	0.85	1.4	1.06			1.4	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	5	1.44	1.15	1.9	1.44			1.9	U	ND			NA					0		0	No	Parameter Not Detected
Toluene	1	5	1.81	1.45	2.25	2.15	3.5	3.5	3.5	I	041M5B0401			NA					0		0	Yes	No SV, no RV, and no RC
trans-1,2-Dichloroethene	0	5	1.15	0.9	1.5	1.15			1.5	U	ND			NA					0		0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	5	1.53	1.2	2	1.53			2	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	5	1.06	0.85	1.4	1.06			1.4	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	1	5	1.29	1.05	1.75	1.77	3.7	3.7	3.7	I	041M5B0202			NA					0		0	Yes	No SV, no RV, and no RC
Xylene (Total)	0	5	2.87	2.25	3.8	2.87			3.8	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result
Parameters in bold were detected and exceeded screening values.

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-1-42
Wetland 5B Phase IV
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Dieldrin	3-Methylphenol/4-Methylphenol	Vinyl Chloride
Cadmium	beta-BHC		
Chromium	Total BHC		
Cobalt	Total PCBs		
Lead			
Silver			

Table 11-1-43
Wetland 5B Phase IV
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5B0202	4/6/2004	UG/KG	6	U	2-Methylnaphthalene	70	670	0.01
041M5B0202	4/6/2004	UG/KG	10	U	Acenaphthene	16	500	0.02
041M5B0202	4/6/2004	UG/KG	9.5	U	Acenaphthylene	44	640	0.01
041M5B0202	4/6/2004	UG/KG	10.5	U	Anthracene	85.3	1,100	0.01
041M5B0202	4/6/2004	UG/KG	120	I	Benzo(a)anthracene	261	1,600	0.08
041M5B0202	4/6/2004	UG/KG	10	U	Benzo(a)pyrene	430	1,600	0.01
041M5B0202	4/6/2004	UG/KG	160		Chrysene	384	2,800	0.06
041M5B0202	4/6/2004	UG/KG	10	U	Dibenz(a,h)anthracene	63.4	260	0.04
041M5B0202	4/6/2004	UG/KG	290		Fluoranthene	600	5,100	0.06
041M5B0202	4/6/2004	UG/KG	8.5	U	Fluorene	19	540	0.02
041M5B0202	4/6/2004	UG/KG	8	U	Naphthalene	160	2,100	0.00
041M5B0202	4/6/2004	UG/KG	70	U	Phenanthrene	240	1,500	0.05
041M5B0202	4/6/2004	UG/KG	210		Pyrene	665	2,600	0.08
041M5B0202	4/6/2004	UG/KG	18	I	4,4'-DDE	2.2	27	0.67
041M5B0202	4/6/2004	UG/KG	3.45	U	4,4'-DDT	1.58	46.1	0.07
041M5B0202	4/6/2004	MG/KG	0.84	I	Arsenic	8.2	70	0.01
041M5B0202	**4/6/2004**	**MG/KG**	**31**		**Cadmium**	**1.2**	**9.6**	**3.23**
041M5B0202	**4/6/2004**	**MG/KG**	**470**		**Chromium**	**81**	**370**	**1.27**
041M5B0202	4/6/2004	MG/KG	90		Copper	34	270	0.33
041M5B0202	**4/6/2004**	**MG/KG**	**420**		**Lead**	**46.7**	**218**	**1.93**
041M5B0202	4/6/2004	MG/KG	0.22		Mercury	0.15	0.71	0.31
041M5B0202	4/6/2004	MG/KG	20		Nickel	20.9	51.6	0.39
041M5B0202	**4/6/2004**	**MG/KG**	**6.4**		**Silver**	**1**	**3.7**	**1.73**
041M5B0202	4/6/2004	MG/KG	200		Zinc	150	410	0.49
041M5B0202	4/6/2004				ERM Quotient Sum			11.99
041M5B0202	4/6/2004				Mean ERM Quotient			0.48
041M5B0202	4/6/2004				Mean ERM Quotient without ND			0.47
041M5B0202	4/6/2004				Mean ERM Quotient Category			2
041M5B0301	4/6/2004	UG/KG	4.75	U	2-Methylnaphthalene	70	670	0.01
041M5B0301	4/6/2004	UG/KG	8	U	Acenaphthene	16	500	0.02
041M5B0301	4/6/2004	UG/KG	7.5	U	Acenaphthylene	44	640	0.01
041M5B0301	4/6/2004	UG/KG	8.5	U	Anthracene	85.3	1,100	0.01
041M5B0301	4/6/2004	UG/KG	98	I	Benzo(a)anthracene	261	1,600	0.06
041M5B0301	4/6/2004	UG/KG	8	U	Benzo(a)pyrene	430	1,600	0.01
041M5B0301	4/6/2004	UG/KG	120		Chrysene	384	2,800	0.04
041M5B0301	4/6/2004	UG/KG	8	U	Dibenz(a,h)anthracene	63.4	260	0.03
041M5B0301	4/6/2004	UG/KG	200		Fluoranthene	600	5,100	0.04
041M5B0301	4/6/2004	UG/KG	7	U	Fluorene	19	540	0.01
041M5B0301	4/6/2004	UG/KG	6.5	U	Naphthalene	160	2,100	0.00
041M5B0301	4/6/2004	UG/KG	27	U	Phenanthrene	240	1,500	0.02
041M5B0301	4/6/2004	UG/KG	160		Pyrene	665	2,600	0.06
041M5B0301	4/6/2004	UG/KG	23	I	4,4'-DDE	2.2	27	0.85
041M5B0301	4/6/2004	UG/KG	2.75	U	4,4'-DDT	1.58	46.1	0.06
041M5B0301	4/6/2004	MG/KG	0.28	U	Arsenic	8.2	70	0.00
041M5B0301	4/6/2004	MG/KG	1	J	Cadmium	1.2	9.6	0.10
041M5B0301	4/6/2004	MG/KG	24	J	Chromium	81	370	0.06
041M5B0301	4/6/2004	MG/KG	12	J	Copper	34	270	0.04
041M5B0301	4/6/2004	MG/KG	38	J	Lead	46.7	218	0.17
041M5B0301	4/6/2004	MG/KG	0.086		Mercury	0.15	0.71	0.12
041M5B0301	4/6/2004	MG/KG	1.2	I	Nickel	20.9	51.6	0.02
041M5B0301	4/6/2004	MG/KG	0.09	UJ	Silver	1	3.7	0.02
041M5B0301	4/6/2004	MG/KG	45	J	Zinc	150	410	0.11
041M5B0301	4/6/2004				ERM Quotient Sum			2.47
041M5B0301	4/6/2004				Mean ERM Quotient			0.10
041M5B0301	4/6/2004				Mean ERM Quotient without ND			0.09
041M5B0301	4/6/2004				Mean ERM Quotient Category			2

Table 11-1-43
Wetland 5B Phase IV
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5B0401	4/6/2004	UG/KG	1.55	U	2-Methylnaphthalene	70	670	0.00
041M5B0401	4/6/2004	UG/KG	2.6	U	Acenaphthene	16	500	0.01
041M5B0401	4/6/2004	UG/KG	2.5	U	Acenaphthylene	44	640	0.00
041M5B0401	4/6/2004	UG/KG	2.8	U	Anthracene	85.3	1,100	0.00
041M5B0401	4/6/2004	UG/KG	2.2	U	Benzo(a)anthracene	261	1,600	0.00
041M5B0401	4/6/2004	UG/KG	2.6	U	Benzo(a)pyrene	430	1,600	0.00
041M5B0401	4/6/2004	UG/KG	2.9	U	Chrysene	384	2,800	0.00
041M5B0401	4/6/2004	UG/KG	2.55	U	Dibenz(a,h)anthracene	63.4	260	0.01
041M5B0401	4/6/2004	UG/KG	15	I	Fluoranthene	600	5,100	0.00
041M5B0401	4/6/2004	UG/KG	2.25	U	Fluorene	19	540	0.00
041M5B0401	4/6/2004	UG/KG	2.05	U	Naphthalene	160	2,100	0.00
041M5B0401	4/6/2004	UG/KG	3.95	U	Phenanthrene	240	1,500	0.00
041M5B0401	4/6/2004	UG/KG	13	I	Pyrene	665	2,600	0.01
041M5B0401	4/6/2004	UG/KG	3.9	U	4,4'-DDE	2.2	27	0.14
041M5B0401	4/6/2004	UG/KG	2.25	U	4,4'-DDT	1.58	46.1	0.05
041M5B0401	4/6/2004	MG/KG	0.23	U	Arsenic	8.2	70	0.00
041M5B0401	4/6/2004	MG/KG	0.95		Cadmium	1.2	9.6	0.10
041M5B0401	4/6/2004	MG/KG	14		Chromium	81	370	0.04
041M5B0401	4/6/2004	MG/KG	5.3		Copper	34	270	0.02
041M5B0401	4/6/2004	MG/KG	19		Lead	46.7	218	0.09
041M5B0401	4/6/2004	MG/KG	0.0034	U	Mercury	0.15	0.71	0.00
041M5B0401	4/6/2004	MG/KG	0.61	I	Nickel	20.9	51.6	0.01
041M5B0401	4/6/2004	MG/KG	0.075	U	Silver	1	3.7	0.02
041M5B0401	4/6/2004	MG/KG	28		Zinc	150	410	0.07
041M5B0401	4/6/2004				ERM Quotient Sum			0.80
041M5B0401	4/6/2004				Mean ERM Quotient			0.03
041M5B0401	4/6/2004				Mean ERM Quotient without ND			0.01
041M5B0401	4/6/2004				Mean ERM Quotient Category			1
041M5B0501	4/6/2004	UG/KG	4.1	U	2-Methylnaphthalene	70	670	0.01
041M5B0501	4/6/2004	UG/KG	7	U	Acenaphthene	16	500	0.01
041M5B0501	4/6/2004	UG/KG	6.5	U	Acenaphthylene	44	640	0.01
041M5B0501	4/6/2004	UG/KG	7.5	U	Anthracene	85.3	1,100	0.01
041M5B0501	4/6/2004	UG/KG	6	U	Benzo(a)anthracene	261	1,600	0.00
041M5B0501	4/6/2004	UG/KG	7	U	Benzo(a)pyrene	430	1,600	0.00
041M5B0501	4/6/2004	UG/KG	7.5	U	Chrysene	384	2,800	0.00
041M5B0501	4/6/2004	UG/KG	7	U	Dibenz(a,h)anthracene	63.4	260	0.03
041M5B0501	4/6/2004	UG/KG	39	I	Fluoranthene	600	5,100	0.01
041M5B0501	4/6/2004	UG/KG	6	U	Fluorene	19	540	0.01
041M5B0501	4/6/2004	UG/KG	5	U	Naphthalene	160	2,100	0.00
041M5B0501	4/6/2004	UG/KG	6	U	Phenanthrene	240	1,500	0.00
041M5B0501	4/6/2004	UG/KG	37	I	Pyrene	665	2,600	0.01
041M5B0501	4/6/2004	UG/KG	4.15	U	4,4'-DDE	2.2	27	0.15
041M5B0501	4/6/2004	UG/KG	2.4	U	4,4'-DDT	1.58	46.1	0.05
041M5B0501	4/6/2004	MG/KG	0.23	U	Arsenic	8.2	70	0.00
041M5B0501	4/6/2004	MG/KG	1.1		Cadmium	1.2	9.6	0.11
041M5B0501	4/6/2004	MG/KG	23		Chromium	81	370	0.06
041M5B0501	4/6/2004	MG/KG	7.8		Copper	34	270	0.03
041M5B0501	4/6/2004	MG/KG	24		Lead	46.7	218	0.11
041M5B0501	4/6/2004	MG/KG	0.019	I	Mercury	0.15	0.71	0.03
041M5B0501	4/6/2004	MG/KG	0.97	I	Nickel	20.9	51.6	0.02
041M5B0501	4/6/2004	MG/KG	0.075	U	Silver	1	3.7	0.02
041M5B0501	4/6/2004	MG/KG	19		Zinc	150	410	0.05
041M5B0501	4/6/2004				ERM Quotient Sum			1.06
041M5B0501	4/6/2004				Mean ERM Quotient			0.04
041M5B0501	4/6/2004				Mean ERM Quotient without ND			0.03
041M5B0501	4/6/2004				Mean ERM Quotient Category			1

Table 11-1-43
Wetland 5B Phase IV
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M5B0601	4/6/2004	UG/KG	6	U	2-Methylnaphthalene	70	670	0.01
041M5B0601	4/6/2004	UG/KG	10	U	Acenaphthene	16	500	0.02
041M5B0601	4/6/2004	UG/KG	10	U	Acenaphthylene	44	640	0.02
041M5B0601	4/6/2004	UG/KG	11	U	Anthracene	85.3	1,100	0.01
041M5B0601	4/6/2004	UG/KG	8.5	U	Benzo(a)anthracene	261	1,600	0.01
041M5B0601	4/6/2004	UG/KG	10	U	Benzo(a)pyrene	430	1,600	0.01
041M5B0601	4/6/2004	UG/KG	56	I	Chrysene	384	2,800	0.02
041M5B0601	4/6/2004	UG/KG	10	U	Dibenz(a,h)anthracene	63.4	260	0.04
041M5B0601	4/6/2004	UG/KG	69	I	Fluoranthene	600	5,100	0.01
041M5B0601	4/6/2004	UG/KG	9	U	Fluorene	19	540	0.02
041M5B0601	4/6/2004	UG/KG	8	U	Naphthalene	160	2,100	0.00
041M5B0601	4/6/2004	UG/KG	9	U	Phenanthrene	240	1,500	0.01
041M5B0601	4/6/2004	UG/KG	59	I	Pyrene	665	2,600	0.02
041M5B0601	4/6/2004	UG/KG	24	I	4,4'-DDE	2.2	27	0.89
041M5B0601	4/6/2004	UG/KG	3.5	U	4,4'-DDT	1.58	46.1	0.08
041M5B0601	4/6/2004	MG/KG	0.33	U	Arsenic	8.2	70	0.00
041M5B0601	4/6/2004	MG/KG	5.1		Cadmium	1.2	9.6	0.53
041M5B0601	4/6/2004	MG/KG	55		Chromium	81	370	0.15
041M5B0601	4/6/2004	MG/KG	16		Copper	34	270	0.06
041M5B0601	4/6/2004	MG/KG	48		Lead	46.7	218	0.22
041M5B0601	4/6/2004	MG/KG	0.12		Mercury	0.15	0.71	0.17
041M5B0601	4/6/2004	MG/KG	3	I	Nickel	20.9	51.6	0.06
041M5B0601	4/6/2004	MG/KG	0.38	I	Silver	1	3.7	0.10
041M5B0601	4/6/2004	MG/KG	60		Zinc	150	410	0.15
041M5B0601	4/6/2004				ERM Quotient Sum			3.43
041M5B0601	4/6/2004				Mean ERM Quotient			0.14
041M5B0601	4/6/2004				Mean ERM Quotient without ND			0.13
041M5B0601	4/6/2004				Mean ERM Quotient Category			2

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-1-44
Wetland 5A Phase II
Sediment Dermal Exposure Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (mg/kg)	Min. Qual.	Maximum Concentration (mg/kg)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	ABS_{sd}	ABS_{sd} Source	DA_{event}: Child Trespasser	DA_{event}: Adult Maintenance Worker	DAD_{sd} (mg/kg-day): Child Trespasser	DAD_{sd} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	4.9E+02	=	1.9E+04	=	MG/KG	041M5A0101	9 / 9	NAV	7.5E+03	1.0E-03	3	3.74E-06	1.87E-06	5.92E-05	3.96E-05
7440393	Barium	N	1.3E+00	J	1.5E+02	=	MG/KG	041M5A0101	9 / 9	NAV	3.5E+01	1.0E-03	3	3.00E-08	1.50E-08	4.75E-07	3.17E-07
7440417	Beryllium	N	2.7E-01	J	8.3E-01	J	MG/KG	041M5A0101	4 / 9	6.0E-02 / 4.4E-01	2.7E-01	1.0E-03	3	1.66E-10	8.30E-11	2.63E-09	1.76E-09
7440439	Cadmium	N	2.7E-01	J	2.2E+02	=	MG/KG	041M5B0201	9 / 9	NAV	2.9E+01	1.0E-03	3	4.40E-08	2.20E-08	6.96E-07	4.66E-07
7440473	Chromium	N	2.8E+00	=	4.2E+02	=	MG/KG	041M5B0201	9 / 9	NAV	8.7E+01	1.0E-03	3	8.32E-08	4.16E-08	1.32E-06	8.81E-07
7440484	Cobalt	C	3.0E-01	J	1.3E+01	J	MG/KG	041M5A0501	7 / 9	2.0E-01 / 1.3E+00	4.0E+00	1.0E-03	3	2.68E-09	1.34E-09	6.06E-09	1.01E-08
7440508	Copper	N	1.3E+01	=	3.2E+02	=	MG/KG	041M5A0501	8 / 9	N/A / 3.1E+00	9.8E+01	1.0E-03	3	6.34E-08	3.17E-08	1.00E-06	6.71E-07
7439896	Iron	N	3.1E+02	=	9.8E+03	=	MG/KG	041M5A0101	9 / 9	NAV	4.0E+03	1.0E-03	3	1.97E-06	9.83E-07	3.11E-05	2.08E-05
7439921	Lead	N	1.2E+01	=	4.8E+02	J	MG/KG	041M5B0201	9 / 9	NAV	1.9E+02	1.0E-03	3	9.62E-08	4.81E-08	1.52E-06	1.02E-06
7439965	Manganese	N	1.4E+00	=	2.1E+02	=	MG/KG	041M5A0101	9 / 9	NAV	5.1E+01	1.0E-03	3	4.10E-08	2.05E-08	6.49E-07	4.34E-07
7487947	Mercury	N	2.5E-01	=	1.0E+00	=	MG/KG	041M5A0101	6 / 9	5.0E-02 / 1.7E-01	4.2E-01	1.0E-03	3	2.00E-10	1.00E-10	3.17E-09	2.12E-09
7440020	Nickel	N	1.3E+00	J	9.4E+01	=	MG/KG	041M5B0201	8 / 9	N/A / 5.3E+00	1.9E+01	1.0E-03	3	1.88E-08	9.39E-09	2.97E-07	1.99E-07
7782492	Selenium	N	1.5E+00	=	3.6E+00	=	MG/KG	041M5B0201	6 / 9	1.8E-01 / 2.2E-01	1.5E+00	1.0E-03	3	7.20E-10	3.60E-10	1.14E-08	7.62E-09
7440224	Silver	N	4.2E-01	J	5.2E+00	J	MG/KG	041M5B0201	3 / 9	2.4E-01 / 1.8E+00	1.0E+00	1.0E-03	3	1.04E-09	5.20E-10	1.65E-08	1.10E-08
7440280	Thallium	N	N/A	N/A	1.4E+00	J	MG/KG	041M5A0101	1 / 9	1.8E-01 / 1.3E+00	4.4E-01	1.0E-03	3	2.80E-10	1.40E-10	4.43E-09	2.96E-09
7440622	Vanadium	N	2.2E+00	J	2.4E+01	=	MG/KG	041M5A0101	7 / 9	8.3E-01 / 1.1E+00	1.1E+01	1.0E-03	3	4.80E-09	2.40E-09	7.60E-08	5.08E-08
7440666	Zinc	N	9.8E+00	=	2.3E+03	=	MG/KG	041M5A0101	9 / 9	NAV	4.9E+02	1.0E-03	3	4.58E-07	2.29E-07	7.25E-06	4.85E-06
72548	4,4'-DDD	C	2.3E-04	J	2.3E-03	J	MG/KG	041M5A0401	6 / 9	2.1E-04 / 8.1E-04	9.3E-04	3.0E-02	1	1.38E-11	6.90E-12	3.12E-11	5.22E-11
72559	4,4'-DDE	C	3.2E-04	J	1.2E-01	D	MG/KG	041M5A0501	7 / 9	2.0E-04 / 6.1E-04	1.4E-02	3.0E-02	1	7.20E-10	3.60E-10	1.63E-09	2.72E-09
50293	4,4'-DDT	C	7.8E-04	J	5.0E-03	J	MG/KG	041M5A0501	3 / 9	2.0E-04 / 7.3E-04	9.1E-04	3.0E-02	1	3.00E-11	1.50E-11	6.78E-11	1.13E-10
319846	alpha-BHC	C	3.0E-04	J	1.8E-03	=	MG/KG	041M5B0201	4 / 9	1.6E-04 / 4.5E-04	4.4E-04	4.0E-02	2	1.44E-11	7.20E-12	3.26E-11	5.44E-11
5103719	alpha-Chlordane	C	1.9E-04	J	1.6E-03	J	MG/KG	041M5A0501	4 / 9	1.0E-04 / 3.6E-04	4.3E-04	4.0E-02	2	1.28E-11	6.40E-12	2.89E-11	4.84E-11
11097691	Aroclor-1254	C	8.7E-03	J	5.3E-02	=	MG/KG	041M5B0201	3 / 9	2.0E-03 / 8.1E-03	1.0E-02	1.6E-02	3	1.65E-10	8.27E-11	3.74E-10	6.25E-10
11096825	Aroclor-1260	C	2.6E-03	J	1.0E-01	DJ	MG/KG	041M5A0501	3 / 9	3.2E-03 / 1.4E-02	1.5E-02	1.4E-02	3	2.76E-10	1.38E-10	6.24E-10	1.04E-09
60571	Dieldrin	C	4.2E-04	J	7.1E-03	J	MG/KG	041M5B0201	4 / 9	2.0E-04 / 8.1E-04	1.4E-03	1.0E-01	2	1.42E-10	7.10E-11	3.21E-10	5.37E-10
33213659	Endosulfan II	N	N/A	N/A	1.7E-03	J	MG/KG	041M5A0501	1 / 9	2.0E-04 / 7.3E-04	3.9E-04	1.0E-01	2	3.40E-11	1.70E-11	5.38E-10	3.60E-10
72208	Endrin	N	N/A	N/A	1.1E-03	J	MG/KG	041M5A0501	1 / 9	2.0E-04 / 7.3E-04	3.2E-04	1.0E-01	2	2.20E-11	1.10E-11	3.48E-10	2.33E-10
7421934	Endrin aldehyde	N	N/A	N/A	7.2E-04	J	MG/KG	041M5A0501	1 / 9	2.0E-04 / 7.3E-04	2.8E-04	1.0E-01	2	1.44E-11	7.20E-12	2.28E-10	1.52E-10
53494705	Endrin ketone	N	N/A	N/A	2.6E-04	=	MG/KG	041M5A0701	1 / 9	2.1E-04 / 8.1E-04	2.6E-04	1.0E-01	2	5.20E-12	2.60E-12	8.23E-11	5.50E-11
57749	gamma-Chlordane	C	2.3E-04	J	1.3E-03	J	MG/KG	041M5A0501	3 / 9	1.0E-04 / 3.6E-04	3.6E-04	4.0E-02	2	1.04E-11	5.20E-12	2.35E-11	3.93E-11
95487	2-Methylphenol (o-Cresol)	N	N/A	N/A	2.0E-01	J	MG/KG	041M5B0201	1 / 9	4.0E-01 / 1.6E+00	4.3E-01	1.0E-01	2	4.00E-09	2.00E-09	6.33E-08	4.23E-08
106445	4-Methylphenol (p-Cresol)	N	1.0E-01	J	2.0E-01	J	MG/KG	041M5A0101	4 / 9	4.0E-01 / 1.2E+00	2.4E-01	1.0E-01	2	4.00E-09	2.00E-09	6.33E-08	4.23E-08
120127	Anthracene	N	N/A	N/A	4.4E-02	=	MG/KG	041M5A0701	1 / 9	6.3E-02 / 1.4E+00	1.6E-01	1.0E-02	3	8.80E-11	4.40E-11	1.39E-09	9.31E-10
56553	Benzo(a)anthracene	C	1.2E-01	=	3.2E-01	=	MG/KG	041M5A0501	3 / 9	4.1E-02 / 1.4E-01	1.1E-01	1.3E-01	2	8.32E-09	4.16E-09	1.88E-08	3.14E-08
50328	Benzo(a)pyrene	C	3.7E-02	J	2.4E-01	=	MG/KG	041M5A0701	4 / 9	4.1E-02 / 1.4E-01	1.0E-01	1.3E-01	2	6.24E-09	3.12E-09	1.41E-08	2.36E-08
205992	Benzo(b)fluoranthene	C	5.7E-02	J	3.6E-01	=	MG/KG	041M5A0701	4 / 9	4.1E-02 / 1.6E-01	1.1E-01	1.3E-01	2	9.36E-09	4.68E-09	2.12E-08	3.54E-08
191242	Benzo(g,h,i)perylene	C	1.2E-01	=	2.8E-01	=	MG/KG	041M5A0501	3 / 9	4.1E-02 / 1.4E-01	9.6E-02	1.3E-01	2	7.28E-09	3.64E-09	1.65E-08	2.75E-08
207089	Benzo(k)fluoranthene	C	7.3E-02	J	1.7E-01	=	MG/KG	041M5A0701	3 / 9	4.1E-02 / 1.6E-01	6.8E-02	1.3E-01	2	4.42E-09	2.21E-09	1.00E-08	1.67E-08
111911	bis(2-Chloroethoxy)methane	N	N/A	N/A	1.1E-01	J	MG/KG	041M5A0501	1 / 9	4.0E-01 / 1.4E+00	4.1E-01	1.0E-02	3	2.20E-10	1.10E-10	3.48E-09	2.33E-09
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	6.9E-01	=	1.5E+00	J	MG/KG	041M5A0501	3 / 9	4.1E-01 / 1.4E+00	7.3E-01	1.0E-01	1	3.00E-08	1.50E-08	6.78E-08	1.13E-07
85687	Butylbenzylphthalate	N	3.8E-02	J	2.0E-01	J	MG/KG	041M5A0501	3 / 9	4.0E-01 / 1.4E+00	3.3E-01	1.0E-01	2	4.00E-09	2.00E-09	6.33E-08	4.23E-08
86748	Carbazole	C	4.8E-02	J	9.6E-02	J	MG/KG	041M5A0501	2 / 9	4.1E-01 / 1.4E+00	3.9E-01	1.0E-01	2	1.92E-09	9.60E-10	4.34E-09	7.26E-09
218019	Chrysene	C	1.8E-01	=	5.1E-01	=	MG/KG	041M5A0501	3 / 9	4.1E-02 / 1.4E-01	1.5E-01	1.3E-01	2	1.33E-08	6.63E-09	3.00E-08	5.01E-08
84742	Di-n-butylphthalate	N	N/A	N/A	1.0E-01	J	MG/KG	041M5A0501	1 / 9	4.0E-01 / 1.4E+00	4.1E-01	1.0E-01	2	2.00E-09	1.00E-09	3.17E-08	2.12E-08
117840	Di-n-octylphthalate	N	N/A	N/A	2.2E-02	J	MG/KG	041M5A0701	1 / 9	4.1E-01 / 1.6E+00	4.6E-01	1.0E-01	2	4.40E-10	2.20E-10	6.96E-09	4.66E-09
206440	Fluoranthene	N	7.1E-02	=	1.1E+00	=	MG/KG	041M5A0501	6 / 9	4.1E-02 / 1.2E-01	2.8E-01	1.3E-01	2	2.86E-08	1.43E-08	4.53E-07	3.03E-07
193395	Indeno(1,2,3-cd)pyrene	C	1.1E-01	J	3.1E-01	=	MG/KG	041M5A0501	3 / 9	4.1E-02 / 1.4E-01	9.8E-02	1.3E-01	2	8.06E-09	4.03E-09	1.82E-08	3.05E-08
85018	Phenanthrene	N	1.1E-01	J	2.4E-01	=	MG/KG	041M5A0501	3 / 9	4.1E-02 / 1.4E-01	9.5E-02	1.0E-02	3	4.80E-10	2.40E-10	7.60E-09	5.08E-09
129000	Pyrene	N	7.1E-02	=	7.3E-01	=	MG/KG	041M5A0501	6 / 9	4.1E-02 / 1.2E-01	2.1E-01	1.0E-02	3	1.46E-09	7.30E-10	2.31E-08	1.55E-08
156605	1,2-Dichloroethene (total)	N	N/A	N/A	1.1E-02	J	MG/KG	041M5B0201	1 / 9	1.2E-02 / 8.3E-02	1.6E-02	1.0E-02	3	2.20E-11	1.10E-11	3.48E-10	2.33E-10

Table 11-1-44
Wetland 5A Phase II
Sediment Dermal Exposure Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (mg/kg)	Min. Qual.	Maximum Concentration (mg/kg)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	ABS_{sd}	ABS_{sd} Source	DA_{event}: Child Trespasser	DA_{event}: Adult Maintenance Worker	DAD_{sd} (mg/kg-day): Child Trespasser	DAD_{sd} (mg/kg-day): Adult Maintenance Worker
67641	Acetone	N	6.6E-02	=	5.2E+00	J	MG/KG	041M5A0201	7 / 9	1.3E-02 / 1.3E-01	1.3E+00	1.0E-02	3	1.04E-08	5.20E-09	1.65E-07	1.10E-07
85018	Chlorobenzene	N	N/A	N/A	7.0E-03	J	MG/KG	041M5B0201	1 / 9	1.2E-02 / 8.3E-02	1.5E-02	1.0E-02	3	1.40E-11	7.00E-12	2.22E-10	1.48E-10
75092	Methylene chloride	C	N/A	N/A	2.5E-01	J	MG/KG	041M5A0101	1 / 9	1.2E-02 / 8.3E-02	4.2E-02	1.0E-02	3	5.00E-10	2.50E-10	1.13E-09	1.89E-09
129000	Toluene	N	5.0E-03	J	2.8E-01	=	MG/KG	041M5A0401	4 / 9	1.2E-02 / 5.3E-02	5.2E-02	1.0E-02	3	5.60E-10	2.80E-10	8.86E-09	5.93E-09
75014	Vinyl chloride	C	N/A	N/A	4.2E-02	=	MG/KG	041M5B0201	1 / 9	4.0E-03 / 5.3E-02	1.1E-02	1.0E-02	3	8.40E-11	4.20E-11	1.90E-10	3.17E-10

Equation for sediment risk:

$$DAD_{sd} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sd} = Dermal Absorbed Dose-soil contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event)
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).

Equation for DA_{event} for sediment contact:

$$DA_{event} = C_{sd} \times CF \times AF \times ABS_d$$

Where:

C_{sd} = Chemical concentration in sediment (mg/kg).
CF = Conversion factor (10^{-6} kg/mg).
AF = Adherence factor of sediment to soil (mg/cm2-event).
0.2 (children playing in wet soil) 0.1 (construction worker)
AB_{sd} = Dermal absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1;
(2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Table 11-1-45
Wetland 5A Phase II
Sediment Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum Concentration (mg/kg)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABSGI	ABSGI Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser		Maintenance Worker	
										Dermal Hazard Quotient	Dermal Cancer Risk	Dermal Hazard Quotient	Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	1.9E+04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	5.9E-04	N/A	4.0E-04	N/A
	Barium	N	1.5E+02	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	9.7E-05	N/A	6.5E-05	N/A
	Beryllium	N	8.3E-01	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	1.9E-04	N/A	1.3E-04	N/A
	Cadmium	N	2.2E+02	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	5.6E-02	N/A	3.7E-02	N/A
	Chromium	N	4.2E+02	N/A	N/A	2.5E-02	1	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	1.3E+01	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	3.8E-07	N/A	6.3E-07	N/A
	Copper	N	3.2E+02	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	8.4E-05	N/A	5.6E-05	N/A
	Iron	N	9.8E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	6.9E-04	N/A	4.6E-04	N/A
	Lead	N	4.8E+02	1.0E-07	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.1E+02	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	6.8E-04	N/A	4.5E-04	N/A
	Mercury	N	1.0E+00	3.0E-04	N/A	7.0E-02	1	2.1E-05	N/A	1.5E-04	N/A	1.0E-04	N/A
	Nickel	N	9.4E+01	2.0E-02	N/A	2.7E-01	3	5.4E-03	N/A	5.5E-05	N/A	3.7E-05	N/A
	Selenium	N	3.6E+00	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	4.1E-06	N/A	2.8E-06	N/A
	Silver	N	5.2E+00	5.0E-03	N/A	1.8E-01	3	9.0E-04	N/A	1.8E-05	N/A	1.2E-05	N/A
	Thallium	N	1.4E+00	6.6E-05	N/A	1.5E-01	3	9.9E-06	N/A	4.5E-04	N/A	3.0E-04	N/A
	Vanadium	N	2.4E+01	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	4.2E-04	N/A	2.8E-04	N/A
	Zinc	N	2.3E+03	3.0E-01	N/A	2.0E-01	3, 4	6.0E-02	N/A	1.2E-04	N/A	8.1E-05	N/A
	4,4'-DDD	C	2.3E-03	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	2.5E-10	N/A	4.2E-10
	4,4'-DDE	C	1.2E-01	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	1.8E-08	N/A	3.1E-08
	4,4'-DDT	C	5.0E-03	5.0E-04	3.4E-01	3.0E-02	2	1.5E-05	1.1E+01	4.5E-06	7.7E-10	7.6E-06	1.3E-09
	alpha-BHC	C	1.8E-03	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	4.6E-06	1.4E-08	7.7E-06	2.4E-08
	alpha-Chlordane	C	1.6E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	7.2E-08	1.3E-11	1.2E-07	2.1E-11
	Aroclor-1254	C	5.3E-02	2.0E-05	2.0E+00	1.4E-01	2	2.8E-06	1.4E+01	1.3E-04	5.3E-09	2.2E-04	8.9E-09
	Aroclor-1260	C	1.0E-01	N/A	2.0E+00	1.4E-01	2	N/A	1.4E+01	N/A	8.9E-09	N/A	1.5E-08
	Dieldrin	C	7.1E-03	5.0E-05	1.6E+01	5.0E-01	3	2.5E-05	3.2E+01	1.3E-05	1.0E-08	2.1E-05	1.7E-08
	Endosulfan II	N	1.7E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	1.8E-07	N/A	1.2E-07	N/A
	Endrin	N	1.1E-03	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	9.3E-05	N/A	6.2E-05	N/A
	Endrin aldehyde	N	7.2E-04	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	6.1E-05	N/A	4.1E-05	N/A
	Endrin ketone	N	2.6E-04	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	2.2E-05	N/A	1.5E-05	N/A
	gamma-Chlordane	C	1.3E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	5.9E-08	1.0E-11	9.8E-08	1.7E-11
	2-Methylphenol (o-Cresol)	N	2.0E-01	5.0E-02	N/A	7.4E-02	3	3.7E-03	N/A	1.7E-05	N/A	1.1E-05	N/A
	4-Methylphenol (p-Cresol)	N	2.0E-01	5.0E-03	N/A	7.4E-02	3	3.7E-04	N/A	1.7E-04	N/A	1.1E-04	N/A
	Anthracene	N	4.4E-02	3.0E-01	N/A	7.6E-01	3	2.3E-01	N/A	6.1E-09	N/A	4.1E-09	N/A
	Benzo(a)anthracene	C	3.2E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	4.4E-08	N/A	7.4E-08
	Benzo(a)pyrene	C	2.4E-01	N/A	7.3E+00	3.1E-01	3	N/A	2.4E+01	N/A	3.3E-07	N/A	5.6E-07
	Benzo(b)fluoranthene	C	3.6E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	5.0E-08	N/A	8.3E-08
	Benzo(g,h,i)perylene	C	2.8E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	3.9E-08	N/A	6.5E-08
	Benzo(k)fluoranthene	C	1.7E-01	N/A	7.3E-02	3.1E-01	3	N/A	2.4E-01	N/A	2.4E-09	N/A	3.9E-09
	bis(2-Chloroethoxy)methane	N	1.1E-01	N/A	N/A	5.0E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	1.5E+00	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	3.4E-05	9.5E-09	5.7E-05	1.6E-08
	Butylbenzylphthalate	N	2.0E-01	2.0E-01	N/A	1.7E-02	3	3.5E-03	N/A	1.8E-05	N/A	1.2E-05	N/A
	Carbazole	C	9.6E-02	N/A	2.0E-02	7.0E-01	3	N/A	2.9E-02	N/A	1.2E-10	N/A	2.1E-10
	Chrysene	C	5.1E-01	7.3E-03	N/A	3.1E-01	3	2.3E-03	N/A	1.3E-05	N/A	2.2E-05	N/A
	Di-n-butylphthalate	N	1.0E-01	1.0E-01	N/A	3.1E-01	3	3.1E-02	N/A	1.0E-06	N/A	6.8E-07	N/A
	Di-n-octylphthalate	N	2.2E-02	4.0E-02	N/A	3.1E-01	3	1.2E-02	N/A	5.6E-07	N/A	3.8E-07	N/A
	Fluoranthene	N	1.1E+00	N/A	4.0E-02	3.1E-01	3	N/A	1.3E-01	N/A	5.8E-08	N/A	3.9E-08
	Indeno(1,2,3-cd)pyrene	C	3.1E-01	7.3E-01	N/A	3.1E-01	3	2.3E-01	N/A	8.1E-08	N/A	1.3E-07	N/A
	Phenanthrene	N	2.4E-01	N/A	3.0E-02	7.3E-01	3	N/A	4.1E-02	N/A	3.1E-10	N/A	2.1E-10
	Pyrene	N	7.3E-01	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	2.2E-09	N/A	1.5E-09
	1,2-Dichloroethene (total)	N	1.1E-02	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	2.2E-08	N/A	1.5E-08	N/A
	Acetone	N	5.2E+00	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	1.6E-05	N/A	1.1E-05	N/A
	Chlorobenzene	N	7.0E-03	2.0E-02	N/A	7.3E-02	3	1.5E-03	N/A	1.5E-07	N/A	1.0E-07	N/A
	Methylene chloride	C	2.5E-01	6.0E-02	7.5E-03	1.0E-01	3	6.1E-03	7.4E-02	1.9E-07	8.4E-11	3.1E-07	1.4E-10
	Toluene	N	2.8E-01	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	1.4E-07	N/A	9.6E-08	N/A
	Vinyl chloride	C	4.2E-02	3.0E-03	7.5E-01	1.0E+00	3	3.0E-03	7.5E-01	6.3E-08	1.4E-10	1.1E-07	2.4E-10

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABSGI = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose-sources: (1) RAIS value; (2) adjusted for ABSGI.
Dermal SF = Dermal slope factor-sources: (1) RAIS value; (2) adjusted for ABSGI.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfDdermal = Dermal reference dose.
RFDoral = Oral reference dose.
ABSGI = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-1-46
Wetland 5A Phase II
Sediment Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum Concentration (mg/kg)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser Ingestion Hazard Quotient	Child Trespasser Ingestion Cancer Risk	Maintenance Worker Ingestion Hazard Quotient	Maintenance Worker Ingestion Cancer Risk
Sediment Incidental Ingestion	Aluminum	N	1.9E+04	1.0E+00	N/A	5.92E-03	N/A	3.81E-03	N/A
	Barium	N	1.5E+02	7.0E-02	N/A	6.78E-04	N/A	4.36E-04	N/A
	Beryllium	N	8.3E-01	2.0E-03	N/A	1.31E-04	N/A	8.45E-05	N/A
	Cadmium	N	2.2E+02	5.0E-04	N/A	1.39E-01	N/A	8.95E-02	N/A
	Chromium	N	4.2E+02	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	1.3E+01	2.0E-02	N/A	3.03E-05	N/A	4.87E-05	N/A
	Copper	N	3.2E+02	4.0E-02	N/A	2.51E-03	N/A	1.61E-03	N/A
	Iron	N	9.8E+03	3.0E-01	N/A	1.04E-02	N/A	6.67E-03	N/A
	Lead	N	4.8E+02	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.1E+02	2.4E-02	N/A	2.70E-03	N/A	1.74E-03	N/A
	Mercury	N	1.0E+00	3.0E-04	N/A	1.06E-03	N/A	6.78E-04	N/A
	Nickel	N	9.4E+01	2.0E-02	N/A	1.49E-03	N/A	9.56E-04	N/A
	Selenium	N	3.6E+00	5.0E-03	N/A	2.28E-04	N/A	1.47E-04	N/A
	Silver	N	5.2E+00	5.0E-03	N/A	3.29E-04	N/A	2.12E-04	N/A
	Thallium	N	1.4E+00	6.6E-05	N/A	6.72E-03	N/A	4.32E-03	N/A
	Vanadium	N	2.4E+01	7.0E-03	N/A	1.09E-03	N/A	6.98E-04	N/A
	Zinc	N	2.3E+03	3.0E-01	N/A	2.42E-03	N/A	1.55E-03	N/A
	4,4'-DDD	C	2.3E-03	N/A	2.4E-01	N/A	2.50E-11	N/A	4.01E-11
	4,4'-DDE	C	1.2E-01	N/A	3.4E-01	N/A	1.85E-09	N/A	2.97E-09
	4,4'-DDT	C	5.0E-03	5.0E-04	3.4E-01	4.52E-07	7.69E-11	7.27E-07	1.24E-10
	alpha-BHC	C	1.8E-03	5.0E-04	6.3E+00	1.63E-07	5.13E-10	2.62E-07	8.24E-10
	alpha-Chlordane	C	1.6E-03	5.0E-04	3.5E-01	1.45E-07	2.53E-11	2.33E-07	4.07E-11
	Aroclor-1254	C	5.3E-02	2.0E-05	2.0E+00	1.20E-04	4.79E-09	1.93E-04	7.70E-09
	Aroclor-1260	C	1.0E-01	N/A	2.0E+00	N/A	9.05E-09	N/A	1.45E-08
	Dieldrin	C	7.1E-03	5.0E-05	1.6E+01	6.42E-06	5.14E-09	1.03E-05	8.26E-09
	Endosulfan II	N	1.7E-03	6.0E-03	N/A	8.97E-08	N/A	5.77E-08	N/A
	Endrin	N	1.1E-03	3.0E-04	N/A	1.16E-06	N/A	7.46E-07	N/A
	Endrin aldehyde	N	7.2E-04	3.0E-04	N/A	7.60E-07	N/A	4.88E-07	N/A
	Endrin ketone	N	2.6E-04	3.0E-04	N/A	2.74E-07	N/A	1.76E-07	N/A
	gamma-Chlordane	C	1.3E-03	5.0E-04	3.5E-01	1.18E-07	2.06E-11	1.89E-07	3.31E-11
	2-Methylphenol (o-Cresol)	N	2.0E-01	5.0E-02	N/A	1.27E-06	N/A	8.14E-07	N/A
	4-Methylphenol (p-Cresol)	N	2.0E-01	5.0E-03	N/A	1.27E-05	N/A	8.14E-06	N/A
	Anthracene	N	4.4E-02	3.0E-01	N/A	4.64E-08	N/A	2.98E-08	N/A
	Benzo(a)anthracene	C	3.2E-01	N/A	7.3E-01	N/A	1.06E-08	N/A	1.70E-08
	Benzo(a)pyrene	C	2.4E-01	N/A	7.3E+00	N/A	7.92E-08	N/A	1.27E-07
	Benzo(b)fluoranthene	C	3.6E-01	N/A	7.3E-01	N/A	1.19E-08	N/A	1.91E-08
	Benzo(g,h,i)perylene	C	2.8E-01	N/A	7.3E-01	N/A	9.24E-09	N/A	1.49E-08
	Benzo(k)fluoranthene	C	1.7E-01	N/A	7.3E-02	N/A	5.61E-10	N/A	9.02E-10
	bis(2-Chloroethoxy)methane	N	1.1E-01	N/A	N/A	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	1.5E+00	2.0E-02	1.4E-02	3.39E-06	9.50E-10	5.45E-06	1.53E-09
	Butylbenzylphthalate	N	2.0E-01	2.0E-01	N/A	3.17E-07	N/A	2.04E-07	N/A
	Carbazole	C	9.6E-02	N/A	2.0E-02	N/A	8.68E-11	N/A	1.40E-10
	Chrysene	C	5.1E-01	7.3E-03	N/A	3.16E-06	N/A	5.08E-06	N/A
	Di-n-butylphthalate	N	1.0E-01	1.0E-01	N/A	3.17E-07	N/A	2.04E-07	N/A
	Di-n-octylphthalate	N	2.2E-02	4.0E-02	N/A	1.74E-07	N/A	1.12E-07	N/A
	Fluoranthene	N	1.1E+00	N/A	4.0E-02	N/A	1.39E-08	N/A	8.95E-09
	Indeno(1,2,3-cd)pyrene	C	3.1E-01	7.3E-01	N/A	1.92E-08	N/A	3.09E-08	N/A
	Phenanthrene	N	2.4E-01	N/A	3.0E-02	N/A	2.28E-09	N/A	1.47E-09
	Pyrene	N	7.3E-01	N/A	3.0E-02	N/A	6.93E-09	N/A	4.46E-09
	1,2-Dichloroethene (total)	N	1.1E-02	2.0E-02	N/A	1.74E-07	N/A	1.12E-07	N/A
	Acetone	N	5.2E+00	1.0E-01	N/A	1.65E-05	N/A	1.06E-05	N/A
	Chlorobenzene	N	7.0E-03	2.0E-02	N/A	1.11E-07	N/A	7.12E-08	N/A
	Methylene chloride	C	2.5E-01	6.0E-02	7.5E-03	1.88E-07	8.48E-11	3.03E-07	1.36E-10
	Toluene	N	2.8E-01	2.0E-01	N/A	4.43E-07	N/A	2.85E-07	N/A
	Vinyl chloride	C	4.2E-02	3.0E-03	7.5E-01	6.33E-07	1.42E-09	1.02E-06	2.29E-09

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI = Chronic daily intake (mg/kg-day)

$$Risk = CDI \times SF_{oral}$$

Equation for Chronic Daily Intake, sediment risk:

$$CDI = \frac{EPC_{sd} \times IR_{sd} \times EF \times ED \times CF}{BW \times AT}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPCsd = Exposure point concentration in sediment (mg/kg).
IRsd = Incidental ingestion rate for sediment (mg/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
CF = Conversion factor (1E-6 kg/mg).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
IRsd = 100 mg/day for age groups greater than 6-years old.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).

Table 11-1-47
Wetland 5A Phase II
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	1.5E+02	J	9.5E+02	=	UG/L	041W5A0201	5 / 6	N/A / 1.4E+02	3.8E+02	9.5E-04	1.0E-03	2.46E-06	3.89E-05	5.20E-05
7440393	Barium	N	1.4E+01	J	4.1E+01	J	UG/L	041W5A0101	6 / 6	NAV	2.7E+01	4.1E-05	1.0E-03	1.08E-07	1.70E-06	2.28E-06
7440439	Cadmium	N	N/A	N/A	3.2E+00	J	UG/L	041W5A0201	1 / 6	3.0E+00 / 3.0E+00	1.8E+00	3.2E-06	1.0E-03	8.32E-09	1.32E-07	1.76E-07
7440473	Chromium	N	N/A	N/A	1.1E+01	=	UG/L	041W5A0501	1 / 6	8.0E+00 / 8.0E+00	5.2E+00	1.1E-05	1.0E-03	2.96E-08	4.69E-07	6.27E-07
7440484	Cobalt	C	N/A	N/A	3.0E+00	=	UG/L	041W5A0101	1 / 6	3.0E+00 / 3.0E+00	1.8E+00	3.0E-06	1.2E-03	9.36E-09	2.12E-08	7.08E-08
7440508	Copper	N	7.2E+00	J	2.1E+01	J	UG/L	041W5A0701	3 / 6	4.4E+00 / 1.9E+01	1.1E+01	2.1E-05	1.0E-03	5.54E-08	8.77E-07	1.17E-06
7439896	Iron	N	3.6E+02	=	1.7E+03	=	UG/L	041W5A0501	6 / 6	NAV	1.1E+03	1.7E-03	2.5E-04	1.11E-06	1.76E-05	2.35E-05
7439921	Lead	N	2.8E+00	J	2.0E+01	J	UG/L	041W5A0401	5 / 6	N/A / 1.4E+00	9.6E+00	2.0E-05	3.4E-04	1.79E-08	2.84E-07	3.80E-07
7439965	Manganese	N	2.1E+01	=	8.0E+01	=	UG/L	041W5A0101	6 / 6	NAV	4.9E+01	8.0E-05	1.0E-03	2.08E-07	3.29E-06	4.40E-06
7440622	Vanadium	N	N/A	N/A	4.8E+00	J	UG/L	041W5A0601	1 / 6	2.0E+00 / 3.4E+00	1.9E+00	4.8E-06	1.0E-03	1.25E-08	1.98E-07	2.64E-07
7440666	Zinc	N	5.6E+01	=	2.4E+02	=	UG/L	041W5A0601	4 / 6	2.7E+01 / 4.6E+01	8.8E+01	2.4E-04	6.0E-04	3.68E-07	5.83E-06	7.79E-06
115297	Endosulfan I	N	N/A	N/A	2.9E-02	J	UG/L	041W5A0101	1 / 6	5.0E-02 / 5.0E-02	2.6E-02	2.9E-08	3.3E-03	5.69E-10	9.01E-09	1.21E-08
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	2.0E+00	J	5.0E+00	=	UG/L	041W5A0401	4 / 6	5.0E+00 / 5.0E+00	2.8E+00	5.0E-06	2.5E-02	4.19E-06	9.48E-06	3.17E-05
75343	1,1-Dichloroethane	N	N/A	N/A	1.0E+00	=	UG/L	041W5A0101	1 / 6	1.0E+00 / 1.0E+00	5.8E-01	1.0E-06	6.7E-03	2.22E-08	3.51E-07	4.70E-07
67641	Acetone	N	N/A	N/A	9.0E+00	J	UG/L	041W5A0601	1 / 6	5.0E+00 / 1.4E+01	5.0E+00	9.0E-06	5.7E-04	1.68E-08	2.66E-07	3.56E-07
75274	Bromodichloromethane	C	N/A	N/A	2.0E+00	=	UG/L	041W5A0601	1 / 6	1.0E+00 / 1.0E+00	7.5E-01	2.0E-06	4.6E-03	4.01E-08	9.07E-08	3.03E-07
67663	Chloroform	C	N/A	N/A	1.0E+00	=	UG/L	041W5A0601	1 / 6	1.0E+00 / 1.0E+00	5.8E-01	1.0E-06	6.8E-03	2.45E-08	5.54E-08	1.85E-07
156592	cis-1,2-Dichloroethene	N	N/A	N/A	1.0E+00	=	UG/L	041W5A0601	1 / 6	1.0E+00 / 1.0E+00	5.8E-01	1.0E-06	1.5E-02	4.83E-08	7.65E-07	1.02E-06
124481	Dibromochloromethane	C	N/A	N/A	2.0E+00	=	UG/L	041W5A0601	1 / 6	1.0E+00 / 1.0E+00	7.5E-01	2.0E-06	3.2E-03	3.67E-08	8.31E-08	2.78E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).

EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1 + B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1 + B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound,
calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-1-48
Wetland 5A Phase II
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser Dermal Hazard Quotient	Child Trespasser Dermal Cancer Risk	Maintenance Worker Dermal Hazard Quotient	Maintenance Worker Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	9.5E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	3.9E-04	N/A	5.2E-04	N/A
	Barium	N	4.1E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	3.5E-04	N/A	4.6E-04	N/A
	Cadmium	N	3.2E-06	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	1.1E-02	N/A	1.4E-02	N/A
	Chromium	N	1.1E-05	3.0E-03	N/A	2.5E-02	1	7.5E-05	N/A	6.3E-03	N/A	8.4E-03	N/A
	Cobalt	C	3.0E-06	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.3E-06	N/A	4.4E-06	N/A
	Copper	N	2.1E-05	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	7.3E-05	N/A	9.8E-05	N/A
	Iron	N	1.7E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	2.0E-05	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	8.0E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	5.9E-04	N/A	7.9E-04	N/A
	Vanadium	N	4.8E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	1.1E-03	N/A	1.5E-03	N/A
	Zinc	N	2.4E-04	3.0E-01	N/A	2.0E-01	2, 4	6.0E-02	N/A	9.7E-05	N/A	1.3E-04	N/A
	Endosulfan I	N	2.9E-08	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	3.0E-06	N/A	4.0E-06	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	5.0E-06	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	4.7E-03	N/A	1.6E-02	N/A
	1,1-Dichloroethane	N	1.0E-06	1.0E-01	N/A	1.0E+00	3	1.0E-01	N/A	3.5E-06	N/A	4.7E-06	N/A
	Acetone	N	9.0E-06	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	2.7E-05	N/A	3.6E-05	N/A
	Bromodichloromethane	C	2.0E-06	2.0E-02	6.2E-02	9.8E-01	3	2.0E-02	6.3E-02	4.6E-06	5.7E-09	1.5E-05	1.9E-08
	Chloroform	C	1.0E-06	1.0E-02	3.1E-02	2.0E-01	3	2.0E-03	1.6E-01	2.8E-05	8.6E-09	9.3E-05	2.9E-08
	cis-1,2-Dichloroethene	N	1.0E-06	1.0E-02	N/A	1.0E+00	3	1.0E-02	N/A	7.6E-05	N/A	1.0E-04	N/A
	Dibromochloromethane	C	2.0E-06	2.0E-02	8.4E-02	6.0E-01	3	1.2E-02	1.4E-01	6.9E-06	1.2E-08	2.3E-05	3.9E-08

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-1-49
Wetland 5A Phase II
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser: Ingestion Hazard Quotient	Child Trespasser: Ingestion Cancer Risk	Maintenance Worker: Ingestion Hazard Quotient	Maintenance Worker: Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	9.5E-04	1.0E+00	N/A	3.0E-08	N/A	1.9E-08	N/A
	Barium	N	4.1E-05	7.0E-02	N/A	1.9E-08	N/A	1.2E-08	N/A
	Cadmium	N	3.2E-06	5.0E-04	N/A	2.0E-07	N/A	1.3E-07	N/A
	Chromium	N	1.1E-05	3.0E-03	N/A	1.2E-07	N/A	7.7E-08	N/A
	Cobalt	C	3.0E-06	2.0E-02	N/A	6.8E-10	N/A	1.1E-09	N/A
	Copper	N	2.1E-05	4.0E-02	N/A	1.7E-08	N/A	1.1E-08	N/A
	Iron	N	1.7E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	2.0E-05	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	8.0E-05	1.4E-01	N/A	1.8E-08	N/A	1.2E-08	N/A
	Vanadium	N	4.8E-06	7.0E-03	N/A	2.2E-08	N/A	1.4E-08	N/A
	Zinc	N	2.4E-04	3.0E-01	N/A	2.5E-08	N/A	1.6E-08	N/A
	Endosulfan I	N	2.9E-08	6.0E-03	N/A	1.5E-10	N/A	9.8E-11	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	5.0E-06	2.0E-02	1.4E-02	1.1E-09	3.2E-13	1.8E-09	5.1E-13
	1,1-Dichloroethane	N	1.0E-06	1.0E-01	N/A	3.2E-10	N/A	2.0E-10	N/A
	Acetone	N	9.0E-06	1.0E-01	N/A	2.8E-09	N/A	1.8E-09	N/A
	Bromodichloromethane	C	2.0E-06	2.0E-02	6.2E-02	4.5E-10	5.6E-13	7.3E-10	9.0E-13
	Chloroform	C	1.0E-06	1.0E-02	3.1E-02	4.5E-10	1.4E-13	7.3E-10	2.3E-13
	cis-1,2-Dichloroethene	N	1.0E-06	1.0E-02	N/A	3.2E-09	N/A	2.0E-09	N/A
	Dibromochloromethane	C	2.0E-06	2.0E-02	8.4E-02	4.5E-10	7.6E-13	7.3E-10	1.2E-12

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Risk = CDI \times SF_{oral}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_{sw} = Exposure point concentration in surface water (mg/L).
IR_{sw} = Incidental ingestion rate for sediment (L/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
Irsw = 0.01 L/day exposure to surface water during wading for adolescents and adults.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).

Table 11-1-50
Wetland 5A Phase III
Sediment Dermal Exposure Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (mg/kg)	Min. Qual.	Maximum Concentration (mg/kg)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	ABS_{sd}	ABS_{sd} Source	DA_{event}: Child Trespasser	DA_{event}: Adult Maintenance Worker	DAD_{sd} (mg/kg-day): Child Trespasser	DAD_{sd} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	8.2E+02	=	2.5E+03	=	MG/KG	041M5A0401	3 / 3	NAV	1.6E+03	1.0E-03	3	4.96E-07	2.48E-07	7.85E-06	5.25E-06
7440360	Antimony	N	2.0E+00	J	2.8E+01	J	MG/KG	041M5A0501	2 / 3	N/A / 1.5E+00	1.0E+01	1.0E-03	3	5.54E-09	2.77E-09	8.77E-08	5.86E-08
7440393	Barium	N	6.9E+00	=	1.7E+01	=	MG/KG	041M5A0501	3 / 3	NAV	1.2E+01	1.0E-03	3	3.44E-09	1.72E-09	5.45E-08	3.64E-08
7440417	Beryllium	N	1.3E-01	J	2.0E-01	=	MG/KG	041M5A0401	2 / 3	N/A / 5.0E-02	1.2E-01	1.0E-03	3	4.00E-11	2.00E-11	6.33E-10	4.23E-10
7440439	Cadmium	N	4.2E-01	J	3.2E+00	=	MG/KG	041M5A0501	3 / 3	NAV	1.6E+00	1.0E-03	3	6.40E-10	3.20E-10	1.01E-08	6.77E-09
7440484	Cobalt	C	9.4E-01	J	1.6E+00	J	MG/KG	041M5A0501	3 / 3	NAV	1.4E+00	1.0E-03	3	3.20E-10	1.60E-10	7.24E-10	1.21E-09
7440508	Copper	N	2.2E+01	=	1.1E+02	=	MG/KG	041M5A0501	3 / 3	NAV	5.2E+01	1.0E-03	3	2.16E-08	1.08E-08	3.42E-07	2.29E-07
7439896	Iron	N	5.5E+02	=	3.0E+03	=	MG/KG	041M5A0501	3 / 3	NAV	1.6E+03	1.0E-03	3	6.04E-07	3.02E-07	9.56E-06	6.39E-06
7439921	Lead	N	5.5E+01	=	2.6E+02	=	MG/KG	041M5A0501	3 / 3	NAV	1.3E+02	1.0E-03	3	5.16E-08	2.58E-08	8.17E-07	5.46E-07
7439965	Manganese	N	8.6E+00	=	2.1E+01	=	MG/KG	041M5A0501	3 / 3	NAV	1.5E+01	1.0E-03	3	4.26E-09	2.13E-09	6.74E-08	4.51E-08
7782492	Selenium	N	N/A	N/A	6.0E-01	J	MG/KG	041M5A0501	1 / 3	2.6E-01 / 2.8E-01	2.9E-01	1.0E-03	3	1.20E-10	6.00E-11	1.90E-09	1.27E-09
7440622	Vanadium	N	1.8E+00	=	4.2E+00	=	MG/KG	041M5A0401	3 / 3	NAV	3.2E+00	1.0E-03	3	8.40E-10	4.20E-10	1.33E-08	8.89E-09
7440666	Zinc	N	7.7E+01	=	3.9E+02	=	MG/KG	041M5A0501	3 / 3	NAV	1.9E+02	1.0E-03	3	7.88E-08	3.94E-08	1.25E-06	8.34E-07
72548	4,4'-DDD	C	1.3E-03	J	1.0E-01	D	MG/KG	041M5A0401	2 / 3	N/A / 1.0E-01	5.0E-02	3.0E-02	1	6.00E-10	3.00E-10	1.36E-09	2.27E-09
72559	4,4'-DDE	C	3.6E-03	J	5.7E-02	D	MG/KG	041M5A0401	2 / 3	N/A / 1.0E-01	3.7E-02	3.0E-02	1	3.42E-10	1.71E-10	7.73E-10	1.29E-09
50293	4,4'-DDT	C	3.2E-03	J	7.2E-03	=	MG/KG	041M5A0401	2 / 3	N/A / 1.0E-01	2.0E-02	3.0E-02	1	4.32E-11	2.16E-11	9.77E-11	1.63E-10
5103719	alpha-Chlordane	C	N/A	N/A	4.5E-03	=	MG/KG	041M5A0401	1 / 3	2.6E-04 / 5.4E-02	1.1E-02	4.0E-02	2	3.60E-11	1.80E-11	8.14E-11	1.36E-10
60571	Dieldrin	C	N/A	N/A	1.4E-03	J	MG/KG	041M5A0601	1 / 3	2.9E-03 / 1.0E-01	1.8E-02	1.0E-01	2	2.80E-11	1.40E-11	6.33E-11	1.06E-10
115297	Endosulfan I	N	N/A	N/A	5.2E-03	=	MG/KG	041M5A0401	1 / 3	3.0E-04 / 5.4E-02	1.1E-02	1.0E-01	2	1.04E-10	5.20E-11	1.65E-09	1.10E-09
1031078	Endosulfan sulfate	N	6.6E-04	J	2.3E-03	J	MG/KG	041M5A0401	2 / 3	N/A / 1.0E-01	1.8E-02	1.0E-01	2	4.60E-11	2.30E-11	7.28E-10	4.87E-10
72208	Endrin	N	N/A	N/A	1.1E-03	J	MG/KG	041M5A0601	1 / 3	6.9E-04 / 2.4E-03	8.8E-04	1.0E-01	2	2.20E-11	1.10E-11	3.48E-10	2.33E-10
58899	gamma-BHC (Lindane)	C	N/A	N/A	2.4E-04	J	MG/KG	041M5A0401	1 / 3	2.8E-03 / 5.4E-02	9.5E-03	4.0E-02	2	1.92E-12	9.60E-13	4.34E-12	7.26E-12
57749	gamma-Chlordane	C	N/A	N/A	7.9E-03	J	MG/KG	041M5A0401	1 / 3	1.4E-04 / 5.4E-02	1.2E-02	4.0E-02	2	6.32E-11	3.16E-11	1.43E-10	2.39E-10
120127	Anthracene	N	N/A	N/A	1.6E-02	J	MG/KG	041M5A0401	1 / 3	5.2E-01 / 5.4E-01	1.8E-01	1.0E-02	3	3.20E-11	1.60E-11	5.07E-10	3.39E-10
56553	Benzo(a)anthracene	C	4.1E-02	J	1.0E-01	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	1.4E-01	1.3E-01	2	2.60E-09	1.30E-09	5.88E-09	9.83E-09
50328	Benzo(a)pyrene	C	5.2E-02	J	1.4E-01	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	1.5E-01	1.3E-01	2	3.64E-09	1.82E-09	8.23E-09	1.38E-08
205992	Benzo(b)fluoranthene	C	6.2E-02	J	1.2E-01	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	1.5E-01	1.3E-01	2	3.12E-09	1.56E-09	7.06E-09	1.18E-08
207089	Benzo(k)fluoranthene	C	N/A	N/A	1.1E-01	J	MG/KG	041M5A0401	1 / 3	5.2E-01 / 5.4E-01	2.1E-01	1.3E-01	2	2.86E-09	1.43E-09	6.47E-09	1.08E-08
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	2.1E-01	J	9.5E-01	=	MG/KG	041M5A0501	2 / 3	N/A / 5.4E-01	4.8E-01	1.0E-01	1	1.90E-08	9.50E-09	4.30E-08	7.18E-08
85687	Butylbenzylphthalate	N	N/A	N/A	1.4E-01	J	MG/KG	041M5A0501	1 / 3	5.0E-01 / 5.4E-01	2.2E-01	1.0E-01	2	2.80E-09	1.40E-09	4.43E-08	2.96E-08
218019	Chrysene	C	5.8E-02	J	1.7E-01	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	1.7E-01	1.3E-01	2	4.42E-09	2.21E-09	1.00E-08	1.67E-08
117840	Di-n-octylphthalate	N	N/A	N/A	2.9E-01	J	MG/KG	041M5A0501	1 / 3	5.0E-01 / 5.4E-01	2.7E-01	1.0E-01	2	5.80E-09	2.90E-09	9.18E-08	6.14E-08
206440	Fluoranthene	N	1.6E-02	J	2.6E-01	J	MG/KG	041M5A0401	3 / 3	NAV	1.2E-01	1.3E-01	2	6.76E-09	3.38E-09	1.07E-07	7.15E-08
85018	Phenanthrene	N	2.8E-02	J	9.7E-02	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	1.3E-01	1.0E-02	3	1.94E-10	9.70E-11	3.07E-09	2.05E-09
129000	Pyrene	N	8.7E-02	J	3.0E-01	J	MG/KG	041M5A0401	2 / 3	N/A / 5.4E-01	2.2E-01	1.0E-02	3	6.00E-10	3.00E-10	9.50E-09	6.35E-09

Notes:
Equation for sediment risk:

$$DAD_{sd} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sd} = Dermal Absorbed Dose-soil contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event)
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).

Equation for DA_{event} for sediment contact:

$$DA_{event} = C_{sd} \times CF \times AF \times ABS_d$$

Where:

C_{sd} = Chemical concentration in sediment (mg/kg).
CF = Conversion factor (10^{-6} kg/mg).
AF = Adherence factor of sediment to soil (mg/cm2-event).
0.2 (children playing in wet soil) 0.1 (construction worker)
AB_{sd} = Dermal absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1;
(2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Table 11-1-51
Wetland 5A Phase III
Sediment Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum Concentration (mg/kg)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABSGI	ABSGI Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser		Maintenance Worker	
										Dermal Hazard Quotient	Dermal Cancer Risk	Dermal Hazard Quotient	Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	2.5E+03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	7.9E-05	N/A	5.2E-05	N/A
	Antimony	N	2.8E+01	4.0E-04	N/A	2.0E-02	3	8.0E-06	N/A	1.1E-02	N/A	7.3E-03	N/A
	Barium	N	1.7E+01	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	1.1E-05	N/A	7.4E-06	N/A
	Beryllium	N	2.0E-01	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	4.5E-05	N/A	3.0E-05	N/A
	Cadmium	N	3.2E+00	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	8.1E-04	N/A	5.4E-04	N/A
	Cobalt	C	1.6E+00	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	4.5E-08	N/A	7.6E-08	N/A
	Copper	N	1.1E+02	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	2.8E-05	N/A	1.9E-05	N/A
	Iron	N	3.0E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	2.1E-04	N/A	1.4E-04	N/A
	Lead	N	2.6E+02	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.1E+01	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	7.0E-05	N/A	4.7E-05	N/A
	Selenium	N	6.0E-01	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	6.9E-07	N/A	4.6E-07	N/A
	Vanadium	N	4.2E+00	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	7.3E-05	N/A	4.9E-05	N/A
	Zinc	N	3.9E+02	3.0E-01	N/A	2.0E-01	3, 4	6.0E-02	N/A	2.1E-05	N/A	1.4E-05	N/A
	4,4'-DDD	C	1.0E-01	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	1.1E-08	N/A	1.8E-08
	4,4'-DDE	C	5.7E-02	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	8.8E-09	N/A	1.5E-08
	4,4'-DDT	C	7.2E-03	5.0E-04	3.4E-01	3.0E-02	2	1.5E-05	1.1E+01	6.5E-06	1.1E-09	1.1E-05	1.9E-09
	alpha-Chlordane	C	4.5E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	2.0E-07	3.6E-11	3.4E-07	6.0E-11
	Dieldrin	C	1.4E-03	5.0E-05	1.6E+01	5.0E-01	3	2.5E-05	3.2E+01	2.5E-06	2.0E-09	4.2E-06	3.4E-09
	Endosulfan I	N	5.2E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	5.5E-07	N/A	3.7E-07	N/A
	Endosulfan sulfate	N	2.3E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	2.4E-07	N/A	1.6E-07	N/A
	Endrin	N	1.1E-03	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	9.3E-05	N/A	6.2E-05	N/A
	gamma-BHC (Lindane)	C	2.4E-04	3.0E-04	1.3E+00	9.7E-01	3	2.9E-04	1.3E+00	1.5E-08	5.8E-12	2.5E-08	9.7E-12
	gamma-Chlordane	C	7.9E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	3.6E-07	6.3E-11	6.0E-07	1.0E-10
	Anthracene	N	1.6E-02	3.0E-01	N/A	7.6E-01	3	2.3E-01	N/A	2.2E-09	N/A	1.5E-09	N/A
	Benzo(a)anthracene	C	1.0E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	1.4E-08	N/A	2.3E-08
	Benzo(a)pyrene	C	1.4E-01	N/A	7.3E+00	3.1E-01	3	N/A	2.4E+01	N/A	1.9E-07	N/A	3.2E-07
	Benzo(b)fluoranthene	C	1.2E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	1.7E-08	N/A	2.8E-08
	Benzo(k)fluoranthene	C	1.1E-01	N/A	7.3E-02	3.1E-01	3	N/A	2.4E-01	N/A	1.5E-09	N/A	2.5E-09
	bis(2-Ethylhexyl)phthalate (BEHP)	C	9.5E-01	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	2.1E-05	6.0E-09	3.6E-05	1.0E-08
	Butylbenzylphthalate	N	1.4E-01	2.0E-01	N/A	1.7E-02	3	3.5E-03	N/A	1.3E-05	N/A	8.5E-06	N/A
	Chrysene	C	1.7E-01	7.3E-03	N/A	3.1E-01	3	2.3E-03	N/A	4.4E-06	N/A	7.4E-06	N/A
	Di-n-octylphthalate	N	2.9E-01	4.0E-02	N/A	3.1E-01	3	1.2E-02	N/A	7.4E-06	N/A	5.0E-06	N/A
	Fluoranthene	N	2.6E-01	N/A	4.0E-02	3.1E-01	3	N/A	1.3E-01	N/A	1.4E-08	N/A	9.2E-09
	Phenanthrene	N	9.7E-02	N/A	3.0E-02	7.3E-01	3	N/A	4.1E-02	N/A	1.3E-10	N/A	8.4E-11
	Pyrene	N	3.0E-01	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	9.2E-10	N/A	6.1E-10

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABSGI = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose-sources: (1) RAIS value; (2) adjusted for ABSGI.
Dermal SF = Dermal slope factor-sources: (1) RAIS value; (2) adjusted for ABSGI.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfDdermal = Dermal reference dose.
RFDoral = Oral reference dose.
ABSGI = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-1-52
Wetland 5A Phase III
Sediment Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum Concentration (mg/kg)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
Sediment Incidental Ingestion	Aluminum	N	2.5E+03	1.0E+00	N/A	7.85E-04	N/A	5.05E-04	N/A
	Antimony	N	2.8E+01	4.0E-04	N/A	2.19E-02	N/A	1.41E-02	N/A
	Barium	N	1.7E+01	7.0E-02	N/A	7.78E-05	N/A	5.00E-05	N/A
	Beryllium	N	2.0E-01	2.0E-03	N/A	3.17E-05	N/A	2.04E-05	N/A
	Cadmium	N	3.2E+00	5.0E-04	N/A	2.03E-03	N/A	1.30E-03	N/A
	Cobalt	C	1.6E+00	2.0E-02	N/A	3.62E-06	N/A	5.81E-06	N/A
	Copper	N	1.1E+02	4.0E-02	N/A	8.55E-04	N/A	5.50E-04	N/A
	Iron	N	3.0E+03	3.0E-01	N/A	3.19E-03	N/A	2.05E-03	N/A
	Lead	N	2.6E+02	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.1E+01	2.4E-02	N/A	2.81E-04	N/A	1.81E-04	N/A
	Selenium	N	6.0E-01	5.0E-03	N/A	3.80E-05	N/A	2.44E-05	N/A
	Vanadium	N	4.2E+00	7.0E-03	N/A	1.90E-04	N/A	1.22E-04	N/A
	Zinc	N	3.9E+02	3.0E-01	N/A	4.16E-04	N/A	2.67E-04	N/A
	4,4'-DDD	C	1.0E-01	N/A	2.4E-01	N/A	1.09E-09	N/A	1.74E-09
	4,4'-DDE	C	5.7E-02	N/A	3.4E-01	N/A	8.77E-10	N/A	1.41E-09
	4,4'-DDT	C	7.2E-03	5.0E-04	3.4E-01	6.51E-07	1.11E-10	1.05E-06	1.78E-10
	alpha-Chlordane	C	4.5E-03	5.0E-04	3.5E-01	4.07E-07	7.12E-11	6.54E-07	1.14E-10
	Dieldrin	C	1.4E-03	5.0E-05	1.6E+01	1.27E-06	1.01E-09	2.04E-06	1.63E-09
	Endosulfan I	N	5.2E-03	6.0E-03	N/A	2.74E-07	N/A	1.76E-07	N/A
	Endosulfan sulfate	N	2.3E-03	6.0E-03	N/A	1.21E-07	N/A	7.80E-08	N/A
	Endrin	N	1.1E-03	3.0E-04	N/A	1.16E-06	N/A	7.46E-07	N/A
	gamma-BHC (Lindane)	C	2.4E-04	3.0E-04	1.3E+00	3.62E-08	1.41E-11	5.81E-08	2.27E-11
	gamma-Chlordane	C	7.9E-03	5.0E-04	3.5E-01	7.15E-07	1.25E-10	1.15E-06	2.01E-10
	Anthracene	N	1.6E-02	3.0E-01	N/A	1.69E-08	N/A	1.09E-08	N/A
	Benzo(a)anthracene	C	1.0E-01	N/A	7.3E-01	N/A	3.30E-09	N/A	5.31E-09
	Benzo(a)pyrene	C	1.4E-01	N/A	7.3E+00	N/A	4.62E-08	N/A	7.43E-08
	Benzo(b)fluoranthene	C	1.2E-01	N/A	7.3E-01	N/A	3.96E-09	N/A	6.37E-09
	Benzo(k)fluoranthene	C	1.1E-01	N/A	7.3E-02	N/A	3.63E-10	N/A	5.84E-10
	bis(2-Ethylhexyl)phthalate (BEHP)	C	9.5E-01	2.0E-02	1.4E-02	2.15E-06	6.02E-10	3.45E-06	9.67E-10
	Butylbenzylphthalate	N	1.4E-01	2.0E-01	N/A	2.22E-07	N/A	1.42E-07	N/A
	Chrysene	C	1.7E-01	7.3E-03	N/A	1.05E-06	N/A	1.69E-06	N/A
	Di-n-octylphthalate	N	2.9E-01	4.0E-02	N/A	2.30E-06	N/A	1.48E-06	N/A
	Fluoranthene	N	2.6E-01	N/A	4.0E-02	N/A	3.29E-09	N/A	2.12E-09
	Phenanthrene	N	9.7E-02	N/A	3.0E-02	N/A	9.21E-10	N/A	5.92E-10
	Pyrene	N	3.0E-01	N/A	3.0E-02	N/A	2.85E-09	N/A	1.83E-09

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI = chronic daily intake (mg/kg-day)

$$Risk = CDI \times SF_{oral}$$

Equation for Chronic Daily Intake, sediment risk:

$$CDI = \frac{EPC_{sd} \times IR_{sd} \times EF \times ED \times CF}{BW \times AT}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPCsd = Exposure point concentration in sediment (mg/kg).
IRsd = Incidental ingestion rate for sediment (mg/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
CF = Conversion factor (1E-6 kg/mg).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
IRsd = 100 mg/day for age groups greater than 6-years old.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Table 11-1-53
Wetland 5A Phase III
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	1.2E+02	=	6.7E+02	=	UG/L	041W5A0501	3 / 3	NAV	3.1E+02	6.7E-04	1.0E-03	1.74E-06	2.75E-05	3.68E-05
7440393	Barium	N	2.2E+01	=	2.8E+01	=	UG/L	041W5A0501	3 / 3	NAV	2.5E+01	2.8E-05	1.0E-03	7.28E-08	1.15E-06	1.54E-06
7440439	Cadmium	N	N/A	N/A	1.2E+00	=	UG/L	041W5A0501	1 / 3	5.8E-01 / 5.8E-01	5.9E-01	1.2E-06	1.0E-03	3.12E-09	4.94E-08	6.60E-08
7440473	Chromium	N	N/A	N/A	1.2E+01	=	UG/L	041W5A0501	1 / 3	8.8E-01 / 8.8E-01	4.3E+00	1.2E-05	1.0E-03	3.12E-08	4.94E-07	6.60E-07
7440484	Cobalt	C	2.0E+00	J	3.2E+00	J	UG/L	041W5A0501	2 / 3	N/A / 5.3E-01	1.8E+00	3.2E-06	1.2E-03	9.98E-09	2.26E-08	7.55E-08
7440508	Copper	N	4.1E+00	J	4.3E+01	=	UG/L	041W5A0501	2 / 3	N/A / 1.7E+00	1.6E+01	4.3E-05	1.0E-03	1.11E-07	1.76E-06	2.36E-06
7439896	Iron	N	7.6E+02	=	2.5E+03	=	UG/L	041W5A0601	3 / 3	NAV	1.4E+03	2.5E-03	2.5E-04	1.63E-06	2.57E-05	3.44E-05
7439921	Lead	N	9.0E+00	=	9.1E+01	=	UG/L	041W5A0501	2 / 3	N/A / 5.5E+00	3.4E+01	9.1E-05	3.4E-04	8.08E-08	1.28E-06	1.71E-06
7439965	Manganese	N	1.2E+02	=	2.0E+02	=	UG/L	041W5A0501	3 / 3	NAV	1.7E+02	2.0E-04	1.0E-03	5.15E-07	8.15E-06	1.09E-05
7440224	Silver	N	N/A	N/A	1.0E-01	J	UG/L	041W5A0501	1 / 3	3.0E-02 / 3.0E-02	4.3E-02	1.0E-07	6.0E-04	1.56E-10	2.47E-09	3.30E-09
7440622	Vanadium	N	1.1E+00	J	3.4E+00	J	UG/L	041W5A0501	2 / 3	N/A / 7.7E-01	1.6E+00	3.4E-06	1.0E-03	8.84E-09	1.40E-07	1.87E-07
7440666	Zinc	N	1.5E+01	J	3.4E+02	=	UG/L	041W5A0501	3 / 3	NAV	1.3E+02	3.4E-04	6.0E-04	5.27E-07	8.35E-06	1.12E-05
156605	1,2-Dichloroethene (total)	N	N/A	N/A	1.1E+00	=	UG/L	041W5A0601	1 / 3	1.0E+00 / 1.0E+00	7.0E-01	1.1E-06	7.7E-03	2.83E-08	4.48E-07	5.99E-07
67641	Acetone	N	N/A	N/A	2.3E+01	J	UG/L	041W5A0601	1 / 3	2.5E+01 / 2.5E+01	1.6E+01	2.3E-05	5.7E-04	4.30E-08	6.80E-07	9.09E-07
108883	Toluene	N	N/A	N/A	4.1E-01	J	UG/L	041W5A0501	1 / 3	1.0E+00 / 1.0E+00	4.7E-01	4.1E-07	3.1E-02	3.98E-08	6.30E-07	8.43E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1 + B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1 + B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound, calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-1-54
Wetland 5A Phase III
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	6.7E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	2.7E-04	N/A	3.7E-04	N/A
	Barium	N	2.8E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	2.4E-04	N/A	3.1E-04	N/A
	Cadmium	N	1.2E-06	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	4.0E-03	N/A	5.3E-03	N/A
	Chromium	N	1.2E-05	3.0E-03	N/A	2.5E-02	1	7.5E-05	N/A	6.6E-03	N/A	8.8E-03	N/A
	Cobalt	C	3.2E-06	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.4E-06	N/A	4.7E-06	N/A
	Copper	N	4.3E-05	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	1.5E-04	N/A	2.0E-04	N/A
	Iron	N	2.5E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	9.1E-05	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.0E-04	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	1.5E-03	N/A	1.9E-03	N/A
	Silver	N	1.0E-07	5.0E-03	N/A	1.8E-01	3	9.0E-04	N/A	2.7E-06	N/A	3.7E-06	N/A
	Vanadium	N	3.4E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	7.7E-04	N/A	1.0E-03	N/A
	Zinc	N	3.4E-04	3.0E-01	N/A	2.0E-01	2, 4	6.0E-02	N/A	1.4E-04	N/A	1.9E-04	N/A
	1,2-Dichloroethene (total)	N	1.1E-06	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	2.8E-05	N/A	3.7E-05	N/A
	Acetone	N	2.3E-05	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	6.8E-05	N/A	9.1E-05	N/A
	Toluene	N	4.1E-07	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	1.0E-05	N/A	1.4E-05	N/A

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-1-55
Wetland 5A Phase III
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser: Ingestion Hazard Quotient	Child Trespasser: Ingestion Cancer Risk	Maintenance Worker: Ingestion Hazard Quotient	Maintenance Worker: Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	6.7E-04	1.0E+00	N/A	2.1E-08	N/A	1.4E-08	N/A
	Barium	N	2.8E-05	7.0E-02	N/A	1.3E-08	N/A	8.1E-09	N/A
	Cadmium	N	1.2E-06	5.0E-04	N/A	7.6E-08	N/A	4.9E-08	N/A
	Chromium	N	1.2E-05	3.0E-03	N/A	1.3E-07	N/A	8.1E-08	N/A
	Cobalt	C	3.2E-06	2.0E-02	N/A	7.2E-10	N/A	1.2E-09	N/A
	Copper	N	4.3E-05	4.0E-02	N/A	3.4E-08	N/A	2.2E-08	N/A
	Iron	N	2.5E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	9.1E-05	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.0E-04	1.4E-01	N/A	4.5E-08	N/A	2.9E-08	N/A
	Silver	N	1.0E-07	5.0E-03	N/A	6.3E-10	N/A	4.1E-10	N/A
	Vanadium	N	3.4E-06	7.0E-03	N/A	1.5E-08	N/A	9.9E-09	N/A
	Zinc	N	3.4E-04	3.0E-01	N/A	3.6E-08	N/A	2.3E-08	N/A
	1,2-Dichloroethene (total)	N	1.1E-06	2.0E-02	N/A	1.7E-09	N/A	1.1E-09	N/A
	Acetone	N	2.3E-05	1.0E-01	N/A	7.3E-09	N/A	4.7E-09	N/A
	Toluene	N	4.1E-07	2.0E-01	N/A	6.5E-11	N/A	4.2E-11	N/A

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Risk = CDI \times SF_{oral}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_{sw} = Exposure point concentration in surface water (mg/L).
IR_{sw} = Incidental ingestion rate for sediment (L/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
Irsw = 0.01 L/day exposure to surface water during wading for adolescents and adults.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).

Table 11-1-56
Wetland 5B Phase II
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	N/A	N/A	2.1E+03	=	UG/L	041W5B0201	1 / 1	NAV	2.1E+03	2.1E-03	1.0E-03	5.36E-06	8.48E-05	1.13E-04
7440393	Barium	N	N/A	N/A	2.8E+01	J	UG/L	041W5B0201	1 / 1	NAV	2.8E+01	2.8E-05	1.0E-03	7.23E-08	1.14E-06	1.53E-06
7440439	Cadmium	N	N/A	N/A	1.9E+01	=	UG/L	041W5B0201	1 / 1	NAV	1.9E+01	1.9E-05	1.0E-03	4.94E-08	7.82E-07	1.05E-06
7440473	Chromium	N	N/A	N/A	4.1E+01	J	UG/L	041W5B0201	1 / 1	NAV	4.1E+01	4.1E-05	1.0E-03	1.06E-07	1.68E-06	2.25E-06
7440484	Cobalt	C	N/A	N/A	3.9E+00	J	UG/L	041W5B0201	1 / 1	NAV	3.9E+00	3.9E-06	1.2E-03	1.22E-08	2.75E-08	9.20E-08
7440508	Copper	N	N/A	N/A	5.3E+01	=	UG/L	041W5B0201	1 / 1	NAV	5.3E+01	5.3E-05	1.0E-03	1.37E-07	2.17E-06	2.90E-06
7439896	Iron	N	N/A	N/A	2.9E+03	=	UG/L	041W5B0201	1 / 1	NAV	2.9E+03	2.9E-03	2.5E-04	1.88E-06	2.97E-05	3.98E-05
7439921	Lead	N	N/A	N/A	9.4E+01	=	UG/L	041W5B0201	1 / 1	NAV	9.4E+01	9.4E-05	3.4E-04	8.32E-08	1.32E-06	1.76E-06
7439965	Manganese	N	N/A	N/A	1.1E+02	=	UG/L	041W5B0201	1 / 1	NAV	1.1E+02	1.1E-04	1.0E-03	2.83E-07	4.49E-06	6.00E-06
7487947	Mercury	N	N/A	N/A	1.4E-01	J	UG/L	041W5B0201	1 / 1	NAV	1.4E-01	1.4E-07	1.0E-03	3.64E-10	5.76E-09	7.70E-09
7440622	Vanadium	N	N/A	N/A	5.2E+00	J	UG/L	041W5B0201	1 / 1	NAV	5.2E+00	5.2E-06	1.0E-03	1.35E-08	2.14E-07	2.86E-07
7440666	Zinc	N	N/A	N/A	1.9E+02	=	UG/L	041W5B0201	1 / 1	NAV	1.9E+02	1.9E-04	6.0E-04	2.95E-07	4.67E-06	6.24E-06
95578	2-Chlorophenol	N	N/A	N/A	1.0E+00	J	UG/L	041W5B0201	1 / 1	NAV	1.0E+00	1.0E-06	8.0E-03	2.98E-08	4.71E-07	6.30E-07
59507	4-Chloro-3-methylphenol	N	N/A	N/A	1.0E+00	J	UG/L	041W5B0201	1 / 1	NAV	1.0E+00	1.0E-06	2.9E-02	1.11E-07	1.76E-06	2.35E-06
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	N/A	N/A	2.0E+00	J	UG/L	041W5B0201	1 / 1	NAV	2.0E+00	2.0E-06	2.5E-02	1.68E-06	3.79E-06	1.27E-05
621647	N-Nitroso-di-n-propylamine	C	N/A	N/A	1.0E+00	J	UG/L	041W5B0201	1 / 1	NAV	1.0E+00	1.0E-06	2.3E-03	8.60E-09	1.95E-08	6.50E-08
129000	Pyrene	N	N/A	N/A	2.0E+00	=	UG/L	041W5B0201	1 / 1	NAV	2.0E+00	2.0E-06	3.2E-01	3.71E-06	5.88E-05	7.86E-05
75343	1,1-Dichloroethane	N	N/A	N/A	3.0E+00	=	UG/L	041W5B0201	1 / 1	NAV	3.0E+00	3.0E-06	6.7E-03	6.66E-08	1.05E-06	1.41E-06
67641	Acetone	N	N/A	N/A	8.0E+00	J	UG/L	041W5B0201	1 / 1	NAV	8.0E+00	8.0E-06	5.7E-04	1.49E-08	2.37E-07	3.16E-07
79016	Trichloroethene	C	N/A	N/A	1.0E+01	=	UG/L	041W5B0201	1 / 1	NAV	1.0E+01	1.0E-05	1.2E-02	4.37E-07	9.87E-07	3.30E-06
75014	Vinyl chloride	C	N/A	N/A	6.0E+00	=	UG/L	041W5B0201	1 / 1	NAV	6.0E+00	6.0E-06	5.6E-03	1.03E-07	2.34E-07	7.82E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1 + B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1 + B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound,
calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-1-57
Wetland 5B Phase II
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser		Maintenance Worker	
										Dermal Hazard Quotient	Dermal Cancer Risk	Dermal Hazard Quotient	Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	2.1E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	8.5E-04	N/A	1.1E-03	N/A
	Barium	N	2.8E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	2.3E-04	N/A	3.1E-04	N/A
	Cadmium	N	1.9E-05	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	6.3E-02	N/A	8.4E-02	N/A
	Chromium	N	4.1E-05	3.0E-03	N/A	2.5E-02	1	7.5E-05	N/A	2.2E-02	N/A	3.0E-02	N/A
	Cobalt	C	3.9E-06	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.7E-06	N/A	5.7E-06	N/A
	Copper	N	5.3E-05	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	1.8E-04	N/A	2.4E-04	N/A
	Iron	N	2.9E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	9.4E-05	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-04	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	8.0E-04	N/A	1.1E-03	N/A
	Mercury	N	1.4E-07	3.0E-04	N/A	7.0E-02	1	2.1E-05	N/A	2.7E-04	N/A	3.7E-04	N/A
	Vanadium	N	5.2E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	1.2E-03	N/A	1.6E-03	N/A
	Zinc	N	1.9E-04	3.0E-01	N/A	2.0E-01	2, 4	6.0E-02	N/A	7.8E-05	N/A	1.0E-04	N/A
	2-Chlorophenol	N	1.0E-06	5.0E-03	N/A	5.0E-01	3	2.5E-03	N/A	1.9E-04	N/A	2.5E-04	N/A
	4-Chloro-3-methylphenol	N	1.0E-06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	2.0E-06	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	1.9E-03	N/A	6.3E-03	N/A
	N-Nitroso-di-n-propylamine	C	1.0E-06	N/A	7.0E+00	2.5E-01	3	N/A	2.8E+01	N/A	5.4E-07	N/A	**1.8E-06**
	Pyrene	N	2.0E-06	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	**5.7E-06**	N/A	**7.6E-06**
	1,1-Dichloroethane	N	3.0E-06	1.0E-01	N/A	1.0E+00	3	1.0E-01	N/A	1.1E-05	N/A	1.4E-05	N/A
	Acetone	N	8.0E-06	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	2.4E-05	N/A	3.2E-05	N/A
	Trichloroethene	C	1.0E-05	3.0E-04	4.0E-01	8.0E-01	3	2.4E-04	5.0E-01	4.1E-03	4.9E-07	1.4E-02	**1.7E-06**
	Vinyl chloride	C	6.0E-06	3.0E-03	7.5E-01	1.0E+00	3	3.0E-03	7.5E-01	7.8E-05	1.8E-07	2.6E-04	5.9E-07

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-1-58
Wetland 5B Phase II
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser: Ingestion Hazard Quotient	Child Trespasser: Ingestion Cancer Risk	Maintenance Worker: Ingestion Hazard Quotient	Maintenance Worker: Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	2.1E-03	1.0E+00	N/A	6.5E-08	N/A	4.2E-08	N/A
	Barium	N	2.8E-05	7.0E-02	N/A	1.3E-08	N/A	8.1E-09	N/A
	Cadmium	N	1.9E-05	5.0E-04	N/A	1.2E-06	N/A	7.7E-07	N/A
	Chromium	N	4.1E-05	3.0E-03	N/A	4.3E-07	N/A	2.8E-07	N/A
	Cobalt	C	3.9E-06	2.0E-02	N/A	8.8E-10	N/A	1.4E-09	N/A
	Copper	N	5.3E-05	4.0E-02	N/A	4.2E-08	N/A	2.7E-08	N/A
	Iron	N	2.9E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	9.4E-05	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-04	1.4E-01	N/A	2.5E-08	N/A	1.6E-08	N/A
	Mercury	N	1.4E-07	3.0E-04	N/A	1.5E-08	N/A	9.5E-09	N/A
	Vanadium	N	5.2E-06	7.0E-03	N/A	2.4E-08	N/A	1.5E-08	N/A
	Zinc	N	1.9E-04	3.0E-01	N/A	2.0E-08	N/A	1.3E-08	N/A
	2-Chlorophenol	N	1.0E-06	5.0E-03	N/A	6.3E-09	N/A	4.1E-09	N/A
	4-Chloro-3-methylphenol	N	1.0E-06	N/A	N/A	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	2.0E-06	2.0E-02	1.4E-02	4.5E-10	1.3E-13	7.3E-10	2.0E-13
	N-Nitroso-di-n-propylamine	C	1.0E-06	N/A	7.0E+00	N/A	3.2E-11	N/A	5.1E-11
	Pyrene	N	2.0E-06	N/A	3.0E-02	N/A	1.9E-12	N/A	1.2E-12
	1,1-Dichloroethane	N	3.0E-06	1.0E-01	N/A	9.5E-10	N/A	6.1E-10	N/A
	Acetone	N	8.0E-06	1.0E-01	N/A	2.5E-09	N/A	1.6E-09	N/A
	Trichloroethene	C	1.0E-05	3.0E-04	4.0E-01	1.5E-07	1.8E-11	2.4E-07	2.9E-11
	Vinyl chloride	C	6.0E-06	3.0E-03	7.5E-01	9.0E-09	2.0E-11	1.5E-08	3.3E-11

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Risk = CDI \times SF_{oral}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

= Oral reference dose.
= Oral slope factor.

Table 11-1-58
Wetland 5B Phase II
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Where:

CDI	=	Chronic daily intake (mg/kg-day).
EPC_{sw}	=	Exposure point concentration in surface water (mg/L).
IR_{sw}	=	Incidental ingestion rate for sediment (L/day).
EF	=	Exposure frequency (days/year).
ED	=	Exposure duration (years).
BW	=	Body weight (kg) 70 kg (adult) 45 kg (child).
AT	=	Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr. carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:

Irsw	=	0.01 L/day exposure to surface water during wading for adolescents and adults.
EF	=	52 dys/yr (child trespasser/adult maintenance worker).
ED	=	10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW	=	45 kg (child trespasser); 70 kg (adult maintenance worker).
AT	=	Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker). Cancer - 25,550 days (child trespasser/adult maintenance worker).

11.2 Wetland 6 — Screening Level Problem Formulation

11.2.1 Site Description and Habitats Present in Wetland 6

Wetland 6 is tile lined drainage ditch that originating at the parade grounds north of the NAS Chapel and draining to the north into the Navy Yacht Basin. It receives surface water from Wetland 5 and the area associated with the former Chevalier Field area (now NATTC). Parsons and Pruitt describe Wetland 6 as a palustrine wetland with open water. This tile lined drainage ditch is fed by several surface water runoff sources and Wetland 5B. Wetland 5B feeds Wetland 6 from the west. Wetland 6 flows north past the former Chevalier Field area (now NATTC) into the Yacht Basin. This wetland is bound by mowed grass, buildings, or isolated areas of highly disturbed vegetation. The ditch portion of Wetland 6 is no deeper than about 3 feet and has a maximum width of about 3 to 5 feet. Sediment in Wetland 6 ranges from a brown poorly graded fine sand with a TOC of 0.121% (041M060401) to a dark yellow brown poorly graded sand with silt and organics and a TOC of 4.03% (041M060701).

Photograph 1 Wetland 6 — After Wetland 5 Enters

Photograph 2 Wetland 6 — Facing South

Wetland 6 is near OU 2 Sites 12 and 30, OU 6 (Sites 9, 29, and 34), and Sites 10 and 36. All of these sites are adjacent or near to this wetland. Wetland 6 eventually drains into the Yacht Basin, Wetland 64 complex and is tidally influenced along its entire length.

Site 9 (Navy Yard Disposal Site) was used as the station disposal site for the old Navy yard. The earliest existing records indicate this disposal site was used in from 1917 to the early 1930s and was used primarily to dispose of ordinary domestic trash and refuse. Contaminants detected in the soil include SVOCs and pesticides (E/A&H, 1997f). The SVOCs may be associated with Site 23, a UST site. Pesticides are believed to represent normal application residue through base wide applications.

Site 10, Commodore's Pond, was used in the mid-1800s for underwater storage of wooden timbers for shipbuilding. There is no evidence of hazardous material use, storage, or disposal at this site.

Site 12 (Scrap Bins) was the location where wet garbage was deposited in receptacles from the early 1930s through the 1940s. Garbage was reportedly stored here, although it is possible that hazardous waste or PCB-containing oil was also stored. Site 12 is approximately 600 feet west of Site 11. Most of the site is enclosed by a fence and paved with concrete.

Site 29 (Soil South of Building 3460) is the location where in 1981 several evacuation workers received minor skin burns from contact with a liquid in soil south of Building 3460. The chemical was never identified.

Site 30 (Buildings 648, 649, and 755) was active from the 1940s through the 1970s as the NADEP Dynamic Components Division. Historical accounts note the periodic discharge of metal plating complex effluents into Wetland 5.

Site 34 is identified as the location of a solvent spill that occurred north of Building 3557.

Site 36 (IWTP Sewer Line) was investigated in conjunction with sites for OU 2. The wastewater treatment plant, originally built in 1948, was replaced in 1971 with a modern plant that could accept industrial wastes. Most facilities discharging to the sewer did so without any pretreatment or waste segregation. The waste stream has included paint strippers, heavy metals, pesticides, radioactive wastes, fuels, cyanide waste, and waste oil (NEESA, 1983). Beginning in 1973, the Naval Air Rework Facility operations discharged to the sewer instead of to Pensacola Bay. The IWTP sewer line consisted of vitreous clay and cast-iron piping installed both before and after 1971. OU 2 investigated portions of the IWTP sewer line from the Building 649 complex to the wastewater treatment plant.

The Chevalier Field Pipe Leak Area was divided into three sub-sites (UST Sites 5, 6, and 7) corresponding to the USTs 116, 119, and 122, for the purpose of the closure and preliminary contamination assessment. Site 5 is located on the west-central side of Chevalier Field at the former location of a 500-gallon underground storage tank (UST 116), associated with the aviation gasoline (AVGAS) pipeline. Site 6 is located on the southwestern boundary of Chevalier Field at the former location of UST 119 (500-gallon tank), associated with the AVGAS pipeline. Site 7 is located on the western boundary of Chevalier Field at the former location of UST 122 (500-gallon tank), associated with the AVGAS pipeline. The three USTs were removed from Site 23 by Phoenix Construction Company and GT Environmental Services Inc. (GTES) in 1994. All excavated soils were returned to the excavation. The UST sites were subsequently transferred to ABB Environmental Services, Inc. (ABB-ES) for closure and preliminary contamination assessment.

11.2.2 Wetland 6 — Sample Location Description

Phase II Sediment Sample Location Description

Twelve sediment samples were collected and analyzed for the Wetland 6 ERA. Sample locations for Wetland 6 were located throughout the length of the wetland, as shown on Figure 11-4.

Sample location 010M0001 was collected in 1994 during the Site 10 investigation. The remaining 11 samples were collected in 1995 during the Site 41 investigation. The 1994 and 1995 data were combined for use in the Site 41 RI. Sampling locations 041M0601 through 041M0603 are located south of the point Murray Road intersects Wetland 6. Sampling locations 041M0604 through 041M0611 are located at approximate 300-foot intervals moving north towards Wetland 64. Sample location 010M0001 is bounded by sample locations 041M0604 and 041M0605. Sample location 041M0607 is located where Wetland 5B enters Wetland 6 (Figure 11-4).

Table 11-2-1 (tables are located at the end of each section) describes the sediments collected at Wetland 6. No physical parameter data were collected for sampling location 010M0001 in 1994. Fine and medium sands made up the majority of samples collected from the 11 sampling stations with most of the sands being fine grained. Ranges among the samples were from 39% fine sand to 74%. TOC levels for stations ranged from 0.121% at sampling location 041M0604 to 4.03% at sampling location 041M0607.

Phase II Surface Water Sample Location Description

Three surface water samples were collected at Wetland 6, locations 041W0603, 041W0607, and 041W0610 (Figure 11-4), and were collocated with sediment locations. The surface water samples were collected during the 1995 Site 41 investigation. Hardness at sample 041W0603 was 53.5 mg/L, 75.9 mg/L at sample location 041W0607, and 57.8 mg/L at sample 041W0610. None of these stations were analyzed for pH, specific conductivity, or turbidity.

Phase IV Surface Water Sample Location Description

As shown in Figure 11-4, one surface water sample, location 041W0610, was collected in Phase IV/2004 for VOC and metals analysis. The Wetland 6 Phase IV surface water sample was not analyzed for physical parameters.

11.2.3 Nature and Extent of Contamination

Phase II Sediment

Figure 11-4 presents the Phase II sediment sampling locations for Wetland 6. Table 11-2-2 presents a summary of the analytical results of the sediment samples.

Metals — Twenty-three metals were detected during Phase II sediment sampling at Wetland 6. The greatest number of exceedances and generally the highest concentrations detected were at location 041M060701, where 21 analytes were detected, and six were present above the freshwater reference values. In addition, locations 010M000101, 041M060101, 041M060301, and

041M060601 exhibited detections exceeding reference values. Parameters with detections exceeding freshwater reference values at Wetland 6 were barium, cadmium, chromium, cobalt, copper, lead, and zinc.

Pesticides and PCBs — Twelve pesticide compounds and PCBs, aroclor-1254 and aroclor-1260, were detected during Phase II sediment sampling at Wetland 6. Total DDT was calculated for each location by adding the concentrations of 4,4′-DDD, 4,4′-DDE, and 4,4′-DDT. Likewise, a basewide total DDT reference concentration was calculated using the basewide concentrations for these same constituents.

The greatest numbers of pesticides detected in Wetland 6 sediments during Phase II sampling were at locations 041M060201, 041M060301, 041M060701, and 041M060801, with eight to ten detections each. Reference values were exceeded at 041M060101 for 4,4′-DDE and 4,4′-DDT and at location 041M060301 for 4,4′-DDT. These two locations also exceeded the basewide reference value for total DDT. The PCBs were detected at locations 041M060201, 041M060601, 04M061001, and 041M061101 at low concentrations.

SVOCs — Fifteen SVOCs were detected in sediment samples collected during Phase II sampling at Wetland 6. Sample locations 041M060101, 041M060201, and 041M060401 exhibited 12, 11, and eight SVOC detections, respectively. The highest concentrations were generally found at location 041M060201.

VOCs — Nine VOCs were detected in sediments collected from Wetland 6 during Phase II sampling. Location 041M060901 exhibited the most detections with nine VOC detections. Other locations with detections include 041M060201, 041M060301, 041M060501, 041M060601, 041M060701, 041M060801, 041M061001, and 041M061101.

Phase II Surface Water

Figure 11-4 presents the Phase II surface sampling locations for Wetland 6. Table 11-2-3 summarizes the analytical results of the three Phase II surface water samples.

Metals — Twelve metals and cyanide were detected in Phase II surface water samples taken from Wetland 6. Location 041W060301 had seven detections, two of which exceeded their reference concentrations. Location 041W060701 exhibited 11 detections, three of which exceeded reference concentrations. Location 041W061001 exhibited detections for 10 metals and cyanide. Four of these metals exceeded reference concentrations, as well as cyanide, which was a

slight exceedance. The inorganic analytes detected at concentrations exceeding the freshwater reference values were barium, calcium, cyanide, manganese, and mercury.

Pesticides and PCBs — No pesticides or PCBs were detected during Phase II surface water sampling at Wetland 6.

SVOCs — Only one SVOC, bis(2-ethylhexyl)phthalate, was detected during Phase II sampling at location 041W061001.

VOCs — VOCs were detected at two sampling locations, 041W060701 and 041W061001. Location 041W060701 exhibited a single detection of methylene chloride. Location 041W061001 exhibited detections of the following parameters: 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, and trichloroethene.

Phase IV Surface Water

The Phase IV/2004 surface water sampling at Wetland 6 was implemented to confirm the previous Phase II results at location 041W061002. Table 11-2-4 summarizes the surface water sample results.

Metals — Eighteen metals were detected in the Phase IV surface water sample. When compared to the Phase II results, the Phase IV results illustrated a greater diversity of analytes and a greater number of reference value exceedances. The problematic analytes identified by Phase IV data were aluminum, arsenic, barium, calcium, chromium, copper, iron, lead, manganese, selenium, and zinc. Each of these exceeded its reference concentration.

Pesticides and PCBs — No pesticides or PCBs were detected during the Phase IV sampling efforts.

SVOCs — No SVOCs were detected in the Phase IV surface water sampling at Wetland 6.

VOCs — Five VOCs, (1,1-dichloroethane, 1,1-dichloroethene, chlorobenzene, cis-1,2-dichloroethene, and trichloroethene) were detected in Phase IV surface water sample collected from location 041W061002. VOCs detected during the Phase IV sampling were generally lower, with the exception of cis-1,2-dichloroethene. Chlorobenzene, not detected during Phase II, was reported in this more recent sampling event.

11.2.4 Ecological Risk Assessment

11.2.4.1 Phase II Investigation Summary — Wetland 6

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-2-5, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-2-6.

Baseline Problem Formulation — Wetland 6 Sediment COPC Refinement

During the COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs. This risk assessment presents a statement of potential risk for each of the COPCs.
The COPC refinement process included:

- Comparison of maximum concentrations to RVs
- Comparison of average concentrations to SVs and RVs
- Comparison to basewide (reference) concentrations for DDT
- Comparison of inorganic constituents to reference wetland values
- Interpretive tool for metals
- Di Toro EqP SQGs for VOCs
- Comparison to Swartz consensus values
- Mean ERM quotients
- Description of exceedances of RVs and their extent

The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-2-7. COPCs retained after refinement are presented in Table 11-2-8. Additionally, the table compares: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 6 concentrations to reference concentrations.

As showing in Figure 11-5, total DDT and 4,4′-DDT were above the basewide level. Total DDT was retained as a COPC for this wetland and was included as a COPC in the OU-wide food chain models. For Wetland 6, barium, cadmium, chromium, cobalt, copper, lead, and zinc exceeded their Site 41 freshwater sediment reference concentrations. Barium, cadmium, copper, chromium, lead, and zinc concentrations did appear enriched, when normalized to aluminum and iron concentrations using FDEP's interpretative tool (Appendix L).

Several organic constituents were detected and retained due to HQs greater than one or no appropriate screening values. Five pesticides were retained: aldrin, dieldrin, heptachlor, total endrin, and total BHC. Four SVOCs, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene, were retained as COPCs. Nine VOCs were detected and retained for refinement due to lack of screening values. When normalized to detected TOC concentrations, both VOCs (Appendix L) and PAHs do not appear to be risk drivers for Wetland 6. Normalized PAHs are shown on Figure 11-6. 1,1-Dichloroethane and chloroethane were not addressed by this method and were therefore carried forward as COPCs.

Table 11-2-9 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Based on this approach, eight sample locations (010M0001, 041M0601 through 041M0606, and 041M0608) were determined to be Category 2, which, according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this Category also has the highest level of uncertainty. Sample location 041M0607 was determined to be Category 3, which is the category that includes the studies where about 50% of samples were found to be toxic and average survival was about 60-70%. Sampling locations 041M0609 through 041M0611 were determined to be Category 1, indicating these sediments are considered nontoxic. Figure 11-7 shows the Mean ERM category for each sediment sample location at Wetland 6.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-2-10, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-2-11.

Baseline Problem Formulation — Wetland 6 Surface Water COPC Refinement

During the surface water COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs.

The COPC refinement process included:

- Comparison of maximum SV concentrations to average SV concentrations
- Comparison of inorganic constituents to reference wetland values
- Description of surface water exceedances and their extent

The methods used in the COPC refinement in the Site 41 ERA Process are detailed in Section 8.

Comparison of maximum detected concentrations with refinement values is presented in Table 11-2-12. COPCs retained after refinement are presented in Table 11-2-13. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

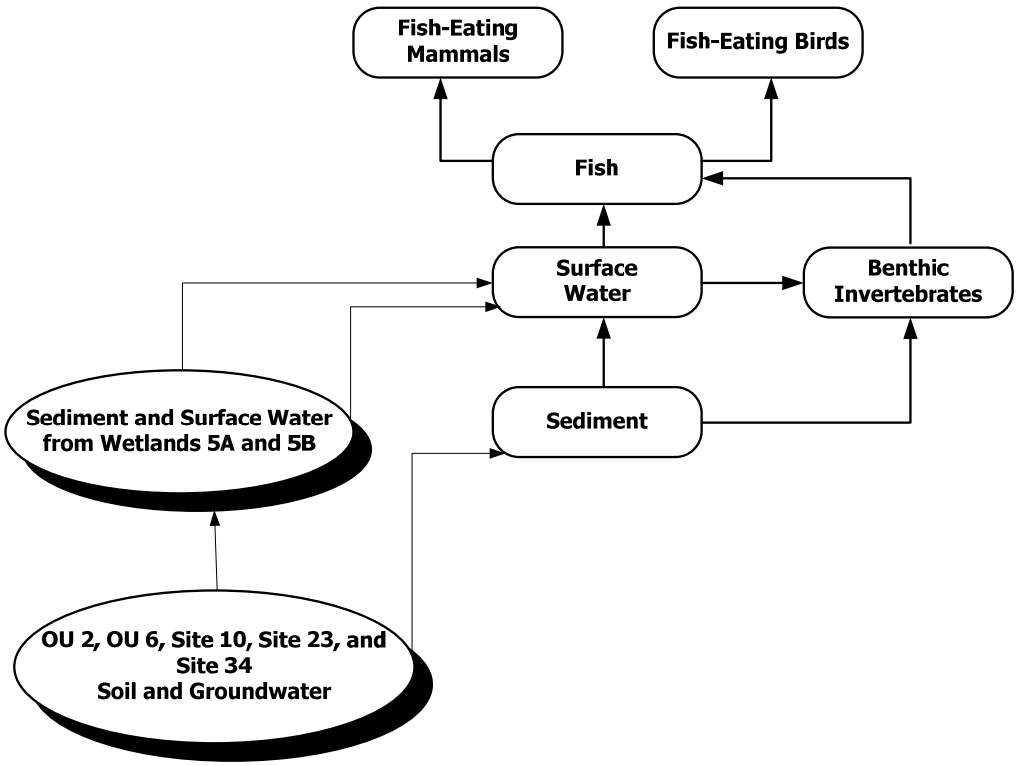
For Wetland 6, barium, calcium, cyanide, manganese, and mercury exceeded their Site 41 freshwater reference surface water concentrations (Table 11-2-12) and were therefore retained as COPCs for Wetland 6 surface water. The majority of the exceedances above were detected at sample location 041W061001.

One SVOC (BEHP) and three VOCs (1,1-dichloroethane, cis-1,2-dichloroethene, and trichloroethene) were detected at surface water sample 041W061001. These constituents were retained for further consideration due to the site proximity to OU 1 and the lack of a screening value for comparison.

During the Wetland 6 Phase II investigation, the following constituents were detected in sediment and surface water samples: barium and 1,1-dichloroethane. Barium was detected at sample location 041M0610/041W0610; however, 1,1-dichloroethane was detected at sediment sample location 041M0609 and surface water location 041W0610.

The conceptual model below symbolizes which environmental habitats may be impacted by Wetland 6 Phase II constituents retained during the ERA Process. Based on the Phase II findings, Wetland 6 was identified as an Orange-Coded Wetland, indicating contaminants were detected and may be related to nearby IR sites.

Wetland 6
Conceptual Site Model



11.2.4.2 Phase IV Investigation Summary

Additional investigation was determined to be necessary based on the Phase II results. As detailed in *Final RI/FS SAP Addendum* (E/A&H, 1997d), an additional surface water sample (041W061002) was collected within Wetland 6, where COPC concentrations were high.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-2-14, the surface water sample was compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-2-15.

Baseline Problem Formulation — Phase IV Surface Water COPC Refinement

The same approach used to refine Wetland 6 Phase II surface water was applied to the Phase IV Wetland 6 surface water sample.

The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 11-2-16. COPCs retained after refinement are presented in Table 11-2-17. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 6 concentrations to reference concentrations.

In Wetland 6, aluminum, barium, calcium, chromium, copper, iron, lead, manganese, selenium, and zinc exceeded their freshwater reference concentrations (Table 11-2-16) and were therefore retained as COPCs. Three VOCs were detected and retained as COPCs due to no appropriate screening values: 1,1-dichloroethane, cis-1,2-dichloroethene, and trichloroethene. These constituents were also detected during the Phase II surface water sampling.

11.2.4.3 Comparison of Phase II and IV Surface Water Results

Both the Phase II and IV results indicate that inorganic constituents and VOCs were the greatest concern in Wetland 6. Concentrations increased among constituents common between the two phase, with the exception of 1,1-dichloroethane, which decreased during this time period.

The differences between the Phase II and Phase IV sampling efforts are presented below.

Surface Water

Constituent	Phase II	Phase IV	Difference
Metals µg/L			
Barium	30.5	46	+15.5 increase
Calcium	24,700	30,000	+5,300 increase
Manganese	55.7	110	+54.3 increase
Organics µg/L			
1,1-Dichloroethane	5	0.8	-4.2 drop
Cis-1,2-Dichloroethene	2	5.1	+3.1 increase
Trichloroethene	1	1.3	+0.3 increase

Note:
µg/L = Micrograms per Liter

11.2.5 Wetland 6 — Human Health Risk Assessment

Wetland 6 is described in Section 11.2.1, and the HHRA is summarized below.

11.2.5.1 Site Data

Surface water and sediment data were collected at Wetland 6 during Phase II and IV of the RI. Section 11.2.3 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data are summarized in Tables 11-2-2 and 11-2-3 (Phase II data) and Table 11-2-4 (Phase IV).

11.2.5.2 Conceptual Site Model

As described in Section 11.2.1, Wetland 6 is an estuarine, tile-lined drainage ditch that is fed by several surface water runoff sources, including Wetland 5B, flowing north into the Yacht Basin. This wetland is surrounded by mowed grass, buildings, or isolated areas of highly disturbed vegetation. Wetland 6 is accessible to both trespassers and Navy personnel.

The wetland is continually inundated. Therefore, in accordance with USEPA Region IV Supplemental Guidance to RAGS Bulletins (USEPA Region 4, 2000) described in Section 9, sediment exposure was not assessed in this HHRA, because it is assumed to be an insignificant exposure pathway. Based on the species present, depth of surface water, and available habitat, fishing would not likely occur, and contact with surface water while wading would be the only likely exposure scenario.

The following scenarios and exposure pathways were evaluated for this wetland:

Scenario	Medium	Ingestion	Dermal
Maintenance	Surface water	√	√
Trespasser	Surface water	√	√

11.2.5.3 Risk Characterization

The child trespasser and adult maintenance worker scenarios were assessed for surface water for this wetland as described in Section 9.

Phase II Data

Trespasser

As shown in Tables 11-2-18 through 11-2-20, surface water ingestion and dermal contact risk estimates for trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-2-18 through 11-2-20, surface water ingestion risk estimates for maintenance workers exceeded the FDEP risk threshold of 1E-6 for BEHP. Dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 6 Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	1.6E-02	2.9E-06
Trespasser	Surface water	6.7E-03	8.7E-07

Based on Phase II data, BEHP was identified as a COC for Wetland 6.

Phase IV Data

Trespasser

As shown in Tables 11-2-21 through 11-2-23, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-2-21 through 11-2-23, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 6 Phase IV Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	4.9E-02	2.1E-07
Trespasser	Surface water	3.6E-02	6.4E-08

No COCs were identified for Wetland 6 based on the Phase IV data.

Wetland 6 HHRA COC Summary

The following parameter was determined in the HHRA to be a COC for Wetland 6:

- BEHP

11.2.6 Wetland 6 — Fate and Transport Analysis

This wetland is channelized from its headwaters through its exit to the Wetland 7/64 complex, drains the eastern side of OU 2 and IR Site 10, and flows from south to north. It is intersected on the west by Wetland 5B, approximately halfway down its defined span, and discharges on its northern end into the Wetland 7/64 complex (see Figure 11-1). It also receives storm water drainage from the east through a series of drainage ditches, from what is now the NTTC training complex (and originally was Chevalier Field, which hosted IR sites 9, 27, and 34).

Eight sediment samples and one surface water sample were collected from this wetland prior to its confluence with Wetland 5B, and five sediment and two surface water samples were collected prior to its flow point into the Wetland 7/64 complex. This wetland has been documented to be tidally influenced, but flow reversal due to normal tidal flux has not been documented. Because this wetland spans a large distance and is large scale, long term flow reversals have not been documented.

Based on site topography and groundwater flow (Figures 11-2 and 11-3), it is expected that only certain areas of soil and groundwater discharge will affect certain portions of the wetland; similarly, only the span downgradient of their confluence is expected to be affected by direct inflow from Wetland 5B. Therefore, this fate and transport evaluation was segmented into two parts: a lower span (upgradient of the Wetland 5B confluence) and an upper span (downgradient of the Wetland 5B confluence). The influence of soil and groundwater influx on the lower span was evaluated using a set of borings/wells proximal to it alone; the upper span was evaluated using these and another set located downgradient of the 5B/6 confluence.

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Tables 11-2-8 (sediment, Phase II), 11-2-13 (surface water, Phase II) and 11-2-17 (surface water, Phase IV). Provided below are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis.

Associated Monitoring Wells for Wetland 6:

Lower Span — 009G0008, 009GGM30, 036GGR37, 009G0003, 036GGR22, 009G0002, 009G0001, 009GGR02, 010GS04, 010GS05, 0101GGM06, 010GS03, 010GGS02

Upper Span — 030GS154, 030GS108, 030GS105, 030GI014, 011GS013, 011GS52, 030GS123, 030GS113, 030GiI113, 030GS156, 030GS157, 030GS160, 0303GS161, 030GS146, 030GS162, 030GS166, 030GS165, 030GS164, 030GI164

Associated Borings for Wetland 6:

Lower Span — 009S0008, 009S0019, 036S3700, 09S0003, 009S0017, 009S0024, 009S0016, 036S0022, 009S0002, 009S0031, 009S0030, 009S0014, 009S0015, 009S0001, 010S0004, 010S0005, 010S0003, 010S0002, 030S0121, 030S0120, 030S0122

Upper Span — 030S0123, 030S0112, 030S0113, 030S0110, 030S0109, 030S0153, 030S0154, 030S0154, 030S0108, 030S0106, 030S105, 1030S0104

Surface Water/Sediment Transport into the Wetlands:

Surface Water — Although there is significant storm water drainage into this wetland, there is no directly comparable storm water data from the area proximal to this wetland complex. Because of the lack of data, no definitive statement can be made regarding the validation of the pathway via storm water runoff into the wetland complex. The vast majority of surface drainage to this wetland is from the eastern side of OU 2 (including Sites 30, 27, and 25), direct drainage from Wetland 5A, and storm water inflow from the former Chevalier Field area.

Sediment (Lower Span) — Based on the data from surface soil proximal to this wetland complex, this storm water to wetland sediment pathway is validated for the following parameters:

Phase II
Barium
Cadmium
Cobalt
Lead
Dieldrin

Sediment (Upper Span) — Based on the data from surface soil proximal to this wetland complex, this storm water to wetland sediment pathway is validated for the following parameters:

Phase II
Barium
Cadmium
Cobalt
Lead
Dieldrin
Heptachlor

Groundwater Discharge into the Wetland Media:

Surface Water (Lower Span) — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway is validated and significant for the following parameters (**note:** the metals data from the 1993 sampling is not used due to potential bias introduced by the sampling methodology):

Phase II
Barium
Cyanide
Manganese
Bis(2-Ethylhexyl)phthalate (BEHP)

Surface Water (Upper Span) — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway is validated and significant for the following parameters (**note:** the metals data from the 1993 sampling is not used due to potential bias introduced by the sampling methodology):

Phase II
Barium
Cyanide
Manganese
Bis(2-Ethylhexyl)phthalate (BEHP)
1,1-Dichloroethane
Cis-1,2-Dichloroethene
Trichloroethene

Sediment (Lower Span) — Based on the data from associated monitoring wells, the groundwater to wetland sediment pathway is validated and significant for the following parameters (**note:** the metals data from the 1993 sampling is not used due to potential bias introduced by the sampling methodology):

Phase II
Barium
Lead

Sediment (Upper Span) — Based on the data from associated monitoring wells, the groundwater to wetland sediment pathway is validated and significant for the following parameters (**note:** that metals data from the 1993 sampling is not used due to potential bias introduced by the sampling methodology):

Phase II
Barium
Lead
Dieldrin
1,1-Dichloroethane
Acetone
Chloroethane

Surface Water/Sediment Transport within the Wetlands:

To evaluate these pathways in the lower span of Wetland 6, the most upgradient surface water/sediment sample location 041M0603/041W0603 (sampled during Phase II) was compared to downgradient surface water/sediment location 041M0607/041W0607 (sampled during Phase II; first location after the Wetland 6/5B confluence). To evaluate these pathways in the upper span of Wetland 6, upgradient surface water/sediment sample 041M0607/041W0607 was compared to the most downgradient surface water/sediment sample 041M0610/041W0610 (sampled during Phase II). Criteria of note were the number of detected parameters and the apparent trend in concentrations.

Wetland 6

Surface Water (Lower Span) — Evaluation of Wetland 6 locations 041W0603 and 041W0607 indicated an increase in detected parameters (seven metals and zero organics upgradient versus 11 metals and one organic downgradient). Four metals were present downgradient that were not detected upgradient, and of the ones detected at each location, six parameters increased in concentration and one decreased. The only detected organic compound downgradient may be a lab artifact. Increases in inorganic concentrations downgradient were most likely attributable to direct inflow from 5B.

Surface Water (Upper Span) — Evaluation of Wetland 6 locations 041W0607 and 041W0610 indicated a higher number of detections in the downgradient location (11 metals and one organic upgradient versus 11 metals and six organics downgradient). For the metals, there was no apparent trend in concentrations. Two metals were present downgradient that were not detected upgradient; four parameters exhibited a decrease in concentration; and five metals exhibited an increase. For the organics, all six compounds present downgradient were not detected upgradient. The majority of the compounds were VOCs. This increase in organics was attributable to groundwater discharge from the eastern side of OU 2.

Sediment (Lower Span) — Evaluation of Wetland 6 upstream location 041M0603 with downstream location 041M0607 indicated a slightly higher number of detections in the downstream location (19 metals and 11 organics upgradient versus 21 metals and 13 organics downgradient). Inorganic concentrations also trended higher in the downgradient location. Four metals were present downgradient that were not detected upgradient, sixteen metals exhibited an increase in concentration, and one metal exhibited a decrease. For the organics, three compounds were present downgradient that were not detected upgradient. Of the 10 compounds detected at both locations, four constituents exhibited an increase in concentration, four compounds exhibited a decrease, and two compounds remained essentially the same. The bulk of organics in both locations were pesticides (normal surface application of pesticides was practiced along this span of the ditch), although SVOCs were also noted in the downstream location. TOC also exhibited a very large increase in the downgradient location.

The general increase in inorganic detections and concentrations may indicate sediment influx from 5B, entrained sediment within storm water entering from the former Chevalier Field side of the wetland, and/or partitioning from groundwater influx into the wetland. The presence of additional SVOCs in the downstream location infers that storm water runoff plays some role in the increase. Whichever mechanism(s) may be responsible, the increase in TOC concentrations provides a ready substrate for metals absorption.

Sediment (Upper Span) — Evaluation of Wetland 6 upgradient location 041M0607 with downgradient location 041M0610 indicated a marked decrease in parameter detections (21 metals and 13 organics upgradient versus 13 metals and nine organics downgradient). Inorganic concentrations showed a decreasing trend in the downgradient location. All 13 constituents detected in both locations exhibited a decrease. For the organics, three were present downgradient that were not detected upgradient, and of the six detected at both locations, all compounds exhibited a decrease. The bulk of the organics detected were pesticides. TOC also exhibited a significant decrease. The general decrease in both metals and organics together suggests that contamination via sediment transport is not playing a large role in migration. This may be due to the greater adsorptive capabilities of sediment further upgradient that is able to fix the parameters within the sediment, hydrodynamic segregation of contaminated sediment, and/or the lower adsorptive capabilities of sediment in the downstream location.

Table 11-2-1
Wetland 6 Phase II
Sediment Physical Parameters

Parameter	010M000101	041M060101	041M060201	041M060301	041M060401	041M060501	041M060601	041M060701	041M060801	041M060901	041M061001	041M061101
TOC (%)	No Data	0.362	0.378	1.1	0.121	0.204	1.3	4.03	0.148	0.265	0.159	0.137
Percent Solids (%)	No Data	82.7	81.9	70.4	81.6	81.4	51.2	37.6	80.9	73.3	80.9	81.3
Grain Size Analysis (percent of composition[1])												
Fine Gravel	No Data	4	14	0	0	0	1	0	2	0	0	0
Coarse Sand	No Data	4	5	4	0	0	1	7	0	0	0	0
Medium Sand	No Data	35	40	23	25	29	32	25	25	28	24	29
Fine Sand	No Data	55	39	70	74	67	62	64	72	71	74	69
Silt and Clay	No Data	2	2	3	1	4	4	4	1	1	2	2
Description	N/A	Brown Poorly Graded Sand, Fine	Black Silty Sand	Dark Brown Poorly Graded Sand, Fine, with organics	Brown Poorly Graded Sand, Fine	Drak Gray Poorly Graded Sand, Fine, with some Organics	Black Poorly Graded Sand, Medium to Fine, with Organics, shells	Dark Yellow Brown Poorly Graded Sand with Silt, Organics	Pale Yellow Poorly Graded Sand, Medium to Fine	Dark Gray Brown Poorly Graded Sand, Medium to Fine, Organics	Light Yellowish Brown Poorly Graded Sand, Medium	Light Yellowish Brown Poorly Graded Sand, Medium

Note:
1 = Derived from sieve analyses.

Table 11-2-2
Wetland 6 Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	13,610.0	0	12	12	313.0	5,980.0	1,560.0	041M060701
Antimony	4.430	0	2	9	0.160	0.320	0.369	041M060601
Arsenic	6.620	0	9	12	0.140	2.10	0.564	041M060701
Barium	14.0	3	11	12	1.0	37.0	8.840	041M060101
Beryllium	0.840	0	3	12	0.10	0.140	0.058	041M060101
Cadmium	1.80	1	9	12	0.190	5.40	0.793	041M060701
Calcium	10,756.670	0	12	12	62.50	8,370.0	2,150.0	041M060101
Chromium	39.370	1	11	12	0.560	73.50	14.40	041M060701
Cobalt	2.80	1	7	12	0.180	20.70	2.10	010M000101
Copper	19.50	2	11	12	0.970	48.20	12.10	041M060701
Iron	11,911.670	0	12	12	328.0	4,320.0	1,340.0	041M060701
Lead	82.470	1	12	12	6.0	147.0	31.50	041M060701
Magnesium	7,513.330	0	11	12	27.30	1,180.0	356.0	041M060201
Manganese	37.970	0	11	12	1.20	35.20	12.30	041M060701
Mercury	0.550	0	1	12	0.110	0.110	0.034	041M060701
Nickel	9.280	0	7	12	0.840	4.30	1.350	010M000101
Potassium	1,628.670	0	11	12	9.60	161.0	57.10	041M060701
Selenium	3.450	0	1	12	0.850	0.850	0.170	041M060701
Silver	2.10	0	1	12	0.890	0.890	0.220	041M060701
Sodium	18,993.330	0	9	12	4.90	105.0	26.10	041M060301
Thallium	1.570	0	2	12	0.670	0.680	0.215	041M060701
Vanadium	28.670	0	12	12	0.60	11.30	2.830	041M060701
Zinc	36.730	5	11	12	9.70	207.0	50.30	041M060701
PAHs (µg/kg)								
Acenaphthene	N/A	0	1	11	34.0	34.0	42.50	041M060401
Benzo(a)anthracene	N/A	0	3	11	34.0	43.0	67.60	041M060201
Benzo(a)pyrene	N/A	0	4	11	23.0	42.0	67.0	041M060201
Chrysene	N/A	0	4	11	21.0	300.0	68.70	041M060701
Fluoranthene	N/A	0	4	11	42.0	120.0	83.90	041M060201
Phenanthrene	N/A	0	2	11	37.0	51.0	67.10	041M060101
Pyrene	N/A	0	4	11	52.0	100.0	81.80	041M060201
Total PAHs	N/A	0	6	11	242.0	3,540.0	849.0	041M060701
Pesticides and PCBs (µg/kg)								
Aroclor-1254	N/A	0	1	12	9.50	9.50	7.530	041M060201
Aroclor-1260	N/A	0	3	12	0.820	4.10	7.360	041M060601
Total PCBs	N/A	0	4	12	8.070	23.90	56.60	041M060201
Aldrin	N/A	0	5	12	0.230	1.10	0.417	041M060701
Dieldrin	N/A	0	8	12	0.240	10.0	2.530	041M060701
Heptachlor	N/A	0	1	12	0.160	0.160	0.239	041M061001

Table 11-2-2
Wetland 6 Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Pesticides and PCBs (µg/kg) - cont.								
alpha-Chlordane	N/A	0	6	12	0.150	1.70	0.585	041M060301
gamma-Chlordane	N/A	0	6	12	0.190	1.20	0.427	041M060701
Total Chlordane	N/A	0	7	12	0.205	2.70	1.010	041M060701
Endrin	N/A	0	4	12	1.80	3.60	1.10	041M060701
Endrin aldehyde	N/A	0	1	12	0.480	0.480	0.488	041M060801
Total Endrin	N/A	0	4	12	2.385	5.10	2.050	041M060701
alpha-BHC	N/A	0	2	12	0.480	0.60	0.334	041M060801
beta-BHC	N/A	0	3	12	0.160	2.80	0.552	041M060301
Total BHC	N/A	0	4	12	0.740	3.355	1.350	041M060301
4,4'-DDD	50.0	0	12	12	0.210	40.0	12.10	041M060301
4,4'-DDE	40.0	1	11	12	0.230	110.0	19.40	041M060101
4,4'-DDT	20.0	2	11	12	0.220	260.0	29.10	041M060101
Total DDT	110.0	2	12	12	0.60	393.0	60.60	041M060101
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	5	11	27.0	340.0	77.30	041M060701
Benzo(g,h,i)perylene	N/A	0	2	11	29.0	32.0	64.70	041M060101
Benzo(k)fluoranthene	N/A	0	2	11	21.0	24.0	63.20	041M060201
Butylbenzylphthalate	N/A	0	6	11	22.0	30.0	356.0	041M060401
Diethylphthalate	N/A	0	1	11	23.0	23.0	439.0	041M060401
Di-n-butylphthalate	N/A	0	4	11	29.0	99.0	403.0	041M060201
Di-n-octylphthalate	N/A	0	1	11	84.0	84.0	442.0	041M060601
Indeno(1,2,3-cd)pyrene	N/A	0	2	11	27.0	28.0	64.10	041M060101
VOCs (µg/kg)								
1,1,1-Trichloroethane	N/A	0	1	12	4.0	4.0	7.250	041M060901
1,1-Dichloroethane	N/A	0	1	12	9.0	9.0	7.670	041M060901
1,1-Dichloroethene	N/A	0	1	12	8.0	8.0	7.580	041M060901
Acetone	N/A	0	7	11	13.0	4,000.0	490.0	041M060801
Chlorobenzene	N/A	0	1	12	2.0	2.0	7.080	041M060901
Chloroethane	N/A	0	1	12	2.0	2.0	7.080	041M060901
Tetrachloroethene	N/A	0	2	12	2.0	4.0	6.920	041M061101
Toluene	N/A	0	3	12	4.0	14.0	6.670	041M060301
Trichloroethene	N/A	0	3	12	2.0	5.0	5.580	041M060701

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-2-3
Wetland 6 Phase II
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Range of Detections: Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	1,090.25	0	2	3	287.0	406.0	347.0	041W060701
Barium	3.68	3	2	3	15.9	30.5	23.2	041W061001
Calcium	7,675.0	3	3	3	18,300.0	24,700.0	20,700.0	041W060701
Cyanide (CN)	5.0	1	1	3	5.6	5.6	5.6	041W061001
Iron	2,360.0	0	3	3	334.0	870.0	527.0	041W061001
Lead	3.2	0	2	3	1.2	3.1	2.15	041W061001
Magnesium	20,260.0	0	3	3	1,910.0	3,480.0	2,610.0	041W060701
Manganese	13.2	3	3	3	19.5	55.7	36.2	041W061001
Mercury	0.13	1	1	3	0.88	0.88	0.88	041W061001
Potassium	6,995.0	0	3	3	1,520.0	3,050.0	2,160.0	041W060701
Sodium	182,200.0	0	3	3	10,300.0	13,800.0	12,000.0	041W060301
Thallium	4.2	0	1	3	3.3	3.3	3.3	041W060701
Vanadium	4.7	0	2	3	2.1	2.3	2.2	041W060701
SVOCs (µg/L)								
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	1	3	3.0	3.0	3.0	041W061001
VOCs (µg/L)								
1,1,1-Trichloroethane	N/A	0	1	3	5.0	5.0	5.0	041W061001
1,1-Dichloroethane	N/A	0	1	3	5.0	5.0	5.0	041W061001
1,1-Dichloroethene	N/A	0	1	3	8.0	8.0	8.0	041W061001
cis-1,2-Dichloroethene	N/A	0	1	3	2.0	2.0	2.0	041W061001
Methylene chloride	N/A	0	1	3	13.0	13.0	13.0	041W060701
Trichloroethene	N/A	0	1	3	1.0	1.0	1.0	041W061001

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-2-4
Wetland 6 Phase IV
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	1,090.25	1	1	1	1,200.0	1,200.0	1,200.0	041W061002
Arsenic	2.7	1	1	1	5.7	5.7	5.7	041W061002
Barium	3.68	1	1	1	46.0	46.0	46.0	041W061002
Beryllium	1.0	0	1	1	0.34	0.34	0.34	041W061002
Cadmium	3.0	0	1	1	2.5	2.5	2.5	041W061002
Calcium	7,675.0	1	1	1	30,000.0	30,000.0	30,000.0	041W061002
Chromium	8.0	1	1	1	21.0	21.0	21.0	041W061002
Copper	4.0	1	1	1	19.0	19.0	19.0	041W061002
Iron	2,360.0	1	1	1	3,300.0	3,300.0	3,300.0	041W061002
Lead	3.2	1	1	1	40.0	40.0	40.0	041W061002
Magnesium	20,260.0	0	1	1	3,800.0	3,800.0	3,800.0	041W061002
Manganese	13.2	1	1	1	110.0	110.0	110.0	041W061002
Nickel	12.0	0	1	1	2.5	2.5	2.5	041W061002
Potassium	6,995.0	0	1	1	2,400.0	2,400.0	2,400.0	041W061002
Selenium	3.0	1	1	1	6.9	6.9	6.9	041W061002
Sodium	182,200.0	0	1	1	13,000.0	13,000.0	13,000.0	041W061002
Vanadium	4.7	0	1	1	3.4	3.4	3.4	041W061002
Zinc	5.53	1	1	1	78.0	78.0	78.0	041W061002
VOCs (µg/L)								
1,1-Dichloroethane	N/A	0	1	1	0.8	0.8	0.8	041W061002
1,1-Dichloroethene	N/A	0	1	1	0.98	0.98	0.98	041W061002
Chlorobenzene	N/A	0	1	1	11	11	11	041W061002
cis-1,2-Dichloroethene	N/A	0	1	1	5.1	5.1	5.1	041W061002
Trichloroethene	N/A	0	1	1	1.3	1.3	1.3	041W061002

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-2-5
Wetland 6 Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	12	12			313	5,980	041M060701	5,980			N/A		Yes	No SV
Antimony	2	9	0.06	1.9	0.16	0.32	041M060601	0.32	J	12	2	0.03	No	Max Detect < SV
Arsenic	9	12	0.06	0.355	0.14	2.1	041M060701	2.1		7.24	1, 2	0.29	No	Max Detect < SV
Barium	11	12	1.2	1.2	1	37	041M060101	37			N/A		Yes	No SV
Beryllium	3	12	0.03	0.065	0.1	0.14	041M060101	0.14	J		N/A		Yes	No SV
Cadmium	**9**	**12**	**0.09**	**0.325**	**0.19**	**5.4**	**041M060701**	**5.4**		**0.676**	**1**	**7.99**	**Yes**	**Max Detect > SV**
Calcium	12	12			62.5	8,370	041M060101	8,370	J		N/A		Yes	No SV
Chromium	**11**	**12**	**0.9**	**0.9**	**0.56**	**73.5**	**041M060701**	**73.5**		**52.3**	**1, 2**	**1.41**	**Yes**	**Max Detect > SV**
Cobalt	7	12	0.095	0.145	0.18	20.7	010M000101	20.7	J		N/A		Yes	No SV
Copper	**11**	**12**	**1.2**	**1.2**	**0.97**	**48.2**	**041M060701**	**48.2**		**18.7**	**1, 2**	**2.58**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	12	0.06	0.65			ND	0.65	U		N/A		Yes	No SV
Iron	12	12			328	4,320	041M060701	4,320			N/A		Yes	No SV
Lead	**12**	**12**			**6**	**147**	**041M060701**	**147**		**30.2**	**1, 2**	**4.87**	**Yes**	**Max Detect > SV**
Magnesium	11	12	21.3	21.3	27.3	1,180	041M060201	1,180			N/A		Yes	No SV
Manganese	11	12	0.6	0.6	1.2	35.2	041M060701	35.2			N/A		Yes	No SV
Mercury	1	12	0.015	0.04	0.11	0.11	041M060701	0.11	J	0.13	1, 2	0.85	No	Max Detect < SV
Nickel	7	12	0.345	0.395	0.84	4.3	010M000101	4.3		15.9	1, 2	0.27	No	Max Detect < SV
Potassium	11	12	79	79	9.6	161	041M060701	161	J		N/A		Yes	No SV
Selenium	1	12	0.085	0.205	0.85	0.85	041M060701	0.85			N/A		Yes	No SV
Silver	**1**	**12**	**0.115**	**0.44**	**0.89**	**0.89**	**041M060701**	**0.89**	**J**	**0.733**	**1**	**1.21**	**Yes**	**Max Detect > SV**
Sodium	9	12	1.2	5	4.9	105	041M060301	105	J		N/A		Yes	No SV
Thallium	2	12	0.085	0.34	0.67	0.68	041M060701	0.68	J		N/A		Yes	No SV
Vanadium	12	12			0.6	11.3	041M060701	11.3			N/A		Yes	No SV
Zinc	**11**	**12**	**1.9**	**1.9**	**9.7**	**207**	**041M060701**	**207**		**124**	**1, 2**	**1.67**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	11	19.5	295			ND	295	U	20.2	1	14.6	No	Max SQL> SV
Acenaphthene	1	11	9.5	210	34	34	041M060401	34		6.71	1	5.07	No	TOC normalized PAHs<TEC
Acenaphthylene	0	11	19.5	295			ND	295	U	5.87	1	50.3	No	TOC normalized PAHs<TEC
Anthracene	0	11	19.5	295			ND	295	U	46.9	1	6.29	No	Max SQL> SV
Benzo(a)anthracene	3	11	20	295	34	43	041M060201	43		74.8	1	0.58	No	Max Detect < SV
Benzo(a)pyrene	4	11	20	295	23	42	041M060201	42		88.8	1	0.47	No	Max Detect < SV
Chrysene	4	11	20	210	21	300	041M060701	300	J	108	1	2.78	No	TOC normalized PAHs<TEC
Dibenz(a,h)anthracene	0	11	19.5	295			ND	295	UJ	6.22	1	47.4	No	TOC normalized PAHs<TEC
Fluoranthene	4	11	20	295	42	120	041M060201	120		113	1	1.06	No	TOC normalized PAHs<TEC
Fluorene	0	11	9.5	210			ND	210	UJ	21.2	1	9.91	No	Max SQL> SV
Naphthalene	0	11	19.5	295			ND	295	U	34.6	1	8.53	No	Max SQL> SV
Phenanthrene	2	11	20	295	37	51	041M060101	51		86.7	1	0.59	No	Max Detect < SV
Pyrene	4	11	20	295	52	100	041M060201	100		153	1	0.65	No	Max Detect < SV
Total PAHs	6	11	239	2,730	242	3,540	041M060701	3,540		1,684	1, 2	2.1	No	TOC normalized PAHs<TEC
TOC Normalized PAHs	6	11	94.72	2,256.20	30.69	266.94	041M060401	266.94		290	3	0.92	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	12	1	21			ND	21	U	21.6	N/A	0.97	No	Max SQL< SV
Aroclor-1221	0	12	2	43			ND	43	U	67	2	0.64	No	Max SQL< SV
Aroclor-1232	0	12	1	21			ND	21	U	21.6	N/A	0.97	No	Max SQL< SV
Aroclor-1242	0	12	1	21			ND	21	U	21.6	N/A	0.97	No	Max SQL< SV
Aroclor-1248	0	12	1	21			ND	21	U	21.6	N/A	0.97	No	Max SQL< SV
Aroclor-1254	1	12	1	21	9.5	9.5	041M060201	9.5	J	21.6	N/A	0.44	No	Max Detect < SV
Aroclor-1260	3	12	1	21	0.82	4.1	041M061101	4.1	J	21.6	N/A	0.19	No	Max Detect < SV
Total PCBs	**4**	**12**	**8**	**169**	**8.07**	**23.9**	**041M061101**	**23.9**		**21.6**	**1**	**1.11**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	5	12	0.05	1.1	0.23	1.1	041M060701	1.1	J		N/A		Yes	No SV
Dieldrin	**8**	**12**	**0.105**	**2.1**	**0.24**	**10**	**041M060701**	**10**	**J**	**0.716**	**1**	**14**	**Yes**	**Max Detect > SV**
Endosulfan I	0	12	0.05	1.1			ND	1.1	UJ		N/A		Yes	No SV
Endosulfan II	0	12	0.1	2.1			ND	2.1	UJ		N/A		Yes	No SV
Endosulfan sulfate	0	12	0.1	2.1			ND	2.1	UJ		N/A		Yes	No SV
Heptachlor	1	12	0.05	1.1	0.16	0.16	041M061001	0.16	J		N/A		Yes	No SV
Heptachlor epoxide	0	12	0.05	1.1			ND	1.1	UJ		N/A		Yes	No SV
Methoxychlor	0	12	0.5	11			ND	11	UJ		N/A		Yes	No SV
Toxaphene	0	11	10	110			ND	110	UJ		N/A		Yes	No SV
alpha-Chlordane	6	12	0.05	1.1	0.15	1.7	041M060301	1.7	J	1.7	1	1	No	Max Detect < SV

Table 11-2-5
Wetland 6 Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Pesticides (µg/kg) - cont.														
gamma-Chlordane	6	12	0.05	1.1	0.19	1.2	041M060701	1.2	J	1.7	1	0.71	No	Max Detect < SV
Total Chlordane	**7**	**12**	**0.1**	**2.2**	**0.205**	**2.7**	**041M060701**	**2.7**		**1.7**	**1**	**1.59**	**Yes**	**Max Detect > SV**
Endrin	**4**	**12**	**0.1**	**2.1**	**1.8**	**3.6**	**041M060701**	**3.6**	**J**	**3.3**	**2**	**1.09**	**Yes**	**Max Detect > SV**
Endrin aldehyde	1	12	0.1	2.1	0.48	0.48	041M060801	0.48	J	3.3	2	0.15	No	Max Detect < SV
Endrin ketone	0	12	0.1	2.1			ND	2.1	UJ	3.3	2	0.64	No	Max SQL< SV
Total Endrin	**4**	**12**	**0.3**	**6.3**	**2.38**	**5.1**	**041M060701**	**5.1**		**3.3**	**2**	**1.55**	**Yes**	**Max Detect > SV**
alpha-BHC	2	12	0.05	1.1	0.48	0.6	041M060801	0.6	J		N/A		Yes	No SV
beta-BHC	**3**	**12**	**0.05**	**1.1**	**0.16**	**2.8**	**041M060701**	**2.8**	**J**	**0.32**	**N/A**	**8.75**	**Yes**	**Max Detect > SV**
delta-BHC	0	12	0.05	1.1			ND	1.1	U	0.32	N/A	3.44	No	Max SQL> SV
gamma-BHC (Lindane)	0	12	0.05	1.1			ND	1.1	U	0.32	1	3.44	No	Max SQL> SV
Total BHC	**4**	**12**	**0.2**	**4.4**	**0.74**	**3.36**	**041M060801**	**3.36**		**0.32**	**2**	**10.5**	**Yes**	**Max Detect > SV**
4,4'-DDD	**12**	**12**			**0.21**	**40**	**041M060301**	**40**	**DJ**	**1.22**	**1**	**32.8**	**Yes**	**Max Detect > SV**
4,4'-DDE	**11**	**12**	**0.11**	**0.11**	**0.23**	**110**	**041M060101**	**110**	**D**	**2.07**	**1**	**53.1**	**Yes**	**Max Detect > SV**
4,4'-DDT	**11**	**12**	**0.1**	**0.1**	**0.22**	**260**	**041M060101**	**260**	**DJ**	**1.19**	**1**	**218**	**Yes**	**Max Detect > SV**
Total DDT	**12**	**12**			**0.6**	**393**	**041M060101**	**393**		**3.3**	**2**	**119**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	8	200	2,950			ND	2,950	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2-Chloronaphthalene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2-Chlorophenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2-Nitroaniline	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
2-Nitrophenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
3-Nitroaniline	0	10	475	7,000			ND	7,000	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
4-Chloroaniline	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
4-Nitroaniline	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
4-Nitrophenol	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
Benzo(b)fluoranthene	5	11	20	210	27	340	041M060701	340	J		N/A		No	TOC normalized PAHs<TEC
Benzo(g,h,i)perylene	2	11	20	295	29	32	041M060101	32	J		N/A		No	TOC normalized PAHs<TEC
Benzo(k)fluoranthene	2	11	20	295	21	24	041M060201	24	J		N/A		No	TOC normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	11	19.5	295			ND	295	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	11	195	2,950			ND	2,950	U	182	1, 2	16.2	Yes	Max SQL > SV
Butylbenzylphthalate	6	11	200	2,950	22	30	041M060401	30	J	182	1, 2	0.17	No	Max Detect < SV
Carbazole	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Dibenzofuran	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Diethylphthalate	1	11	195	2,950	23	23	041M060401	23	J	182	1, 2	0.13	No	Max Detect < SV
Dimethylphthalate	0	11	195	2,950			ND	2,950	U	182	1, 2	16.2	Yes	Max SQL > SV
Di-n-butylphthalate	4	11	200	2,950	29	99	041M060201	99	J	182	1, 2	0.54	No	Max Detect < SV
Di-n-octylphthalate	1	11	195	2,950	84	84	041M060601	84	J	182	1, 2	0.46	No	Max Detect < SV
Hexachlorobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Hexachlorobutadiene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Hexachloroethane	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	2	11	20	295	27	28	041M060101	28	J		N/A		No	TOC normalized PAHs<TEC

Table 11-2-5
Wetland 6 Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Isophorone	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Nitrobenzene	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	11	19.5	295			ND	295	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
Pentachlorophenol	0	11	475	7,000			ND	7,000	U		N/A		Yes	No SV
Phenol	0	11	195	2,950			ND	2,950	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	1	12	6	20	4	4	041M060901	4	J		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
1,1-Dichloroethane	1	12	6	20	9	9	041M060901	9	J		N/A		Yes	No SV
1,1-Dichloroethene	1	12	6	20	8	8	041M060901	8	J		N/A		Yes	No SV
1,2-Dichloroethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	12	6	20			ND	20	U		N/A		Yes	No SV
1,2-Dichloropropane	0	12	6	20			ND	20	U		N/A		Yes	No SV
2-Butanone (MEK)	0	12	6	20			ND	20	U		N/A		Yes	No SV
2-Hexanone	0	12	6	20			ND	20	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	12	6	20			ND	20	U		N/A		Yes	No SV
Acetone	7	11	6	95	13	4000	041M060801	4,000			N/A		Yes	No SV
Benzene	0	12	6	20			ND	20	U		N/A		Yes	No SV
Bromodichloromethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
Bromoform	0	12	6	20			ND	20	U		N/A		Yes	No SV
Bromomethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
Carbon disulfide	0	12	6	20			ND	20	U		N/A		Yes	No SV
Carbon tetrachloride	0	12	6	20			ND	20	U		N/A		Yes	No SV
Chlorobenzene	1	12	6	20	2	2	041M060901	2	J		N/A		Yes	No SV
Chloroethane	1	12	6	20	2	2	041M060901	2	J		N/A		Yes	No SV
Chloroform	0	12	6	20			ND	20	U		N/A		Yes	No SV
Chloromethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	12	6	20			ND	20	U		N/A		Yes	No SV
Dibromochloromethane	0	12	6	20			ND	20	U		N/A		Yes	No SV
Ethylbenzene	0	12	6	20			ND	20	U		N/A		Yes	No SV
Methylene chloride	0	12	6	39			ND	39	U		N/A		Yes	No SV
Styrene	0	12	6	20			ND	20	U		N/A		Yes	No SV
Tetrachloroethene	2	12	6	20	2	4	041M061101	4	J		N/A		Yes	No SV
Toluene	3	12	6	7.5	4	14	041M060301	14	J		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	12	6	20			ND	20	U		N/A		Yes	No SV
Trichloroethene	3	12	6	7.5	2	5	041M060701	5	J		N/A		Yes	No SV
Vinyl chloride	0	12	2	6.5			ND	6.5	U		N/A		Yes	No SV
Xylene (Total)	0	12	6	20			ND	20	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient

D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-2-6
Wetland 6 Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	None	1,1,1-Trichloroethane
Barium	4,4'-DDE		1,1-Dichloroethane
Beryllium	4,4'-DDT		1,1-Dichloroethene
Cadmium	Aldrin		Acetone
Calcium	alpha-BHC		Chlorobenzene
Chromium	beta-BHC		Chloroethane
Cobalt	Dieldrin		Tetrachloroethene
Copper	Endrin		Toluene
Iron	Heptachlor		Trichloroethene
Lead	Total BHC		
Magnesium	Total Chlordane		
Manganese	Total DDT		
Potassium	Total Endrin		
Selenium	Total PCBs		
Silver			
Sodium			
Thallium			
Vanadium			
Zinc			
		Not Detected Parameters	
Cyanide (CN)	Endosulfan I	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
	Endosulfan II	1,2-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan sulfate	1,3-Dichlorobenzene	1,2-Dichloroethane
	Heptachlor epoxide	1,4-Dichlorobenzene	1,2-Dichloroethene (total)
	Methoxychlor	2,2'-oxybis(1-Chloropropane)/bis(2-chlor	1,2-Dichloropropane
	Toxaphene	2,4,5-Trichlorophenol	2-Butanone (MEK)
		2,4,6-Trichlorophenol	2-Hexanone
		2,4-Dichlorophenol	4-Methyl-2-Pentanone (MIBK)
		2,4-Dimethylphenol	Benzene
		2,4-Dinitrophenol	Bromodichloromethane
		2,4-Dinitrotoluene	Bromoform
		2,6-Dinitrotoluene	Bromomethane
		2-Chloronaphthalene	Carbon disulfide
		2-Chlorophenol	Carbon tetrachloride
		2-Methyl-4,6-Dinitrophenol	Chloroform
		2-Methylphenol (o-Cresol)	Chloromethane
		2-Nitroaniline	cis-1,3-Dichloropropene
		2-Nitrophenol	Dibromochloromethane
		3,3'-Dichlorobenzidine	Ethylbenzene
		3-Nitroaniline	Methylene chloride
		4-Bromophenyl-phenylether	Styrene
		4-Chloro-3-methylphenol	trans-1,3-Dichloropropene
		4-Chloroaniline	Vinyl chloride
		4-Chlorophenylphenyl ether	Xylene (Total)
		4-Methylphenol (p-Cresol)	
		4-Nitroaniline	
		4-Nitrophenol	
		bis(2-Chloroethoxy)methane	
		bis(2-Chloroethyl)ether	
		bis(2-Ethylhexyl)phthalate (BEHP)	
		Carbazole	
		Dibenzofuran	
		Dimethylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 11-2-7
Wetland 6 Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	12	12				1,560	313	5,980	5,980		041M060701			NA					0	13,610	0	No	EPC < RC
Barium	11	12	1.2	1.2	1.2	8.84	1	37	37		041M060101			NA					0	14	3	Yes	EPC > RC and no RV
Beryllium	3	12	0.0389	0.03	0.065	0.0583	0.1	0.14	0.14	J	041M060101			NA					0	0.84	0	No	EPC < RC
Cadmium	**9**	**12**	**0.17**	**0.09**	**0.325**	**0.793**	**0.19**	**5.4**	**5.4**		**041M060701**	**0.676**	**4.21**	**PEL**	**7.99**	**1.17**	**1.28**	**0.19**	**1**	**1.8**	**1**	**Yes**	**EPC > RV and RC**
Calcium	12	12				2,150	62.5	8,370	8,370	J	041M060101			NA					0	10,756.67	0	No	EPC < RC
Chromium	11	12	0.9	0.9	0.9	14.4	0.56	73.5	73.5		041M060701	52.3	160	PEL	1.41	0.28	0.46	0.09	0	39.37	1	No	EPC > RC, but < RV
Cobalt	7	12	0.106	0.095	0.145	2.1	0.18	20.7	20.7	J	010M000101			NA					0	2.8	1	Yes	EPC > RC and no RV
Copper	11	12	1.2	1.2	1.2	12.1	0.97	48.2	48.2		041M060701	18.7	108	PEL	2.58	0.65	0.45	0.11	0	19.5	2	No	EPC > RC, but < RV
Cyanide (CN)	0	12	0.33	0.06	0.65	0.33			0.65	U	ND			NA					0	5.22	0	No	Parameter Not Detected
Iron	12	12				1,340	328	4,320	4,320		041M060701			NA					0	11,911.67	0	No	EPC < RC
Lead	**12**	**12**				**31.5**	**6**	**147**	**147**		**041M060701**	**30.2**	**112**	**PEL**	**4.87**	**1.04**	**1.31**	**0.28**	**1**	**82.47**	**1**	**Yes**	**EPC > RV and RC**
Magnesium	11	12	21.3	21.3	21.3	356	27.3	1,180	1,180		041M060201			NA					0	7,513.33	0	No	EPC < RC
Manganese	11	12	0.6	0.6	0.6	12.3	1.2	35.2	35.2		041M060701			NA					0	37.97	0	No	EPC < RC
Potassium	11	12	79	79	79	57.1	9.6	161.00	161	J	041M060701			NA					0	1,628.67	0	No	EPC < RC
Selenium	1	12	0.108	0.085	0.205	0.17	0.85	0.85	0.85		041M060701			NA					0	3.45	0	No	EPC < RC
Silver	1	12	0.159	0.115	0.44	0.22	0.89	0.89	0.89	J	041M060701	0.733	1.77	PEL	1.21	0.3	0.50	0.12	0	2.1	0	No	EPC < RC and RV
Sodium	9	12	2.48	1.2	5	26.1	4.9	105	105	J	041M060301			NA					0	18,993.33	0	No	EPC < RC
Thallium	2	12	0.123	0.085	0.34	0.215	0.67	0.68	0.68	J	041M060701			NA					0	1.57	0	No	EPC < RC
Vanadium	12	12				2.83	0.6	11.3	11.3		041M060701			NA					0	28.67	0	No	EPC < RC
Zinc	11	12	1.9	1.9	1.9	50.3	9.7	207	207		041M060701	124	271	PEL	1.67	0.41	0.76	0.19	0	36.73	5	No	EPC > RC, but < RV
PCBs (µg/kg)																							
Aroclor-1016	0	12	6.91	1	21	6.91			21	UJ	ND	21.6	189	PEL					0		0	No	Parameter Not Detected
Aroclor-1221	0	12	14.03	2	43	14.03			43	UJ	ND	67	189	PEL					0		0	No	Parameter Not Detected
Aroclor-1232	0	12	6.91	1	21	6.91			21	UJ	ND	21.6	189	PEL					0		0	No	Parameter Not Detected
Aroclor-1242	0	12	6.91	1	21	6.91			21	UJ	ND	21.6	189	PEL					0		0	No	Parameter Not Detected
Aroclor-1248	0	12	6.91	1	21	6.91			21	UJ	ND	21.6	189	PEL					0		0	No	Parameter Not Detected
Aroclor-1254	1	12	7.35	1	21	7.53	9.5	9.5	9.5	J	041M060201	21.6	189	PEL	0.44	0.35	0.05	0.04	0		0	No	RV HQ <1 and no RC
Aroclor-1260	3	12	8.85	1	21	7.36	0.82	4.1	4.1	J	041M061101	21.6	189	PEL	0.19	0.34	0.01	0.04	0		0	No	RV HQ <1 and no RC
Total PCBs	4	12	77.9	8	169	56.6	8.07	23.9	23.9		041M061101	21.6	189	PEL	1.11	2.62	0.13	0.30	0		0	No	RV HQ <1 and no RC
Pesticides (µg/kg)																							
Aldrin	5	12	0.293	0.05	1.1	0.417	0.23	1.1	1.1	J	041M060701			NA					0		0	Yes	No SV, no RV, and no RC
Dieldrin	**8**	**12**	**0.704**	**0.105**	**2.1**	**2.53**	**0.24**	**10**	**10**	**J**	**041M060701**	**0.716**	**4.3**	**PEL**	**14**	**3.53**	**2.33**	**0.59**	**3**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endosulfan I	0	12	0.355	0.05	1.1	0.355			1.1	UJ	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	0	12	0.457	0.1	2.1	0.457			2.1	UJ	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	0	12	0.457	0.1	2.1	0.457			2.1	UJ	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	1	12	0.246	0.05	1.1	0.239	0.16	0.16	0.16	J	041M061001			NA					0		0	Yes	No SV, no RV, and no RC
Heptachlor epoxide	0	12	0.23	0.05	1.1	0.23			1.1	UJ	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	12	2.3	0.5	11	2.3			11	UJ	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	11	37.3	10	110	37.3			110	UJ	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	6	12	0.333	0.05	1.1	0.585	0.15	1.7	1.7	J	041M060301	1.7	4.79	PEL	1	0.34	0.36	0.12	0		0	No	RV HQ <1 and no RC
Total Chlordane	7	12	0.778	0.1	2.2	1.01	0.205	2.7	2.7		041M060701	1.7	4.79	PEL	1.59	0.60	0.56	0.21	0		0	No	RV HQ <1 and no RC
Endrin	4	12	0.405	0.1	2.1	1.1	1.8	3.6	3.6	J	041M060701	3.3		NA	1.09	0.33			0		0	Yes	No RV or RC and EPC > SV
Total Endrin	4	12	1.22	0.3	6.3	2.05	2.38	5.1	5.1		041M060701	3.3		NA	1.55	0.62			0		0	Yes	No RV or RC and EPC > SV
alpha-BHC	2	12	0.293	0.05	1.1	0.334	0.48	0.6	0.6	J	041M060801		0.99	PEL			0.61	0.34	0		0	No	RV HQ <1 and no RC
beta-BHC	**3**	**12**	**0.24**	**0.05**	**1.1**	**0.552**	**0.16**	**2.8**	**2.8**	**J**	**041M060301**	**0.32**	**0.99**	**PEL**	**8.75**	**1.72**	**2.83**	**0.56**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
delta-BHC	0	12	0.23	0.05	1.1	0.23			1.1	U	ND	0.32	0.99	PEL	3.44	0.72	1.11	0.23	0		0	No	Parameter Not Detected; Max SQL > RV
gamma-BHC (Lindane)	0	12	0.23	0.05	1.1	0.23			1.1	U	ND	0.32	0.99	PEL	3.44	0.72	1.11	0.23	0		0	No	Parameter Not Detected; Max SQL > RV
Total BHC	**4**	**12**	**1.09**	**0.2**	**4.4**	**1.35**	**0.74**	**3.36**	**3.36**		**041M060301**	**0.32**	**0.99**	**PEL**	**10.5**	**4.2**	**3.39**	**1.36**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	**12**	**12**				**12.1**	**0.21**	**40**	**40**	**DJ**	**041M060301**	**1.22**	**7.81**	**PEL**	**32.8**	**9.9**	**5.12**	**1.55**	**5**	**50**	**0**	**No**	**EPC > RV, but < RC**
4,4'-DDE	11	12	0.11	0.11	0.11	19.4	0.23	110	110	D	041M060101	2.07	374	PEL	53.1	9.38	0.29	0.05	0	40	1	No	EPC > RC, but < RV
4,4'-DDT	**11**	**12**	**0.1**	**0.1**	**0.1**	**29.1**	**0.22**	**260**	**260**	**DJ**	**041M060101**	**1.19**	**4.77**	**PEL**	**218**	**24.4**	**54.5**	**6.1**	**5**	**20**	**2**	**Yes**	**EPC > RV and RC**
Total DDT	**12**	**12**				**60.6**	**0.6**	**393**	**393**		**041M060101**	**3.3**	**51.7**	**PEL**	**119**	**18.4**	**7.6**	**1.17**	**4**	**110**	**2**	**Yes**	**EPC > RV and RC**
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	8	552	200	2,950	552			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	11	482	195	2,950	482			2,950	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	10	1,150	475	7,000	1,150			7,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-2-7
Wetland 6 Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
SVOCs (µg/kg) - cont.																							
bis(2-Chloroethoxy)methane	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	11	62.8	19.5	295	62.8			295	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	11	483	195	2,950	483			2,950	U	ND	182	2,647	PEL	16.2	2.65	1.11	0.18	0		0	No	Parameter Not Detected; Max SQL > RV
Carbazole	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Dimethylphthalate	0	11	456	195	2,950	456			2,950	U	ND	182	2,647	PEL	16.2	2.5	1.11	0.17	0		0	No	Parameter Not Detected; Max SQL > RV
Hexachlorobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	11	62.8	20	295	62.8			295	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	11	1,090	475	7,000	1,090			7,000	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	11	456	195	2,950	456			2,950	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	1	12	7.55	6	20	7.25	4	4	4	J	041M060901			NA					0		0	Yes	No SV, no RV, and no RC
1,1,2,2-Tetrachloroethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	1	12	7.55	6	20	7.67	9	9	9	J	041M060901			NA					0		0	Yes	No SV, no RV, and no RC
1,1-Dichloroethene	1	12	7.55	6	20	7.58	8	8	8	J	041M060901			NA					0		0	Yes	No SV, no RV, and no RC
1,2-Dichloroethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	7	11	45.5	6	95	490	13	4000	4,000		041M060801			NA					0		0	Yes	No SV, no RV, and no RC
Benzene	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	1	12	7.55	6	20	7.08	2	2	2	J	041M060901			NA					0		0	Yes	No SV, no RV, and no RC
Chloroethane	1	12	7.55	6	20	7.08	2	2	2	J	041M060901			NA					0		0	Yes	No SV, no RV, and no RC
Chloroform	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	12	12	6	39	12			39	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	2	12	7.7	6	20	6.92	2	4	4	J	041M061101			NA					0		0	Yes	No SV, no RV, and no RC
Toluene	3	12	6.22	6	7.5	6.67	4	14	14	J	041M060301			NA					0		0	Yes	No SV, no RV, and no RC
trans-1,3-Dichloropropene	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	3	12	6.33	6	7.5	5.58	2	5	5	J	041M060701			NA					0		0	Yes	No SV, no RV, and no RC
Vinyl chloride	0	12	2.75	2	6.5	2.75			6.5	U	ND			NA					0		0	No	Parameter Not Detected
Xylene (Total)	0	12	7.42	6	20	7.42			20	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
Parameters in bold were detected and exceeded screening values.

J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-2-8
Wetland 6 Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Aldrin	None	1,1-Dichloroethane
Cadmium	Dieldrin		Chloroethane
Cobalt	Heptachlor		Acetone
Lead	Endrin		
	Total Endrin		
	beta-BHC		
	Total BHC		
	4,4'-DDT		
	Total DDT		

Table 11-2-9
Wetland 6 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
010M000101	2/4/1994	mg/kg	0.355	U	Arsenic	8.2	70	0.01
010M000101	2/4/1994	mg/kg	0.325	U	Cadmium	1.2	9.6	0.03
010M000101	2/4/1994	mg/kg	0.9	U	Chromium	81	370	0.00
010M000101	2/4/1994	mg/kg	14.2	J	Copper	34	270	0.05
010M000101	2/4/1994	mg/kg	31.4		Lead	46.7	218	0.14
010M000101	2/4/1994	mg/kg	0.015	U	Mercury	0.15	0.71	0.02
010M000101	2/4/1994	mg/kg	4.3		Nickel	20.9	51.6	0.08
010M000101	2/4/1994	mg/kg	0.44	U	Silver	1	3.7	0.12
010M000101	2/4/1994	mg/kg	59.6	J	Zinc	150	410	0.15
010M000101	**2/4/1994**	**µg/kg**	**29**	**J**	**4,4'-DDE**	**2.2**	**27**	**1.07**
010M000101	2/4/1994	µg/kg	11	J	4,4'-DDT	1.58	46.1	0.24
010M000101	2/4/1994	µg/kg	169	U	Total PCBs	22.7	180	0.94
010M000101	2/4/1994	µg/kg	210	UJ	2-Methylnaphthalene	70	670	0.31
010M000101	2/4/1994	µg/kg	210	UJ	Acenaphthene	16	500	0.42
010M000101	2/4/1994	µg/kg	210	UJ	Acenaphthylene	44	640	0.33
010M000101	2/4/1994	µg/kg	210	UJ	Anthracene	85.3	1,100	0.19
010M000101	2/4/1994	µg/kg	210	UJ	Benzo(a)anthracene	261	1,600	0.13
010M000101	2/4/1994	µg/kg	210	UJ	Benzo(a)pyrene	430	1,600	0.13
010M000101	2/4/1994	µg/kg	210	UJ	Chrysene	384	2,800	0.08
010M000101	2/4/1994	µg/kg	210	UJ	Dibenz(a,h)anthracene	63.4	260	0.81
010M000101	2/4/1994	µg/kg	210	UJ	Fluoranthene	600	5,100	0.04
010M000101	2/4/1994	µg/kg	210	UJ	Fluorene	19	540	0.39
010M000101	2/4/1994	µg/kg	210	UJ	Naphthalene	160	2,100	0.10
010M000101	2/4/1994	µg/kg	210	UJ	Phenanthrene	240	1,500	0.14
010M000101	2/4/1994	µg/kg	210	UJ	Pyrene	665	2,600	0.08
010M000101	2/4/1994				ERM Quotient Sum			6.01
010M000101	2/4/1994				Mean ERM Quotient			0.24
010M000101	2/4/1994				Mean ERM Quotient without ND			0.07
010M000101	2/4/1994				Mean ERM Quotient Category			2
041M060101	11/15/1995	mg/kg	0.74		Arsenic	8.2	70	0.01
041M060101	11/15/1995	mg/kg	0.28	J	Cadmium	1.2	9.6	0.03
041M060101	11/15/1995	mg/kg	2.5		Chromium	81	370	0.01
041M060101	11/15/1995	mg/kg	7.8	J	Copper	34	270	0.03
041M060101	11/15/1995	mg/kg	47.4	J	Lead	46.7	218	0.22
041M060101	11/15/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M060101	11/15/1995	mg/kg	1.6	J	Nickel	20.9	51.6	0.03
041M060101	11/15/1995	mg/kg	0.115	UJ	Silver	1	3.7	0.03
041M060101	11/15/1995	mg/kg	64.2	J	Zinc	150	410	0.16
041M060101	**11/15/1995**	**µg/kg**	**110**	**D**	**4,4'-DDE**	**2.2**	**27**	**4.07**
041M060101	**11/15/1995**	**µg/kg**	**260**	**DJ**	**4,4'-DDT**	**1.58**	**46.1**	**5.64**
041M060101	11/15/1995	µg/kg	156.5	U	Total PCBs	22.7	180	0.87
041M060101	11/15/1995	µg/kg	19.5	U	2-Methylnaphthalene	70	670	0.03
041M060101	11/15/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M060101	11/15/1995	µg/kg	19.5	U	Acenaphthylene	44	640	0.03
041M060101	11/15/1995	µg/kg	19.5	U	Anthracene	85.3	1,100	0.02
041M060101	11/15/1995	µg/kg	34	J	Benzo(a)anthracene	261	1,600	0.02
041M060101	11/15/1995	µg/kg	33	J	Benzo(a)pyrene	430	1,600	0.02
041M060101	11/15/1995	µg/kg	55		Chrysene	384	2,800	0.02
041M060101	11/15/1995	µg/kg	19.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060101	11/15/1995	µg/kg	88		Fluoranthene	600	5,100	0.02
041M060101	11/15/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M060101	11/15/1995	µg/kg	19.5	U	Naphthalene	160	2,100	0.01
041M060101	11/15/1995	µg/kg	51		Phenanthrene	240	1,500	0.03
041M060101	11/15/1995	µg/kg	73		Pyrene	665	2,600	0.03
041M060101	11/15/1995				ERM Quotient Sum			11.47
041M060101	11/15/1995				Mean ERM Quotient			0.46
041M060101	11/15/1995				Mean ERM Quotient without ND			0.41
041M060101	11/15/1995				Mean ERM Quotient Category			2
041M060201	11/15/1995	mg/kg	0.28	J	Arsenic	8.2	70	0.00
041M060201	11/15/1995	mg/kg	0.33		Cadmium	1.2	9.6	0.03
041M060201	11/15/1995	mg/kg	2		Chromium	81	370	0.01
041M060201	11/15/1995	mg/kg	8.3	J	Copper	34	270	0.03
041M060201	11/15/1995	mg/kg	10.9	J	Lead	46.7	218	0.05
041M060201	11/15/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M060201	11/15/1995	mg/kg	0.84	J	Nickel	20.9	51.6	0.02
041M060201	11/15/1995	mg/kg	0.115	UJ	Silver	1	3.7	0.03
041M060201	11/15/1995	mg/kg	29.5	J	Zinc	150	410	0.07
041M060201	11/15/1995	µg/kg	2.8	J	4,4'-DDE	2.2	27	0.10
041M060201	11/15/1995	µg/kg	0.35	J	4,4'-DDT	1.58	46.1	0.01
041M060201	11/15/1995	µg/kg	23.9		Total PCBs	22.7	180	0.13
041M060201	11/15/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M060201	11/15/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M060201	11/15/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M060201	11/15/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M060201	11/15/1995	µg/kg	43		Benzo(a)anthracene	261	1,600	0.03
041M060201	11/15/1995	µg/kg	42		Benzo(a)pyrene	430	1,600	0.03
041M060201	11/15/1995	µg/kg	45		Chrysene	384	2,800	0.02
041M060201	11/15/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060201	11/15/1995	µg/kg	120		Fluoranthene	600	5,100	0.02
041M060201	11/15/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M060201	11/15/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01
041M060201	11/15/1995	µg/kg	37	J	Phenanthrene	240	1,500	0.02
041M060201	11/15/1995	µg/kg	100		Pyrene	665	2,600	0.04
041M060201	11/15/1995				ERM Quotient Sum			0.89
041M060201	11/15/1995				Mean ERM Quotient			0.04
041M060201	11/15/1995				Mean ERM Quotient without ND			0.02
041M060201	11/15/1995				Mean ERM Quotient Category			2

Table 11-2-9
Wetland 6 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M060301	11/15/1995	mg/kg	0.53	J	Arsenic	8.2	70	0.01
041M060301	11/15/1995	mg/kg	0.32	J	Cadmium	1.2	9.6	0.03
041M060301	11/15/1995	mg/kg	4.4		Chromium	81	370	0.01
041M060301	11/15/1995	mg/kg	20.9	J	Copper	34	270	0.08
041M060301	11/15/1995	mg/kg	36.1	J	Lead	46.7	218	0.17
041M060301	11/15/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M060301	11/15/1995	mg/kg	1.2	J	Nickel	20.9	51.6	0.02
041M060301	11/15/1995	mg/kg	0.135	UJ	Silver	1	3.7	0.04
041M060301	11/15/1995	mg/kg	74.1	J	Zinc	150	410	0.18
041M060301	**11/15/1995**	**µg/kg**	**33**	**DJ**	**4,4'-DDE**	**2.2**	**27**	**1.22**
041M060301	**11/15/1995**	**µg/kg**	**52**	**D**	**4,4'-DDT**	**1.58**	**46.1**	**1.13**
041M060301	11/15/1995	µg/kg	60	U	Total PCBs	22.7	180	0.33
041M060301	11/15/1995				ERM Quotient Sum			3.26
041M060301	11/15/1995				Mean ERM Quotient			0.13
041M060301	11/15/1995				Mean ERM Quotient without ND			0.11
041M060301	11/15/1995				Mean ERM Quotient Category			2
041M060401	11/15/1995	mg/kg	0.06	U	Arsenic	8.2	70	0.00
041M060401	11/15/1995	mg/kg	0.09	U	Cadmium	1.2	9.6	0.01
041M060401	11/15/1995	mg/kg	0.85		Chromium	81	370	0.00
041M060401	11/15/1995	mg/kg	13.6	J	Copper	34	270	0.05
041M060401	11/15/1995	mg/kg	16.2	J	Lead	46.7	218	0.07
041M060401	11/15/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M060401	11/15/1995	mg/kg	0.36	U	Nickel	20.9	51.6	0.01
041M060401	11/15/1995	mg/kg	0.12	UJ	Silver	1	3.7	0.03
041M060401	11/15/1995	mg/kg	28.1	J	Zinc	150	410	0.07
041M060401	11/15/1995	µg/kg	4.3		4,4'-DDE	2.2	27	0.16
041M060401	11/15/1995	µg/kg	2	J	4,4'-DDT	1.58	46.1	0.04
041M060401	11/15/1995	µg/kg	80.5	U	Total PCBs	22.7	180	0.45
041M060401	11/15/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M060401	11/15/1995	µg/kg	34		Acenaphthene	16	500	0.07
041M060401	11/15/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M060401	11/15/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M060401	11/15/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M060401	11/15/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M060401	11/15/1995	µg/kg	21	J	Chrysene	384	2,800	0.01
041M060401	11/15/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060401	11/15/1995	µg/kg	42		Fluoranthene	600	5,100	0.01
041M060401	11/15/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M060401	11/15/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01
041M060401	11/15/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M060401	11/15/1995	µg/kg	52		Pyrene	665	2,600	0.02
041M060401	11/15/1995				ERM Quotient Sum			1.26
041M060401	11/15/1995				Mean ERM Quotient			0.05
041M060401	11/15/1995				Mean ERM Quotient without ND			0.02
041M060401	11/15/1995				Mean ERM Quotient Category			2
041M060501	11/16/1995	mg/kg	0.06	U	Arsenic	8.2	70	0.00
041M060501	11/16/1995	mg/kg	0.095	U	Cadmium	1.2	9.6	0.01
041M060501	11/16/1995	mg/kg	0.56	J	Chromium	81	370	0.00
041M060501	11/16/1995	mg/kg	3.6		Copper	34	270	0.01
041M060501	11/16/1995	mg/kg	9.4		Lead	46.7	218	0.04
041M060501	11/16/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M060501	11/16/1995	mg/kg	0.37	U	Nickel	20.9	51.6	0.01
041M060501	11/16/1995	mg/kg	0.125	U	Silver	1	3.7	0.03
041M060501	11/16/1995	mg/kg	18.8		Zinc	150	410	0.05
041M060501	11/16/1995	µg/kg	2.8	J	4,4'-DDE	2.2	27	0.10
041M060501	11/16/1995	µg/kg	2.2		4,4'-DDT	1.58	46.1	0.05
041M060501	11/16/1995	µg/kg	8	U	Total PCBs	22.7	180	0.04
041M060501	11/16/1995	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M060501	11/16/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M060501	11/16/1995	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M060501	11/16/1995	µg/kg	20	U	Anthracene	85.3	1,100	0.02
041M060501	11/16/1995	µg/kg	20	U	Benzo(a)anthracene	261	1,600	0.01
041M060501	11/16/1995	µg/kg	20	U	Benzo(a)pyrene	430	1,600	0.01
041M060501	11/16/1995	µg/kg	20	U	Chrysene	384	2,800	0.01
041M060501	11/16/1995	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060501	11/16/1995	µg/kg	20	U	Fluoranthene	600	5,100	0.00
041M060501	11/16/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M060501	11/16/1995	µg/kg	20	U	Naphthalene	160	2,100	0.01
041M060501	11/16/1995	µg/kg	20	U	Phenanthrene	240	1,500	0.01
041M060501	11/16/1995	µg/kg	20	U	Pyrene	665	2,600	0.01
041M060501	11/16/1995				ERM Quotient Sum			0.65
041M060501	11/16/1995				Mean ERM Quotient			0.03
041M060501	11/16/1995				Mean ERM Quotient without ND			0.01
041M060501	11/16/1995				Mean ERM Quotient Category			2
041M060601	11/16/1995	mg/kg	1.4		Arsenic	8.2	70	0.02
041M060601	11/16/1995	mg/kg	0.76		Cadmium	1.2	9.6	0.08
041M060601	11/16/1995	mg/kg	7.5		Chromium	81	370	0.02
041M060601	11/16/1995	mg/kg	19		Copper	34	270	0.07
041M060601	11/16/1995	mg/kg	49.1		Lead	46.7	218	0.23
041M060601	11/16/1995	mg/kg	0.04	U	Mercury	0.15	0.71	0.06
041M060601	11/16/1995	mg/kg	1.3	J	Nickel	20.9	51.6	0.03
041M060601	11/16/1995	mg/kg	0.195	U	Silver	1	3.7	0.05
041M060601	11/16/1995	mg/kg	75.7		Zinc	150	410	0.18
041M060601	11/16/1995	µg/kg	8	D	4,4'-DDE	2.2	27	0.30
041M060601	11/16/1995	µg/kg	4.8	J	4,4'-DDT	1.58	46.1	0.10
041M060601	11/16/1995	µg/kg	12.5		Total PCBs	22.7	180	0.07
041M060601	11/16/1995	µg/kg	24	U	2-Methylnaphthalene	70	670	0.04
041M060601	11/16/1995	µg/kg	11.5	U	Acenaphthene	16	500	0.02
041M060601	11/16/1995	µg/kg	24	U	Acenaphthylene	44	640	0.04
041M060601	11/16/1995	µg/kg	24	U	Anthracene	85.3	1,100	0.02

Table 11-2-9
Wetland 6 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M060601	11/16/1995	µg/kg	40	J	Benzo(a)anthracene	261	1,600	0.03
041M060601	11/16/1995	µg/kg	32	J	Benzo(a)pyrene	430	1,600	0.02
041M060601	11/16/1995	µg/kg	24	U	Chrysene	384	2,800	0.01
041M060601	11/16/1995	µg/kg	24	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M060601	11/16/1995	µg/kg	67		Fluoranthene	600	5,100	0.01
041M060601	11/16/1995	µg/kg	11.5	U	Fluorene	19	540	0.02
041M060601	11/16/1995	µg/kg	24	U	Naphthalene	160	2,100	0.01
041M060601	11/16/1995	µg/kg	24	U	Phenanthrene	240	1,500	0.02
041M060601	11/16/1995	µg/kg	69		Pyrene	665	2,600	0.03
041M060601	11/16/1995				ERM Quotient Sum			1.56
041M060601	11/16/1995				Mean ERM Quotient			0.06
041M060601	11/16/1995				Mean ERM Quotient without ND			0.05
041M060601	11/16/1995				Mean ERM Quotient Category			2
041M060701	11/14/1995	mg/kg	2.1		Arsenic	8.2	70	0.03
041M060701	11/14/1995	mg/kg	5.4		Cadmium	1.2	9.6	0.56
041M060701	11/14/1995	mg/kg	73.5		Chromium	81	370	0.20
041M060701	11/14/1995	mg/kg	48.2		Copper	34	270	0.18
041M060701	11/14/1995	mg/kg	147		Lead	46.7	218	0.67
041M060701	11/14/1995	mg/kg	0.11	J	Mercury	0.15	0.71	0.15
041M060701	11/14/1995	mg/kg	4.2	J	Nickel	20.9	51.6	0.08
041M060701	11/14/1995	mg/kg	0.89	J	Silver	1	3.7	0.24
041M060701	11/14/1995	mg/kg	207		Zinc	150	410	0.50
041M060701	**11/14/1995**	**µg/kg**	**34**	**J**	**4,4'-DDE**	**2.2**	**27**	**1.26**
041M060701	11/14/1995	µg/kg	11	J	4,4'-DDT	1.58	46.1	0.24
041M060701	11/14/1995	µg/kg	116.5	U	Total PCBs	22.7	180	0.65
041M060701	11/14/1995	µg/kg	295	U	2-Methylnaphthalene	70	670	0.44
041M060701	11/14/1995	µg/kg	145	U	Acenaphthene	16	500	0.29
041M060701	11/14/1995	µg/kg	295	U	Acenaphthylene	44	640	0.46
041M060701	11/14/1995	µg/kg	295	U	Anthracene	85.3	1,100	0.27
041M060701	11/14/1995	µg/kg	295	U	Benzo(a)anthracene	261	1,600	0.18
041M060701	11/14/1995	µg/kg	295	UJ	Benzo(a)pyrene	430	1,600	0.18
041M060701	11/14/1995	µg/kg	300	J	Chrysene	384	2,800	0.11
041M060701	11/14/1995	µg/kg	295	UJ	Dibenz(a,h)anthracene	63.4	260	1.13
041M060701	11/14/1995	µg/kg	295	U	Fluoranthene	600	5,100	0.06
041M060701	11/14/1995	µg/kg	145	U	Fluorene	19	540	0.27
041M060701	11/14/1995	µg/kg	295	U	Naphthalene	160	2,100	0.14
041M060701	11/14/1995	µg/kg	295	U	Phenanthrene	240	1,500	0.20
041M060701	11/14/1995	µg/kg	295	U	Pyrene	665	2,600	0.11
041M060701	11/14/1995				ERM Quotient Sum			8.62
041M060701	11/14/1995				Mean ERM Quotient			0.34
041M060701	11/14/1995				Mean ERM Quotient without ND			0.17
041M060701	11/14/1995				Mean ERM Quotient Category			2
041M060801	11/14/1995	mg/kg	0.14	J	Arsenic	8.2	70	0.00
041M060801	11/14/1995	mg/kg	0.19	J	Cadmium	1.2	9.6	0.02
041M060801	11/14/1995	mg/kg	19.6		Chromium	81	370	0.05
041M060801	11/14/1995	mg/kg	0.97	J	Copper	34	270	0.00
041M060801	11/14/1995	mg/kg	6.6		Lead	46.7	218	0.03
041M060801	11/14/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M060801	11/14/1995	mg/kg	0.345	U	Nickel	20.9	51.6	0.01
041M060801	11/14/1995	mg/kg	0.115	U	Silver	1	3.7	0.03
041M060801	11/14/1995	mg/kg	1.9	U	Zinc	150	410	0.00
041M060801	11/14/1995	µg/kg	8.4	D	4,4'-DDE	2.2	27	0.31
041M060801	11/14/1995	µg/kg	4.5	J	4,4'-DDT	1.58	46.1	0.10
041M060801	11/14/1995	µg/kg	16.05	U	Total PCBs	22.7	180	0.09
041M060801	11/14/1995	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M060801	11/14/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M060801	11/14/1995	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M060801	11/14/1995	µg/kg	20	U	Anthracene	85.3	1,100	0.02
041M060801	11/14/1995	µg/kg	20	U	Benzo(a)anthracene	261	1,600	0.01
041M060801	11/14/1995	µg/kg	20	U	Benzo(a)pyrene	430	1,600	0.01
041M060801	11/14/1995	µg/kg	20	U	Chrysene	384	2,800	0.01
041M060801	11/14/1995	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060801	11/14/1995	µg/kg	20	U	Fluoranthene	600	5,100	0.00
041M060801	11/14/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M060801	11/14/1995	µg/kg	20	U	Naphthalene	160	2,100	0.01
041M060801	11/14/1995	µg/kg	20	U	Phenanthrene	240	1,500	0.01
041M060801	11/14/1995	µg/kg	20	U	Pyrene	665	2,600	0.01
041M060801	11/14/1995				ERM Quotient Sum			0.94
041M060801	11/14/1995				Mean ERM Quotient			0.04
041M060801	11/14/1995				Mean ERM Quotient without ND			0.02
041M060801	11/14/1995				Mean ERM Quotient Category			2
041M060901	11/14/1995	mg/kg	0.47	J	Arsenic	8.2	70	0.01
041M060901	11/14/1995	mg/kg	0.24	J	Cadmium	1.2	9.6	0.03
041M060901	11/14/1995	mg/kg	15.6		Chromium	81	370	0.04
041M060901	11/14/1995	mg/kg	2.9		Copper	34	270	0.01
041M060901	11/14/1995	mg/kg	10.8		Lead	46.7	218	0.05
041M060901	11/14/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M060901	11/14/1995	mg/kg	0.395	U	Nickel	20.9	51.6	0.01
041M060901	11/14/1995	mg/kg	0.13	U	Silver	1	3.7	0.04
041M060901	11/14/1995	mg/kg	9.7		Zinc	150	410	0.02
041M060901	11/14/1995	µg/kg	0.11	U	4,4'-DDE	2.2	27	0.00
041M060901	11/14/1995	µg/kg	0.74		4,4'-DDT	1.58	46.1	0.02
041M060901	11/14/1995	µg/kg	16.9	U	Total PCBs	22.7	180	0.09
041M060901	11/14/1995	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M060901	11/14/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M060901	11/14/1995	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M060901	11/14/1995	µg/kg	21	U	Anthracene	85.3	1,100	0.02
041M060901	11/14/1995	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M060901	11/14/1995	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M060901	11/14/1995	µg/kg	21	U	Chrysene	384	2,800	0.01

Table 11-2-9
Wetland 6 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M060901	11/14/1995	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M060901	11/14/1995	µg/kg	21	U	Fluoranthene	600	5,100	0.00
041M060901	11/14/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M060901	11/14/1995	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M060901	11/14/1995	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M060901	11/14/1995	µg/kg	21	U	Pyrene	665	2,600	0.01
041M060901	11/14/1995				ERM Quotient Sum			0.63
041M060901	11/14/1995				Mean ERM Quotient			0.03
041M060901	11/14/1995				Mean ERM Quotient without ND			0.01
041M060901	11/14/1995				Mean ERM Quotient Category			1
041M061001	11/16/1995	mg/kg	0.33	J	Arsenic	8.2	70	0.00
041M061001	11/16/1995	mg/kg	0.77		Cadmium	1.2	9.6	0.08
041M061001	11/16/1995	mg/kg	22.6		Chromium	81	370	0.06
041M061001	11/16/1995	mg/kg	1.2	U	Copper	34	270	0.00
041M061001	11/16/1995	mg/kg	7.1		Lead	46.7	218	0.03
041M061001	11/16/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M061001	11/16/1995	mg/kg	0.385	U	Nickel	20.9	51.6	0.01
041M061001	11/16/1995	mg/kg	0.13	U	Silver	1	3.7	0.04
041M061001	11/16/1995	mg/kg	16.4		Zinc	150	410	0.04
041M061001	11/16/1995	µg/kg	0.23		4,4'-DDE	2.2	27	0.01
041M061001	11/16/1995	µg/kg	0.22		4,4'-DDT	1.58	46.1	0.00
041M061001	11/16/1995	µg/kg	8.07		Total PCBs	22.7	180	0.04
041M061001	11/16/1995	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M061001	11/16/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M061001	11/16/1995	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M061001	11/16/1995	µg/kg	200	U	Anthracene	85.3	1,100	0.18
041M061001	11/16/1995	µg/kg	20	U	Benzo(a)anthracene	261	1,600	0.01
041M061001	11/16/1995	µg/kg	20	U	Benzo(a)pyrene	430	1,600	0.01
041M061001	11/16/1995	µg/kg	20	U	Chrysene	384	2,800	0.01
041M061001	11/16/1995	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M061001	11/16/1995	µg/kg	20	U	Fluoranthene	600	5,100	0.00
041M061001	11/16/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M061001	11/16/1995	µg/kg	20	U	Naphthalene	160	2,100	0.01
041M061001	11/16/1995	µg/kg	20	U	Phenanthrene	240	1,500	0.01
041M061001	11/16/1995	µg/kg	20	U	Pyrene	665	2,600	0.01
041M061001	11/16/1995				ERM Quotient Sum			0.78
041M061001	11/16/1995				Mean ERM Quotient			0.03
041M061001	11/16/1995				Mean ERM Quotient without ND			0.01
041M061001	11/16/1995				Mean ERM Quotient Category			1
041M061101	11/16/1995	mg/kg	0.3	J	Arsenic	8.2	70	0.00
041M061101	11/16/1995	mg/kg	0.72		Cadmium	1.2	9.6	0.08
041M061101	11/16/1995	mg/kg	22.4		Chromium	81	370	0.06
041M061101	11/16/1995	mg/kg	4		Copper	34	270	0.01
041M061101	11/16/1995	mg/kg	6		Lead	46.7	218	0.03
041M061101	11/16/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M061101	11/16/1995	mg/kg	0.96	J	Nickel	20.9	51.6	0.02
041M061101	11/16/1995	mg/kg	0.125	U	Silver	1	3.7	0.03
041M061101	11/16/1995	mg/kg	18.3		Zinc	150	410	0.04
041M061101	11/16/1995	µg/kg	0.29		4,4'-DDE	2.2	27	0.01
041M061101	11/16/1995	µg/kg	0.1	U	4,4'-DDT	1.58	46.1	0.00
041M061101	11/16/1995	µg/kg	10.8		Total PCBs	22.7	180	0.06
041M061101	11/16/1995	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M061101	11/16/1995	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M061101	11/16/1995	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M061101	11/16/1995	µg/kg	20	U	Anthracene	85.3	1,100	0.02
041M061101	11/16/1995	µg/kg	20	U	Benzo(a)anthracene	261	1,600	0.01
041M061101	11/16/1995	µg/kg	23	J	Benzo(a)pyrene	430	1,600	0.01
041M061101	11/16/1995	µg/kg	20	U	Chrysene	384	2,800	0.01
041M061101	11/16/1995	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M061101	11/16/1995	µg/kg	20	U	Fluoranthene	600	5,100	0.00
041M061101	11/16/1995	µg/kg	9.5	U	Fluorene	19	540	0.02
041M061101	11/16/1995	µg/kg	20	U	Naphthalene	160	2,100	0.01
041M061101	11/16/1995	µg/kg	20	U	Phenanthrene	240	1,500	0.01
041M061101	11/16/1995	µg/kg	20	U	Pyrene	665	2,600	0.01
041M061101	11/16/1995				ERM Quotient Sum			0.65
041M061101	11/16/1995				Mean ERM Quotient			0.03
041M061101	11/16/1995				Mean ERM Quotient without ND			0.01
041M061101	11/16/1995				Mean ERM Quotient Category			1

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-2-10
Wetland 6 Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**2**	**3**	**95.5**	**95.5**	**95.5**	**263**	**287**	**406**	**041W060701**	**406**		**13**	**FDEP**	**31.2**	**Yes**	**Max Detect > SV**
Antimony	0	3	1	1	1	1			ND	1	UJ	160	EPA	0.01	No	Max SQL< SV
Arsenic	0	3	1	1	1	1			ND	1	U	50	FDEP	0.02	No	Max SQL< SV
Barium	2	3	5.8	5.8	5.8	17.4	15.9	30.5	041W061001	30.5	J		NA		Yes	No SV
Beryllium	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	3.85	Yes	Max SQL > SV
Cadmium	0	3	1.5	1.5	1.5	1.5			ND	1.5	U	0.66	EPA	2.27	Yes	Max SQL > SV
Calcium	3	3				20,700	18,300	24,700	041W060701	24,700			NA		Yes	No SV
Chromium	0	3	4	4	4	4			ND	4	U	11	EPA	0.36	No	Max SQL< SV
Cobalt	0	3	1.5	1.5	1.5	1.5			ND	1.5	UJ		NA		Yes	No SV
Copper	0	3	2.67	2	4	2.67			ND	4	U	6.54	EPA	0.61	No	Max SQL< SV
Cyanide (CN)	**1**	**3**	**2.5**	**2.5**	**2.5**	**3.53**	**5.6**	**5.6**	**041W061001**	**5.6**	**J**	**5.2**	**EPA**	**1.08**	**Yes**	**Max Detect > SV**
Iron	3	3				527	334	870	041W061001	870	J		NA		Yes	No SV
Lead	**2**	**3**	**0.5**	**0.5**	**0.5**	**1.6**	**1.2**	**3.1**	**041W061001**	**3.1**	**J**	**1.32**	**EPA**	**2.35**	**Yes**	**Max Detect > SV**
Magnesium	3	3				2,610	1,910	3,480	041W060701	3,480	J		NA		Yes	No SV
Manganese	3	3				36.2	19.5	55.7	041W061001	55.7			NA		Yes	No SV
Mercury	**1**	**3**	**0.065**	**0.065**	**0.065**	**0.337**	**0.88**	**0.88**	**041W061001**	**0.88**		**0.012**	**EPA**	**73.3**	**Yes**	**Max Detect > SV**
Nickel	0	3	6	6	6	6			ND	6	U	87.71	EPA	0.07	No	Max SQL< SV
Potassium	3	3				2,160	1,520	3,050	041W060701	3,050	J		NA		Yes	No SV
Selenium	0	3	1.5	1.5	1.5	1.5			ND	1.5	U	5	EPA	0.3	No	Max SQL< SV
Silver	0	3	2	2	2	2			ND	2	U	0.012	EPA	167	Yes	Max SQL > SV
Sodium	3	3				12,000	10,300	13,800	041W060301	13,800			NA		Yes	No SV
Thallium	1	3	1.5	1.5	1.5	2.1	3.3	3.3	041W060701	3.3	J	4	EPA	0.83	No	Max Detect < SV
Vanadium	2	3	1.9	1.9	1.9	2.1	2.1	2.3	041W060701	2.3	J		NA		Yes	No SV
Zinc	0	3	10.1	5.4	19.35	10.1			ND	19.35	U	58.91	EPA	0.33	No	Max SQL< SV
Pesticides (µg/L)																
Aldrin	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Dieldrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan I	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.056	EPA	0.45	No	Max SQL< SV
Endosulfan II	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan sulfate	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Heptachlor	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	6.58	Yes	Max SQL > SV
Heptachlor epoxide	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	3	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Toxaphene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
alpha-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Total Chlordane	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	11.6	Yes	Max SQL > SV
Endrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin aldehyde	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin ketone	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	Yes	Max SQL > SV
Total Endrin	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
alpha-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
beta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
delta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-BHC (Lindane)	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.08	EPA	0.31	No	Max SQL< SV
Total BHC	0	3	0.1	0.1	0.1	0.1			ND	0.1	U		NA		Yes	No SV
4,4'-DDD	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	Yes	Max SQL > SV
Total DDT	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
PCBs (µg/L)																
Aroclor-1016	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1221	0	3	1	1	1	1			ND	1	U		NA		Yes	No SV
Aroclor-1232	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1242	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1248	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1254	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Table 11-2-10
Wetland 6 Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
PCBs (µg/L) - cont.																
Aroclor-1260	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	35.7	Yes	Max SQL > SV
Total PCB	0	3	4	4	4	4			ND	4	U		NA		Yes	No SV
SVOCs (µg/L)																
1,2,4-Trichlorobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlo	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dimethylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chloronaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	43.8	EPA	0.06	No	Max SQL< SV
2-Methyl-4,6-Dinitrophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitrophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methylphenol (p-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Nitrophenol	0	3	10	10	10	10			ND	10	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**3**	**2.5**	**2.5**	**2.5**	**2.67**	**3**	**3**	**041W061001**	**3**	**J**	**0.3**	**EPA**	**10**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dibenzofuran	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Diethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dimethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Di-n-butylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U	9.4	EPA	0.27	No	Max SQL< SV
Di-n-octylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Hexachlorobutadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachloroethane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Isophorone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Nitrobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitrosodiphenylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pentachlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Phenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
PAHs (µg/L)																
2-Methylnaphthalene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthylene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Table 11-2-10
Wetland 6 Phase II
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
PAHs (µg/L) - cont.																
Chrysene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluorene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Naphthalene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	No	Max SQL< SV
Phenanthrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Total PAH	0	3	6.5	6.5	6.5	6.5			ND	6.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	1	3	0.5	0.5	0.5	2	5	5	041W061001	5		270	FDEP	0.02	No	Max Detect < SV
1,1,2,2-Tetrachloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethane	1	3	0.5	0.5	0.5	2	5	5	041W061001	5			NA		Yes	No SV
1,1-Dichloroethene	**1**	**3**	**0.5**	**0.5**	**0.5**	**3**	**8**	**8**	**041W061001**	**8**		**3.2**	**FDEP**	**2.5**	**Yes**	**Max Detect > SV**
1,2-Dibromo-3-Chloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dibromoethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	15.8	EPA	0.03	No	Max SQL< SV
1,2-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,3-Dichlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	3	FDEP	0.17	No	Max SQL< SV
2-Butanone (MEK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Hexanone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acetone	0	1	8.5	8.5	8.5	8.5			ND	8.5	U		NA		Yes	No SV
Benzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	53	EPA	0.01	No	Max SQL< SV
Bromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromodichloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromoform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromomethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon disulfide	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon tetrachloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	17	FDEP	0.03	No	Max SQL< SV
Chloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chloroform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	289	EPA	0.00	No	Max SQL< SV
Chloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
cis-1,2-Dichloroethene	1	3	0.5	0.5	0.5	1	2	2	041W061001	2			NA		Yes	No SV
cis-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Ethylbenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	1	3	2	0.5	3.5	5.67	13	13	041W060701	13		1,580	FDEP	0.01	No	Max Detect < SV
Styrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Tetrachloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Toluene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	175	EPA	0.00	No	Max SQL< SV
trans-1,2-Dichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	1	3	0.5	0.5	0.5	0.667	1	1	041W061001	1			NA		Yes	No SV
Vinyl chloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Xylene (Total)	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
N/R = No refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value

Table 11-2-11
Wetland 6 Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	bis(2-Ethylhexyl)phthalate (BEHP)	cis-1,2-Dichloroethene
Barium			1,1-Dichloroethane
Calcium			1,1-Dichloroethene
Cyanide (CN)			Trichloroethene
Iron			
Lead			
Magnesium			
Manganese			
Mercury			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Cadmium	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1,2-Trichloroethane
Cobalt	Endosulfan II	2,4,5-Trichlorophenol	1,2-Dibromo-3-Chloropropane
Silver	Endosulfan sulfate	2,4,6-Trichlorophenol	1,2-Dibromoethane
	Heptachlor	2,4-Dichlorophenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4-Dimethylphenol	1,2-Dichloropropane
	Methoxychlor	2,4-Dinitrophenol	1,3-Dichlorobenzene
	Toxaphene	2,4-Dinitrotoluene	2-Butanone (MEK)
	alpha-Chlordane	2,6-Dinitrotoluene	2-Hexanone
	gamma-Chlordane	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	Total Chlordane	2-Methyl-4,6-Dinitrophenol	Acetone
	Endrin	2-Methylphenol (o-Cresol)	Bromochloromethane
	Endrin aldehyde	2-Nitroaniline	Bromodichloromethane
	Endrin ketone	2-Nitrophenol	Bromoform
	Total Endrin	3,3'-Dichlorobenzidine	Bromomethane
	alpha-BHC	3-Nitroaniline	Carbon disulfide
	beta-BHC	4-Bromophenyl-phenylether	Carbon tetrachloride
	delta-BHC	4-Chloro-3-methylphenol	Chloroethane
	Total BHC	4-Chloroaniline	Chloromethane
	4,4'-DDD	4-Chlorophenylphenyl ether	cis-1,3-Dichloropropene
	4,4'-DDE	4-Methylphenol (p-Cresol)	Dibromochloromethane
	4,4'-DDT	4-Nitroaniline	Styrene
	Total DDT	4-Nitrophenol	Tetrachloroethene
	Aroclor-1016	Benzo(b)fluoranthene	trans-1,2-Dichloroethene
	Aroclor-1221	Benzo(g,h,i)perylene	trans-1,3-Dichloropropene
	Aroclor-1232	Benzo(k)fluoranthene	Vinyl chloride
	Aroclor-1242	bis(2-Chloroethoxy)methane	Xylene (Total)
	Aroclor-1248	bis(2-Chloroethyl)ether	
	Aroclor-1254	Butylbenzylphthalate	
	Aroclor-1260	Dibenzofuran	
	Total PCBs	Diethylphthalate	
		Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	
		2-Methylnaphthalene	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	
		Pyrene	
		Total PAHs	

Table 11-2-12
Wetland 6 Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
Metals (µg/L)																			
Aluminum	**2**	**3**	**95.5**	**95.5**	**95.5**	**263**	**287**	**406**	**041W060701**	**406**		**13**	**FDEP**	**31.23**	**20.2**	**1,090.25**	**0**	**No**	**Max Result < Ref. Conc.**
Barium	2	3	5.8	5.8	5.8	17.4	15.9	30.5	041W061001	30.5	J		NA			3.68	3	Yes	Max Result > Ref. Conc.
Beryllium	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	4	3.85	1	0	No	Parameter Not Detected
Cadmium	0	3	1.5	1.5	1.5	1.5			ND	1.5	U	0.66	EPA	2.27	2.27	3	0	No	Parameter Not Detected
Calcium	3	3				20,700	18,300	24,700	041W060701	24,700			NA			7,675	3	No	Essential Nutrient
Cobalt	0	3	1.5	1.5	1.5	1.5			ND	1.5	UJ		NA			3	0	No	Parameter Not Detected
Cyanide (CN)	**1**	**3**	**2.5**	**2.5**	**2.5**	**3.53**	**5.6**	**5.6**	**041W061001**	**5.6**	**J**	**5.2**	**EPA**	**1.08**	**0.68**	**5**	**1**	**Yes**	**Max Result > Ref. Conc.**
Iron	3	3				527	334	870	041W061001	870	J		NA			2,360	0	No	Max Result < Ref. Conc.
Lead	**2**	**3**	**0.5**	**0.5**	**0.5**	**1.6**	**1.2**	**3.1**	**041W061001**	**3.1**	**J**	**1.32**	**EPA**	**2.35**	**1.21**	**3.2**	**0**	**No**	**Max Result < Ref. Conc.**
Magnesium	3	3				2,610	1,910	3,480	041W060701	3,480	J		NA			20,260	0	No	Max Result < Ref. Conc.
Manganese	3	3				36.2	19.5	55.7	041W061001	55.7			NA			13.2	3	Yes	Max Result > Ref. Conc.
Mercury	**1**	**3**	**0.065**	**0.065**	**0.065**	**0.337**	**0.88**	**0.88**	**041W061001**	**0.88**		**0.012**	**EPA**	**73.33**	**28.1**	**0.13**	**1**	**Yes**	**Max Result > Ref. Conc.**
Potassium	3	3				2,160	1,520	3,050	041W060701	3,050	J		NA			6,995	0	No	Max Result < Ref. Conc.
Silver	0	3	2	2	2	2			ND	2	U	0.012	EPA	167	167	4	0	No	Parameter Not Detected
Sodium	3	3				12,000	10,300	13,800	041W060301	13,800			NA			182,200	0	No	Max Result < Ref. Conc.
Vanadium	2	3	1.9	1.9	1.9	2.1	2.1	2.3	041W060701	2.3	J		NA			4.7	0	No	Max Result < Ref. Conc.
Pesticides (µg/L)																			
Aldrin	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
Dieldrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endosulfan II	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endosulfan sulfate	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Heptachlor	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.0038	EPA	7	6.58		0	No	Parameter Not Detected
Heptachlor epoxide	0	3	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	No	Parameter Not Detected
Methoxychlor	0	3	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	No	Parameter Not Detected
Toxaphene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
alpha-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
gamma-Chlordane	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
Total Chlordane	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	12	11.6		0	No	Parameter Not Detected
Endrin	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endrin aldehyde	0	3	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endrin ketone	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	22	21.7		0	No	Parameter Not Detected
Total Endrin	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	No	Parameter Not Detected
alpha-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
beta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
delta-BHC	0	3	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
Total BHC	0	3	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	No	Parameter Not Detected
4,4'-DDD	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	No	Parameter Not Detected
4,4'-DDE	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	No	Parameter Not Detected
4,4'-DDT	0	3	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	No	Parameter Not Detected
Total DDT	0	3	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	No	Parameter Not Detected
PCBs (µg/L)																			
Aroclor-1016	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1221	0	3	1	1	1	1			ND	1	U		NA				0	No	Parameter Not Detected
Aroclor-1232	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1242	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1248	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1254	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1260	0	3	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	EPA	36	35.7		0	No	Parameter Not Detected
Total PCB	0	3	4	4	4	4			ND	4	U		NA				0	No	Parameter Not Detected
SVOCs (µg/L)																			
1,2,4-Trichlorobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dichlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dimethylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dinitrophenol	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Chloronaphthalene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Nitroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Nitrophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
3-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chloroaniline	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Nitroaniline	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
4-Nitrophenol	0	3	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
Benzo(b)fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected

Table 11-2-12
Wetland 6 Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
Benzo(g,h,i)perylene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Metals (µg/L) - cont.																			
Benzo(k)fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**3**	**2.5**	**2.5**	**2.5**	**2.67**	**3**	**3**	**041W061001**	**3**	**J**	**0.3**	**EPA**	**10**	**8.89**		**0**	**Yes**	**Max Result > SV**
Butylbenzylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Dibenzofuran	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Diethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Dimethylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Di-n-octylphthalate	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Hexachlorobutadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachloroethane	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Isophorone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Nitrobenzene	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Pentachlorophenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Phenol	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
PAHs (µg/L)																			
2-Methylnaphthalene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Acenaphthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Acenaphthylene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(a)anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(a)pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chrysene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Dibenz(a,h)anthracene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Fluoranthene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Fluorene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Phenanthrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Pyrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Total PAH	0	3	6.5	6.5	6.5	6.5			ND	6.5	U		NA				0	No	Parameter Not Detected
VOCs (µg/L)																			
1,1,2,2-Tetrachloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,1-Dichloroethane	1	3	0.5	0.5	0.5	2	5	5	041W061001	5			NA				0	Yes	No SV
1,1-Dichloroethene	**1**	**3**	**0.5**	**0.5**	**0.5**	**3**	**8**	**8**	**041W061001**	**8**		**3.2**	**FDEP**	**2.5**	**0.94**	**NA**		Yes	Max Result > SV
1,2-Dibromo-3-Chloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dibromoethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dichloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dichloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
2-Butanone (MEK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Hexanone	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	3	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Acetone	0	1	8.5	8.5	8.5	8.5			ND	8.5	U		NA				0	No	Parameter Not Detected
Bromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromodichloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromoform	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromomethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Carbon disulfide	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Carbon tetrachloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chloroethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
cis-1,2-Dichloroethene	1	3	0.5	0.5	0.5	1	2	2	041W061001	2			NA				0	Yes	No SV
cis-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Dibromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Styrene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Tetrachloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
trans-1,2-Dichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Trichloroethene	1	3	0.5	0.5	0.5	0.667	1	1	041W061001	1			NA				0	Yes	No SV
Vinyl chloride	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Xylene (Total)	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
UJ = Not detected. SQL is estimated.
D = Diluted Result
J = Estimated Value

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
PEL = Probable effects level.
N/R = No refinement value available.

N/A = Not applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the Max detections
Parameters in bold were detected and exceeded Ref. Conc.s

Table 11-2-13
Wetland 6 Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Cyanide (CN)	None	bis(2-Ethylhexyl)phthalate (BEHP)	cis-1,2-Dichloroethene
Manganese			1,1-Dichloroethene
Mercury			1,1-Dichloroethane
Barium			Trichloroethene

Table 11-2-14
Wetland 6 Phase IV
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**1**	**1**				**1,200**	**1,200**	**1,200**	**041W061002**	**1,200**		**13**	**FDEP**	**92.3**	**Yes**	**Max Detect > SV**
Antimony	0	1	1.95	1.95	1.95	1.95			ND	1.95	U	160	EPA	0.01	No	Max SQL< SV
Arsenic	1	1				5.7	5.7	5.7	041W061002	5.7	I	50	FDEP	0.11	No	Max Detect < SV
Barium	1	1				46	46	46	041W061002	46			NA		Yes	No SV
Beryllium	**1**	**1**				**0.34**	**0.34**	**0.34**	**041W061002**	**0.34**	**I**	**0.13**	**FDEP**	**2.62**	**Yes**	**Max Detect > SV**
Cadmium	**1**	**1**				**2.5**	**2.5**	**2.5**	**041W061002**	**2.5**	**I**	**0.66**	**EPA**	**3.79**	**Yes**	**Max Detect > SV**
Calcium	1	1				30,000	30,000	30,000	041W061002	30,000			NA		Yes	No SV
Chromium	**1**	**1**				**21**	**21**	**21**	**041W061002**	**21**		**11**	**EPA**	**1.91**	**Yes**	**Max Detect > SV**
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA		Yes	No SV
Copper	**1**	**1**				**19**	**19**	**19**	**041W061002**	**19**	**I**	**6.54**	**EPA**	**2.91**	**Yes**	**Max Detect > SV**
Iron	1	1				3,300	3,300	3,300	041W061002	3,300			NA		Yes	No SV
Lead	**1**	**1**				**40**	**40**	**40**	**041W061002**	**40**		**1.32**	**EPA**	**30.3**	**Yes**	**Max Detect > SV**
Magnesium	1	1				3,800	3,800	3,800	041W061002	3,800			NA		Yes	No SV
Manganese	1	1				110	110	110	041W061002	110			NA		Yes	No SV
Mercury	0	1	0.039	0.039	0.039	0.039			ND	0.039	U	0.012	EPA	3.25	Yes	Max SQL > SV
Nickel	1	1				2.5	2.5	2.5	041W061002	2.5	I	87.71	EPA	0.03	No	Max Detect < SV
Potassium	1	1				2,400	2,400	2,400	041W061002	2,400			NA		Yes	No SV
Selenium	**1**	**1**				**6.9**	**6.9**	**6.9**	**041W061002**	**6.9**	**I**	**5**	**EPA**	**1.38**	**Yes**	**Max Detect > SV**
Silver	0	1	0.55	0.55	0.55	0.55			ND	0.55	U	0.012	EPA	45.8	Yes	Max SQL > SV
Sodium	1	1				13,000	13,000	13,000	041W061002	13,000			NA		Yes	No SV
Thallium	0	1	3.8	3.8	3.8	3.8			ND	3.8	U	4	EPA	0.95	No	Max SQL< SV
Vanadium	1	1				3.4	3.4	3.4	041W061002	3.4	I		NA		Yes	No SV
Zinc	**1**	**1**				**78**	**78**	**78**	**041W061002**	**78**		**58.91**	**EPA**	**1.32**	**Yes**	**Max Detect > SV**
VOCs (µg/L)																
1,1,1-Trichloroethane	0	1	0.16	0.16	0.16	0.16			ND	0.16	U	270	FDEP	0.00	No	Max SQL< SV
1,1,2,2-Tetrachloroethane	0	1	0.09	0.09	0.09	0.09			ND	0.09	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	1	0.11	0.11	0.11	0.11			ND	0.11	U		NA		Yes	No SV
1,1-Dichloroethane	1	1				0.8	0.8	0.8	041W061002	0.8	I		NA		Yes	No SV
1,1-Dichloroethene	1	1				0.98	0.98	0.98	041W061002	0.98	I	3.2	FDEP	0.31	No	Max Detect < SV
1,2-Dichloroethane	0	1	0.13	0.13	0.13	0.13			ND	0.13	U		NA		Yes	No SV
1,2-Dichloropropane	0	1	0.165	0.165	0.165	0.165			ND	0.165	U		NA		Yes	No SV
2-Butanone (MEK)	0	1	2.8	2.8	2.8	2.8			ND	2.8	U		NA		Yes	No SV
2-Hexanone	0	1	0.465	0.465	0.465	0.465			ND	0.465	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	1	0.325	0.325	0.325	0.325			ND	0.325	U		NA		Yes	No SV
Acetone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzene	0	1	0.18	0.18	0.18	0.18			ND	0.18	U	53	EPA	0.00	No	Max SQL< SV
Bromodichloromethane	0	1	0.07	0.07	0.07	0.07			ND	0.07	U		NA		Yes	No SV
Bromoform	0	1	0.165	0.165	0.165	0.165			ND	0.165	U		NA		Yes	No SV
Bromomethane	0	1	0.31	0.31	0.31	0.31			ND	0.31	U		NA		Yes	No SV
Carbon disulfide	0	1	0.33	0.33	0.33	0.33			ND	0.33	U		NA		Yes	No SV
Carbon tetrachloride	0	1	0.155	0.155	0.155	0.155			ND	0.155	U		NA		Yes	No SV
Chlorobenzene	1	1				11	11	11	041W061002	11		17	FDEP	0.65	No	Max Detect < SV
Chloroethane	0	1	0.39	0.39	0.39	0.39			ND	0.39	U		NA		Yes	No SV
Chloroform	0	1	0.185	0.185	0.185	0.185			ND	0.185	U	289	EPA	0.00	No	Max SQL< SV
Chloromethane	0	1	0.195	0.195	0.195	0.195			ND	0.195	U		NA		Yes	No SV
cis-1,2-Dichloroethene	1	1				5.1	5.1	5.1	041W061002	5.1			NA		Yes	No SV
cis-1,3-Dichloropropene	0	1	0.115	0.115	0.115	0.115			ND	0.115	U		NA		Yes	No SV
Dibromochloromethane	0	1	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Ethylbenzene	0	1	0.17	0.17	0.17	0.17			ND	0.17	U	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	0	1	0.32	0.32	0.32	0.32			ND	0.32	U	1580	FDEP	0.00	No	Max SQL< SV
Styrene	0	1	0.125	0.125	0.125	0.125			ND	0.125	U		NA		Yes	No SV
Tetrachloroethene	0	1	0.175	0.175	0.175	0.175			ND	0.175	U		NA		Yes	No SV
Toluene	0	1	0.27	0.27	0.27	0.27			ND	0.27	U	175	EPA	0.00	No	Max SQL< SV
trans-1,2-Dichloroethene	0	1	0.2	0.2	0.2	0.2			ND	0.2	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	1	0.13	0.13	0.13	0.13			ND	0.13	U		NA		Yes	No SV
Trichloroethene	1	1				1.3	1.3	1.3	041W061002	1.3			NA		Yes	No SV
Vinyl chloride	0	1	0.28	0.28	0.28	0.28			ND	0.28	U		NA		Yes	No SV
Xylene (Total)	0	1	0.65	0.65	0.65	0.65			ND	0.65	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8)
HQ = Hazard Quotient.
N/R = No refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value.

Table 11-2-15
Wetland 6 Phase IV
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs	VOCs
		Detected Parameters	
Aluminum	Not Analyzed	Not Analyzed	cis-1,2-Dichloroethene
Barium			1,1-Dichloroethane
Beryllium			Trichloroethene
Cadmium			
Calcium			
Chromium			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Selenium			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Cobalt	Not Analyzed	Not Analyzed	1,1,2,2-Tetrachloroethane
Mercury			1,1,2-Trichloroethane
Silver			1,2-Dichloroethane
			1,2-Dichloropropane
			2-Butanone (MEK)
			2-Hexanone
			4-Methyl-2-Pentanone (MIBK)
			Acetone
			Bromodichloromethane
			Bromoform
			Bromomethane
			Carbon disulfide
			Carbon tetrachloride
			Chloroethane
			Chloromethane
			cis-1,3-Dichloropropene
			Dibromochloromethane
			Styrene
			Tetrachloroethene
			trans-1,2-Dichloroethene
			trans-1,3-Dichloropropene
			Vinyl chloride
			Xylene (Total)

Table 11-2-16
Wetland 6 Phase IV
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
Metals (µg/L)																			
Aluminum	**1**	**1**				**1,200**	**1,200**	**1,200**	**041W061002**	**1,200**		**13**	**FDEP**	**92.31**	**92.3**	**1,090.25**	**1**	**Yes**	**Max Result > Ref. Conc.**
Barium	1	1				46	46	46	041W061002	46			NA			3.68	1	Yes	Max Result > Ref. Conc.
Beryllium	**1**	**1**				**0.34**	**0.34**	**0.34**	**041W061002**	**0.34**	**I**	**0.13**	**FDEP**	**3**	**2.62**	**1**	**0**	**No**	**Max Result < Ref. Conc.**
Cadmium	**1**	**1**				**2.5**	**2.5**	**2.5**	**041W061002**	**2.5**	**I**	**0.66**	**EPA**	**4**	**3.79**	**3**	**0**	**No**	**Max Result < Ref. Conc.**
Calcium	1	1				30,000	30,000	30,000	041W061002	30,000			NA			7,675	1	No	Essential Nutrient
Chromium	**1**	**1**				**21**	**21**	**21**	**041W061002**	**21**		**11**	**EPA**	**2**	**1.91**	**8**	**1**	**Yes**	**Max Result > Ref. Conc.**
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA			3	0	No	Parameter Not Detected
Copper	**1**	**1**				**19**	**19**	**19**	**041W061002**	**19**	**I**	**6.54**	**EPA**	**3**	**2.91**	**4**	**1**	**Yes**	**Max Result > Ref. Conc.**
Iron	1	1				3,300	3,300	3,300	041W061002	3,300			NA			2,360	1	Yes	Max Result > Ref. Conc.
Lead	**1**	**1**				**40**	**40**	**40**	**041W061002**	**40**		**1.32**	**EPA**	**30.30**	**30.3**	**3.2**	**1**	**Yes**	**Max Result > Ref. Conc.**
Magnesium	1	1				3,800	3,800	3,800	041W061002	3,800			NA			20,260	0	No	Max Result < Ref. Conc.
Manganese	1	1				110	110	110	041W061002	110			NA			13.2	1	Yes	Max Result > Ref. Conc.
Mercury	0	1	0.039	0.039	0.039	0.039			ND	0.039	U	0.012	EPA	3.25	3.25	0.13	0	No	Parameter Not Detected
Potassium	1	1				2,400	2,400	2,400	041W061002	2,400			NA			6,995	0	No	Max Result < Ref. Conc.
Selenium	**1**	**1**				**6.9**	**6.9**	**6.9**	**041W061002**	**6.9**	**I**	**5**	**EPA**	**1.38**	**1.38**	**3**	**1**	**Yes**	**Max Result > Ref. Conc.**
Silver	0	1	0.55	0.55	0.55	0.55			ND	0.55	U	0.012	EPA	46	45.8	4	0	No	Parameter Not Detected
Sodium	1	1				13,000	13,000	13,000	041W061002	13,000			NA			182,200	0	No	Max Result < Ref. Conc.
Vanadium	1	1				3.4	3.4	3.4	041W061002	3.4	I		NA			4.7	0	No	Max Result < Ref. Conc.
Zinc	**1**	**1**				**78**	**78**	**78**	**041W061002**	**78**		**58.91**	**EPA**	**1.32**	**1.32**	**5.53**	**1**	**Yes**	**Max Result > Ref. Conc.**
VOCs (µg/L)																			
1,1,2,2-Tetrachloroethane	0	1	0.09	0.09	0.09	0.09			ND	0.09	U		NA				0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	1	0.11	0.11	0.11	0.11			ND	0.11	U		NA				0	No	Parameter Not Detected
1,1-Dichloroethane	1	1				0.8	0.8	0.8	041W061002	0.8	I		NA				0	Yes	No SV
1,2-Dichloroethane	0	1	0.13	0.13	0.13	0.13			ND	0.13	U		NA				0	No	Parameter Not Detected
1,2-Dichloropropane	0	1	0.165	0.165	0.165	0.165			ND	0.165	U		NA				0	No	Parameter Not Detected
2-Butanone (MEK)	0	1	2.8	2.8	2.8	2.8			ND	2.8	U		NA				0	No	Parameter Not Detected
2-Hexanone	0	1	0.465	0.465	0.465	0.465			ND	0.465	U		NA				0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	1	0.325	0.325	0.325	0.325			ND	0.325	U		NA				0	No	Parameter Not Detected
Acetone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Bromodichloromethane	0	1	0.07	0.07	0.07	0.07			ND	0.07	U		NA				0	No	Parameter Not Detected
Bromoform	0	1	0.165	0.165	0.165	0.165			ND	0.165	U		NA				0	No	Parameter Not Detected
Bromomethane	0	1	0.31	0.31	0.31	0.31			ND	0.31	U		NA				0	No	Parameter Not Detected
Carbon disulfide	0	1	0.33	0.33	0.33	0.33			ND	0.33	U		NA				0	No	Parameter Not Detected
Carbon tetrachloride	0	1	0.155	0.155	0.155	0.155			ND	0.155	U		NA				0	No	Parameter Not Detected
Chloroethane	0	1	0.39	0.39	0.39	0.39			ND	0.39	U		NA				0	No	Parameter Not Detected
Chloromethane	0	1	0.195	0.195	0.195	0.195			ND	0.195	U		NA				0	No	Parameter Not Detected
cis-1,2-Dichloroethene	1	1				5.1	5.1	5.1	041W061002	5.1			NA				0	Yes	No SV
cis-1,3-Dichloropropene	0	1	0.115	0.115	0.115	0.115			ND	0.115	U		NA				0	No	Parameter Not Detected
Dibromochloromethane	0	1	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	No	Parameter Not Detected
Styrene	0	1	0.125	0.125	0.125	0.125			ND	0.125	U		NA				0	No	Parameter Not Detected
Tetrachloroethene	0	1	0.175	0.175	0.175	0.175			ND	0.175	U		NA				0	No	Parameter Not Detected
trans-1,2-Dichloroethene	0	1	0.2	0.2	0.2	0.2			ND	0.2	U		NA				0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	1	0.13	0.13	0.13	0.13			ND	0.13	U		NA				0	No	Parameter Not Detected
Trichloroethene	1	1				1.3	1.3	1.3	041W061002	1.3			NA				0	Yes	No SV
Vinyl chloride	0	1	0.28	0.28	0.28	0.28			ND	0.28	U		NA				0	No	Parameter Not Detected
Xylene (Total)	0	1	0.65	0.65	0.65	0.65			ND	0.65	U		NA				0	No	Parameter Not Detected

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
UJ = Not detected. SQL is estimated.
D = Diluted Result
J = Estimated Value

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
PEL = Probable effects level.
N/R = No refinement value available.

N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the Max detections.
Parameters in bold were detected and exceeded Ref. Conc.s.

Table 11-2-17
Wetland 6 Phase IV
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Not Analyzed	Not Analyzed	cis-1,2-Dichloroethene
Iron			1,1-Dichloroethane
Lead			Trichloroethene
Manganese			
Barium			
Chromium			
Copper			
Zinc			
Selenium			

Table 11-2-18
Wetland 6 Phase II
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	2.9E+02	=	4.1E+02	=	UG/L	041W060701	2 / 3	N/A / 1.9E+02	2.6E+02	4.1E-04	1.0E-03	1.06E-06	1.67E-05	2.23E-05
7440393	Barium	N	1.6E+01	J	3.1E+01	J	UG/L	041W061001	2 / 3	N/A / 1.2E+01	1.7E+01	3.1E-05	1.0E-03	7.93E-08	1.26E-06	1.68E-06
57125	Cyanide (CN)	N	N/A	N/A	5.6E+00	J	UG/L	041W061001	1 / 3	5.0E+00 / 5.0E+00	3.5E+00	5.6E-06	1.0E-03	1.46E-08	2.30E-07	3.08E-07
7439921	Lead	N	1.2E+00	J	3.1E+00	J	UG/L	041W061001	2 / 3	N/A / 1.0E+00	1.6E+00	3.1E-06	3.4E-04	2.74E-09	4.34E-08	5.80E-08
7439965	Manganese	N	2.0E+01	=	5.6E+01	=	UG/L	041W061001	3 / 3	NAV	3.6E+01	5.6E-05	1.0E-03	1.45E-07	2.29E-06	3.07E-06
7487947	Mercury	N	N/A	N/A	8.8E-01	=	UG/L	041W061001	1 / 3	1.3E-01 / 1.3E-01	3.4E-01	8.8E-07	1.0E-03	2.29E-09	3.62E-08	4.84E-08
7440622	Vanadium	N	2.1E+00	J	2.3E+00	J	UG/L	041W060701	2 / 3	N/A / 3.8E+00	2.1E+00	2.3E-06	1.0E-03	5.98E-09	9.47E-08	1.27E-07
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	N/A	N/A	3.0E+00	J	UG/L	041W061001	1 / 3	5.0E+00 / 5.0E+00	2.7E+00	3.0E-06	2.5E-02	2.52E-06	5.69E-06	1.90E-05
71556	1,1,1-Trichloroethane	N	N/A	N/A	5.0E+00	=	UG/L	041W061001	1 / 3	1.0E+00 / 1.0E+00	2.0E+00	5.0E-06	6.7E-03	1.13E-07	1.78E-06	2.38E-06
75343	1,1-Dichloroethane	N	N/A	N/A	5.0E+00	=	UG/L	041W061001	1 / 3	1.0E+00 / 1.0E+00	2.0E+00	5.0E-06	6.7E-03	1.11E-07	1.76E-06	2.35E-06
75354	1,1-Dichloroethene	N	N/A	N/A	8.0E+00	=	UG/L	041W061001	1 / 3	1.0E+00 / 1.0E+00	3.0E+00	8.0E-06	1.2E-02	3.21E-07	5.08E-06	6.79E-06
156592	cis-1,2-Dichloroethene	N	N/A	N/A	2.0E+00	=	UG/L	041W061001	1 / 3	1.0E+00 / 1.0E+00	1.0E+00	2.0E-06	1.5E-02	9.67E-08	1.53E-06	2.05E-06
75092	Methylene chloride	C	N/A	N/A	1.3E+01	=	UG/L	041W060701	1 / 3	1.0E+00 / 7.0E+00	5.7E+00	1.3E-05	3.5E-03	1.46E-07	3.31E-07	1.11E-06
79016	Trichloroethene	C	N/A	N/A	1.0E+00	=	UG/L	041W061001	1 / 3	1.0E+00 / 1.0E+00	6.7E-01	1.0E-06	1.2E-02	4.37E-08	9.87E-08	3.30E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound,
calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-2-19
Wetland 6 Phase II
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser		Maintenance Worker	
										Dermal Hazard Quotient	Dermal Cancer Risk	Dermal Hazard Quotient	Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	4.1E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	1.7E-04	N/A	2.2E-04	N/A
	Barium	N	3.1E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	2.6E-04	N/A	3.4E-04	N/A
	Cyanide (CN)	N	5.6E-06	2.0E-02	N/A	1.7E-01	3	3.4E-03	N/A	6.8E-05	N/A	9.1E-05	N/A
	Lead	N	3.1E-06	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	5.6E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	4.1E-04	N/A	5.5E-04	N/A
	Mercury	N	8.8E-07	3.0E-04	N/A	7.0E-02	1	2.1E-05	N/A	1.7E-03	N/A	2.3E-03	N/A
	Vanadium	N	2.3E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	5.2E-04	N/A	7.0E-04	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.0E-06	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	2.8E-03	8.0E-07	9.5E-03	**2.7E-06**
	1,1,1-Trichloroethane	N	5.0E-06	2.8E-01	N/A	9.0E-01	3	2.5E-01	N/A	7.1E-06	N/A	9.5E-06	N/A
	1,1-Dichloroethane	N	5.0E-06	1.0E-01	N/A	1.0E+00	3	1.0E-01	N/A	1.8E-05	N/A	2.3E-05	N/A
	1,1-Dichloroethene	N	8.0E-06	5.0E-02	N/A	1.0E+00	3	5.0E-02	N/A	1.0E-04	N/A	1.4E-04	N/A
	cis-1,2-Dichloroethene	N	2.0E-06	1.0E-02	N/A	1.0E+00	3	1.0E-02	N/A	1.5E-04	N/A	2.0E-04	N/A
	Methylene chloride	C	1.3E-05	6.0E-02	7.5E-03	1.0E-01	3	6.1E-03	7.4E-02	5.5E-05	2.5E-08	1.8E-04	8.2E-08
	Trichloroethene	C	1.0E-06	3.0E-04	4.0E-01	8.0E-01	3	2.4E-04	5.0E-01	4.1E-04	4.9E-08	1.4E-03	1.7E-07

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-2-20
Wetland 6 Phase II
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser Ingestion Hazard Quotient	Child Trespasser Ingestion Cancer Risk	Maintenance Worker Ingestion Hazard Quotient	Maintenance Worker Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	4.1E-04	1.0E+00	N/A	1.3E-08	N/A	8.3E-09	N/A
	Barium	N	3.1E-05	7.0E-02	N/A	1.4E-08	N/A	8.9E-09	N/A
	Cyanide (CN)	N	5.6E-06	2.0E-02	N/A	8.9E-09	N/A	5.7E-09	N/A
	Lead	N	3.1E-06	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	5.6E-05	1.4E-01	N/A	1.3E-08	N/A	8.1E-09	N/A
	Mercury	N	8.8E-07	3.0E-04	N/A	9.3E-08	N/A	6.0E-08	N/A
	Vanadium	N	2.3E-06	7.0E-03	N/A	1.0E-08	N/A	6.7E-09	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.0E-06	2.0E-02	1.4E-02	6.8E-10	1.9E-13	1.1E-09	3.1E-13
	1,1,1-Trichloroethane	N	5.0E-06	2.8E-01	N/A	5.7E-10	N/A	3.6E-10	N/A
	1,1-Dichloroethane	N	5.0E-06	1.0E-01	N/A	1.6E-09	N/A	1.0E-09	N/A
	1,1-Dichloroethene	N	8.0E-06	5.0E-02	N/A	5.1E-09	N/A	3.3E-09	N/A
	cis-1,2-Dichloroethene	N	2.0E-06	1.0E-02	N/A	6.3E-09	N/A	4.1E-09	N/A
	Methylene chloride	C	1.3E-05	6.0E-02	7.5E-03	9.8E-10	4.4E-13	1.6E-09	7.1E-13
	Trichloroethene	C	1.0E-06	3.0E-04	4.0E-01	1.5E-08	1.8E-12	2.4E-08	2.9E-12

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

$$Risk = CDI \times SF_{oral}$$

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_{sw} = Exposure point concentration in surface water (mg/L).
IR_{sw} = Incidental ingestion rate for sediment (L/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
Irsw = 0.01 L/day exposure to surface water during wading for adolescents and adults.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Table 11-2-21
Wetland 6 Phase IV
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	N/A	N/A	1.2E+03	=	UG/L	041W061002	1 / 1	NAV	1.2E+03	1.2E-03	1.0E-03	3.12E-06	4.94E-05	6.60E-05
7440393	Barium	N	N/A	N/A	4.6E+01	=	UG/L	041W061002	1 / 1	NAV	4.6E+01	4.6E-05	1.0E-03	1.20E-07	1.89E-06	2.53E-06
7440417	Beryllium	N	N/A	N/A	3.4E-01	I	UG/L	041W061002	1 / 1	NAV	3.4E-01	3.4E-07	1.0E-03	8.84E-10	1.40E-08	1.87E-08
7440439	Cadmium	N	N/A	N/A	2.5E+00	I	UG/L	041W061002	1 / 1	NAV	2.5E+00	2.5E-06	1.0E-03	6.50E-09	1.03E-07	1.38E-07
7440473	Chromium	N	N/A	N/A	2.1E+01	=	UG/L	041W061002	1 / 1	NAV	2.1E+01	2.1E-05	1.0E-03	5.46E-08	8.64E-07	1.16E-06
7440508	Copper	N	N/A	N/A	1.9E+01	I	UG/L	041W061002	1 / 1	NAV	1.9E+01	1.9E-05	1.0E-03	4.94E-08	7.82E-07	1.05E-06
7439896	Iron	N	N/A	N/A	3.3E+03	=	UG/L	041W061002	1 / 1	NAV	3.3E+03	3.3E-03	2.5E-04	2.15E-06	3.40E-05	4.54E-05
7439921	Lead	N	N/A	N/A	4.0E+01	=	UG/L	041W061002	1 / 1	NAV	4.0E+01	4.0E-05	3.4E-04	3.54E-08	5.60E-07	7.48E-07
7439965	Manganese	N	N/A	N/A	1.1E+02	=	UG/L	041W061002	1 / 1	NAV	1.1E+02	1.1E-04	1.0E-03	2.86E-07	4.53E-06	6.05E-06
7782492	Selenium	N	N/A	N/A	6.9E+00	I	UG/L	041W061002	1 / 1	NAV	6.9E+00	6.9E-06	1.0E-03	1.79E-08	2.84E-07	3.80E-07
7440622	Vanadium	N	N/A	N/A	3.4E+00	I	UG/L	041W061002	1 / 1	NAV	3.4E+00	3.4E-06	1.0E-03	8.84E-09	1.40E-07	1.87E-07
7440666	Zinc	N	N/A	N/A	7.8E+01	=	UG/L	041W061002	1 / 1	NAV	7.8E+01	7.8E-05	6.0E-04	1.22E-07	1.93E-06	2.58E-06
75343	1,1-Dichloroethane	N	N/A	N/A	8.0E-01	I	UG/L	041W061002	1 / 1	NAV	8.0E-01	8.0E-07	6.7E-03	1.78E-08	2.81E-07	3.76E-07
75354	1,1-Dichloroethene	N	N/A	N/A	9.8E-01	I	UG/L	041W061002	1 / 1	NAV	9.8E-01	9.8E-07	1.2E-02	3.93E-08	6.22E-07	8.31E-07
85018	Chlorobenzene	N	N/A	N/A	1.1E+01	=	UG/L	041W061002	1 / 1	NAV	1.1E+01	1.1E-05	2.8E-02	1.04E-06	1.65E-05	2.20E-05
156592	cis-1,2-Dichloroethene	N	N/A	N/A	5.1E+00	=	UG/L	041W061002	1 / 1	NAV	5.1E+00	5.1E-06	1.5E-02	2.46E-07	3.90E-06	5.22E-06
79016	Trichloroethene	C	N/A	N/A	1.3E+00	=	UG/L	041W061002	1 / 1	NAV	1.3E+00	1.3E-06	1.2E-02	5.68E-08	1.28E-07	4.29E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).

EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1 + B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1 + B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound,
calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer - 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer - 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-2-22
Wetland 6 Phase IV
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	1.2E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	4.9E-04	N/A	6.6E-04	N/A
	Barium	N	4.6E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	3.9E-04	N/A	5.2E-04	N/A
	Beryllium	N	3.4E-07	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	1.0E-03	N/A	1.3E-03	N/A
	Cadmium	N	2.5E-06	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	8.2E-03	N/A	1.1E-02	N/A
	Chromium	N	2.1E-05	3.0E-03	N/A	2.5E-02	1	7.5E-05	N/A	1.2E-02	N/A	1.5E-02	N/A
	Copper	N	1.9E-05	4.0E-02	N/A	3.0E-01	3	1.2E-02	N/A	6.5E-05	N/A	8.7E-05	N/A
	Iron	N	3.3E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	4.0E-05	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-04	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	8.1E-04	N/A	1.1E-03	N/A
	Selenium	N	6.9E-06	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	1.0E-04	N/A	1.4E-04	N/A
	Vanadium	N	3.4E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	7.7E-04	N/A	1.0E-03	N/A
	Zinc	N	7.8E-05	3.0E-01	N/A	2.0E-01	2, 4	6.0E-02	N/A	3.2E-05	N/A	4.3E-05	N/A
	1,1-Dichloroethane	N	8.0E-07	1.0E-01	N/A	1.0E+00	3	1.0E-01	N/A	2.8E-06	N/A	3.8E-06	N/A
	1,1-Dichloroethene	N	9.8E-07	5.0E-02	N/A	1.0E+00	3	5.0E-02	N/A	1.2E-05	N/A	1.7E-05	N/A
	Chlorobenzene	N	1.1E-05	2.0E-02	N/A	7.3E-02	3	1.5E-03	N/A	1.1E-02	N/A	1.5E-02	N/A
	cis-1,2-Dichloroethene	N	5.1E-06	1.0E-02	N/A	1.0E+00	3	1.0E-02	N/A	3.9E-04	N/A	5.2E-04	N/A
	Trichloroethene	C	1.3E-06	3.0E-04	4.0E-01	8.0E-01	3	2.4E-04	5.0E-01	5.3E-04	6.4E-08	1.8E-03	2.1E-07

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-2-23
Wetland 6 Phase IV
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Child Trespasser: Ingestion Hazard Quotient	Child Trespasser: Ingestion Cancer Risk	Maintenance Worker: Ingestion Hazard Quotient	Maintenance Worker: Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	1.2E-03	1.0E+00	N/A	3.8E-08	N/A	2.4E-08	N/A
	Barium	N	4.6E-05	7.0E-02	N/A	2.1E-08	N/A	1.3E-08	N/A
	Beryllium	N	3.4E-07	2.0E-03	N/A	5.4E-09	N/A	3.5E-09	N/A
	Cadmium	N	2.5E-06	5.0E-04	N/A	1.6E-07	N/A	1.0E-07	N/A
	Chromium	N	2.1E-05	3.0E-03	N/A	2.2E-07	N/A	1.4E-07	N/A
	Copper	N	1.9E-05	4.0E-02	N/A	1.5E-08	N/A	9.7E-09	N/A
	Iron	N	3.3E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	4.0E-05	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-04	1.4E-01	N/A	2.5E-08	N/A	1.6E-08	N/A
	Selenium	N	6.9E-06	5.0E-03	N/A	4.4E-08	N/A	2.8E-08	N/A
	Vanadium	N	3.4E-06	7.0E-03	N/A	1.5E-08	N/A	9.9E-09	N/A
	Zinc	N	7.8E-05	3.0E-01	N/A	8.2E-09	N/A	5.3E-09	N/A
	1,1-Dichloroethane	N	8.0E-07	1.0E-01	N/A	2.5E-10	N/A	1.6E-10	N/A
	1,1-Dichloroethene	N	9.8E-07	5.0E-02	N/A	6.2E-10	N/A	4.0E-10	N/A
	Chlorobenzene	N	1.1E-05	2.0E-02	N/A	1.7E-08	N/A	1.1E-08	N/A
	cis-1,2-Dichloroethene	N	5.1E-06	1.0E-02	N/A	1.6E-08	N/A	1.0E-08	N/A
	Trichloroethene	C	1.3E-06	3.0E-04	4.0E-01	2.0E-08	2.4E-12	3.1E-08	3.8E-12

Notes:
Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

$$Risk = CDI \times SF_{oral}$$

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_{sw} = Exposure point concentration in surface water (mg/L).
IR_{sw} = Incidental ingestion rate for sediment (L/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:
Irsw = 0.01 L/day exposure to surface water during wading for adolescents and adults.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

11.3 Wetland 64 — Screening Level Problem Formulation

11.3.1 Site Description and Habitats Present at Wetland 64

Wetland 64 is an approximately 41-acre area on the eastern shore of the upstream side of the NAS Pensacola Yacht Basin, which is in the northeastern quadrant of the base (Figure 11-1). For the Site 41 RI, the Wetland 64 complex investigation incorporated several areas surrounding NAS Pensacola Yacht Basin: the southeast shore of the Yacht Basin, the open water area of the Yacht Basin, and adjacent Wetlands 7 and 8. The open water portion of the Wetland 64 complex is approximately 20 acres in size, ranging from about 2 to 15 feet in depth, and is 600 to 900 feet wide.

Photograph 1 Wetland 64 — Looking south across Yacht Basin toward headwater. Shoreline of Magazine Point in left background.

Adjacent Wetland 7 encompasses the downstream end of the tile-lined storm water conduit (Wetland 6) that drains into the Yacht Basin. Wetland 6 drains storm water runoff from the area directly around Naval Air Technical Training Center (NATTC) and the NAS Chapel. The NATTC was previously the Naval Aviation Depot or NADEP. Wetlands 5A and 5B (Section 11.1) contribute additional discharge to Wetland 6 (Section 11.2), which ultimately discharges into Wetland 64.

Adjacent Wetland 8 includes the western shore of Magazine Point. The western shore of the Yacht Basin also contains the NAS Pensacola Yacht Club and marina. A concrete seawall exists along the shoreline of the marina, from which several docks housing numerous boats extend into the

Yacht Basin. The western shore of the Yacht Basin also contains buildings, a paved parking area, a fenced area for boat storage, and road access. The eastern bank of the Yacht Basin remains relatively undisturbed.

Evaluation of maps and aerial photography from 1939 and 1951 reveal the Wetland 64 area was once approximately one-third larger than the current area. Sometime after 1939, approximately 15 acres in the southwest portion (the area now encompassing IR Site 11, North Chevalier Disposal Site), and approximately 10 acres along the west side (the area now containing the building and parking areas associated with the Yacht Basin), were filled; apparently coincident with the construction of the marina. The filled area along Site 11 constricts the width of the open water portion of Wetland 64 to approximately 8 to 10 feet from where Wetland 6 discharges into this water body to the southern end of the marina.

IR sites potentially affecting Wetland 64 include Site 10, OU 2 (Sites 11, 12, and 30), and OU 6 (Sites 9, 29, and 34). OU 6 may affect Wetland 64 based on potential contaminant transport from Wetland 6. From the late 1930s until the early 1950s, industrial waste was disposed of and burned at Site 11 (North Chevalier Disposal Site). Wastes disposed of at this site included waste oils. Site 12 (Scrap Bins) was active from the early 1930s through the 1940s as an area where wet garbage was deposited in receptacles.

Site 9 (Navy Yard Disposal Site) was used as the station disposal site for the old Navy yard. The earliest existing records indicate this disposal site was used from 1917 to the early 1930s and was used primarily to dispose of ordinary domestic trash and refuse. Contaminants detected in the soil include semi-volatiles and pesticides (E/A&H, 1997f). The semi-volatiles may be associated with Site 23, a UST site. Pesticides are believed to represent normal application residue through basewide applications.

Site 10, Commodore's Pond, was used in the mid-1800s for underwater storage of wooden timbers for shipbuilding. There is no evidence of hazardous material use, storage, or disposal at this site.

Site 11 was a former landfill in the North Chavalier Field Disposal Area where industrial and municipal wastes were disposed and burned from the late 1930s to the mid-1940s. Two prefabricated buildings (3627 and 3628) are near the center of the site. Building 3445, at the site's southeastern corner, is used to store outdated office equipment. A fenced area north and south of Building 3445 is used for outside storage of boats, trucks, and heavy equipment.

Site 12 (Scrap Bins) was the location where wet garbage was deposited in receptacles from the early 1930s through the 1940s. There is no evidence that hazardous materials were stored or disposed of in this area; although it is possible that hazardous waste or PCB-containing oil was also stored. Site 12 is approximately 600 feet west of Site 11. Most of the site is enclosed by a fence and paved with concrete.

Site 29 (Soil South of Building 3460) is the location where several evacuation workers received minor skin burns from contact with a liquid in soil south of Building 3460 in 1981. The chemical was never identified.

Site 30 (Buildings 648, 649, and 755) was active from the 1940s through the 1970s as the NADEP Dynamic Components Division. Historical accounts note the periodic discharge of metal plating complex effluents into Wetland 5. Site 34 is identified as the location of solvent spill that occurred north of Building 3557.

11.3.2 Wetland 64 — Sample Location Description

Phase II Sediment Sample Location Description

Twenty-four sediment samples were collected and analyzed for the Wetland 64 ERA. Sample locations for Wetland 64 covered the aerial extent of the wetland, focusing on groundwater seeps and depositional areas. Wetland 64's shape (resembling an inverted bottle) was conducive to a sampling design allowing for three station intervals at the wider parts, narrowing down to two station intervals in the southern (neck of the bottle) region, and eventually one sample. Table 11-3-1 (tables are located at the end of each section) provides a physical description of the Phase II sediments collected at Wetland 64 during the Site 41 RI Phase II investigations in November 1995 and February 1996. Sediments at Wetland 64 were composed of dark gray organic silt (041M641001) to dark brown silty sand with gravel, organics (041M642201). TOC concentrations ranged from 0.07% at sample location 041M642401 to 19.4% at sample location 041M640301.

Phase III Sediment Sample Location Description

Three sediment samples were collected during the Phase III investigation of Wetland 64. Phase III sampling was initiated to confirm elevated detections at sediment locations 041M640401, 041M640501, and 041M640601. Table 11-3-2 provides a physical description of the sediments collected in 1997. Phase III sediments at Wetland 64 were dominated by fine sands and superfine silt and clay. TOC concentrations ranged from 6.00% to 8.60%.

Phase III Surface Water Sample Location Description

Two surface water samples were collected during the 1997 Phase III investigation of Wetland 64. Surface water locations 041W640101 and 041W640501 (Figure 11-4) were collocated with sediment locations collected during the Phase II investigation. However, no analyses for physical parameters were performed on these samples.

Phase IV/2001 Sediment Sample Location Description

Seven sediment samples were collected and analyzed for the Phase IV Wetland 64 ERA. Sample locations were concentrated around the area identified as Site 11, and included 041M640202, 041M640302, 041M640502 through 041M640702, 041M641102, and 041M642402 (Figure 11-4). Grain size analysis was not performed on these sediments, although TOC levels were analyzed. TOC levels ranged from 0.14% to 18.0%.

Sediment locations 041M640202 through 041M640702 were collocated at depths ranging from 1.5 to 3.5 feet. Locations 041M641102 and 041M642402 were in the deeper portion of the wetland, with depths greater than 8 feet.

11.3.3 Nature and Extent of Contamination

Phase II Sediment

Figure 11-4 presents the Phase II sediment sampling locations for Wetland 64. Table 11-3-3 presents a summary of the analytical results of the 24 Phase II sediment samples.

Metals — Twenty-three inorganic constituents were detected during Phase II sediment sampling at Wetland 64. Inorganic detections were distributed across the entirety of Wetland 64. However, estuarine reference value exceedances were mostly concentrated along the northwestern border of the sampling grid, specifically sampling points 041M641001, 041M641101, 041M641301, 041M641401, 041M641601, and 041M641901. Each of these sampling points yielded analytical results exceeding estuarine reference values for each of the 23 inorganic analytes. Estuarine reference values were exceeded in sampling points surrounding these five locations in the northwest and center of Wetland 64. Estuarine values were also exceeded in the southern portion of Wetland 64 during the Phase II sediment sampling event. Twenty-two of the 23 detected constituents were found to exceed estuarine reference concentrations at sample location 041M640301. Sampling points surrounding 041M640301 were found to contain fewer constituents exceeding estuarine reference concentrations.

Pesticides and PCBs — Fourteen pesticide compounds and two PCBs (aroclor-1254 and aroclor-1260) were detected during Phase II sediment sampling at Wetland 64. Total DDT was calculated for each location by adding the concentrations of 4,4′-DDD, 4,4′-DDE and 4,4′-DDT. Likewise, a basewide total DDT reference concentration was calculated using the basewide concentrations for these same constituents.

The greatest number of pesticides detected in Wetland 64 sediments was situated in the south central portion of the wetland at locations 041M640101, 041M640201, 041M640301, 041M640501, 041M640601, and 041M640801. Each of these locations had five or more detections of pesticide compounds. All other sampling locations had four or fewer pesticide detections. PCBs were detected at all sampling locations, except for the following: 041M642101, 041M642201, 041M642301, and 041M642401.

SVOCs — Twenty-seven SVOCs were detected in sediment samples collected during Phase II sampling. Three of the sample locations (041M641201, 041M642101, and 041M642401) exhibited no detections of SVOCs. Locations 041M640101 and 041M640501 had the greatest numbers of SVOC detections with 19 and 20 compounds detected, respectively. These sampling locations also yielded some of the highest constituent concentrations, especially for benzo(b)fluoranthene and fluoranthene.

VOCs — Four VOCs were detected in sediments collected from Wetland 64 during Phase II sampling. The greatest numbers of constituents detected were at location 041M641601 located in the northern portion of the wetland. However, the highest constituent concentrations were located at 041M641401, located closer to the center of the wetland than 041M641601. Locations 041M641401 and 041M641901 (directly north of 041M641601) each had two detections.

Phase III Sediment

Based on the results of the Phase II sampling, Phase III was initiated to confirm elevated detections at sediment locations 041M640401, 041M640501, and 041M640601. Figure 11-4 presents the Phase III sediment sampling locations for Wetland 64. Table 11-3-4 presents a summary the analytical results of the Phase III sediment sampling.

Metals — Twenty-two metals were detected at the Phase III sediment samples collected at Wetland 64. All 22 constituents were detected at sample location 041M640501. Metals detected exceeded reference concentration at the majority of the sediment sample locations.

The Phase III sample results were in close agreement with the Phase II results, with the exception of sample location 041M640601. Results from this sampling location differed by up to five times the original concentration.

Pesticides and PCBs — Seven pesticide compounds and one PCB (aroclor-1260) were detected during Phase III sediment sampling. In general, the Phase II and III pesticide and PCB analytical results were not in agreement. Sampling location 041M640401 contained the greatest number of constituents, as well as highest concentrations during Phase III. Concentrations during Phase III varied from Phase II by multiples of five or even by factors of 10.

SVOCs — Eighteen SVOCs were detected during Phase III at Wetland 64. All sample locations had detections. All constituents, except for dibenzofuran, were detected at sampling location 041W640401. Concentrations of many constituents during Phase III differed from Phase II concentrations by as little as multiples of two or as great as factors of 10, with the greatest differences found at sampling location 041W640601.

VOCs — The only VOC detected in sediment samples during Phase III sampling was acetone. Concentrations for acetone found at sampling locations 041W640401 and 041W640501 were comparable to concentrations found during Phase II. Acetone was not detected during Phase III at sampling location 041W640601.

Phase IV Sediment

Figure 11-4 presents the Phase IV sediment sampling locations for Wetland 64. Table 11-3-5 presents a summary of the analytical results of the seven sediment samples.

Metals — Twenty metals were detected in sediment samples taken during Phase IV at Wetland 64. The distribution of detections and reference value exceedances were at locations 041M640202, 041M640302, 041M640502, 041M640602, and 041M641102, located within the south central area of the wetland. These locations generally exhibited the highest concentrations of metals as well as diversity. The other two locations exhibited multiple detections but only had two exceedances at 041M640702 and no exceedances at 041M642402.

Pesticides and PCBs — Four pesticides were detected during Phase IV at Wetland 64. All four constituents were detected at sampling location 041M640602, with 4,4′-DDD and total DDT exceeding their basewide reference values. Location 041M640202 exceeded its basewide reference concentration for 4,4′-DDE.

SVOCs — Ten SVOCs were detected in the seven sediment samples during Phase IV at Wetland 64. During Phase II, 27 constituents were detected in the 24 sediment samples collected. Similar constituents were compared and sampling location 041M640601/041M640602 had comparable detections. In general, the concentrations were similar to those observed during Phase II.

VOCs — No VOCs were detected during Phase IV at Wetland 64.

Phase III Surface Water

Figure 11-4 presents the Phase III surface water sampling locations for Wetland 64. Table 11-3-6 presents a summary of the analytical results of the two Phase III surface water samples.

Metals — Seventeen metals were detected during Phase III surface water sampling at Wetland 64. The distribution of metals detections and reference value exceedances during Phase III at Wetland 64 were equally distributed between sampling locations 041W640101 and 041W640501 both located toward the southern end of Wetland 64. Of the 17 detected metals, eight exceeded estuarine reference values. Six of the eight analytes exceeding reference values (barium, calcium, magnesium, manganese, potassium, and sodium) were found in both sample locations. Reference values for chromium were exceeded only at sampling point 041W640501, and reference values for zinc were exceeded only at sampling point 041W640101.

Pesticides and PCBs — Beta-BHC was the only pesticide compound detected during Phase III surface water sampling at Wetland 64. This compound was found at sample location 041W640101.

SVOCs — No SVOCs were detected during Phase III surface water sampling at Wetland 64.

VOCs — Six VOCs were detected in surface water samples collected from Wetland 64 during Phase III sampling. The greatest number of constituents detected and generally the highest concentrations were at location 041W640101, located toward the southern end of the wetland

11.3.4 Ecological Risk Assessment

11.3.4.1 Phase II Investigation Summary

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-3-7, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is

included in Table 11-3-8.

Baseline Problem Formulation — Wetland 64 Sediment COPC Refinement

During the COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs. This risk assessment presents a statement of potential risk for each of the COPCs.

The COPC refinement process included:

- Comparison of maximum concentrations to RVs
- Comparison of average concentrations to SVs and RVs
- Comparison to basewide (reference) concentrations for total DDT
- Comparison of inorganic constituents to reference wetland values
- Regression analysis of inorganic constituents
- Di Toro EqP SQGs for VOCs
- Comparison to Swartz consensus values
- Mean ERM quotients
- Description of exceedances of RVs and their extent

The methods used in the COPC refinement for the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 11-3-9. COPCs retained after refinement are presented in Table 11-3-10. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 64 concentrations to reference concentrations.

At Wetland 64, total DDT and its daughter product, 4,4'-DDD, were detected above basewide levels and were carried forward as COPCs (Table 11-3-9). Total DDT concentrations are presented in Figure 11-5. For Wetland 64, aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc exceeded their Site 41 freshwater sediment reference concentrations (Table 11-3-9). Arsenic and nickel concentrations were below RV; therefore, these constituents were not retained as COPCs. Calcium, magnesium, potassium, and sodium are essential nutrients and are not carried forward in the ERA process.

Based on regression analysis of the Phase II Wetland 64 data, when compared to aluminum concentrations, barium, cadmium, chromium, copper, lead, mercury, and zinc were identified as outliers at various sample locations. When compared to iron concentrations, various sample locations

concentrations were identified as outliers for barium, cadmium, chromium, copper, lead, mercury, and zinc.

Barium was identified as an outlier, when compared to aluminum at sample locations 041M640301 and 041M640501. Cadmium was identified as an outlier at sample locations 041M640201, 041M640301, 041M640501, 041M640601, and 041M641101; however, zinc was identified as an outlier, when compared to zinc for all the previous sample locations, except for 041M641101. Chromium and lead concentrations were identified as outliers, when compared to aluminum for sample locations 041M640201 through 041M640601. Chromium was also identified at sample location 041M641101. The following sample locations were identified as outlier for copper concentrations, when compared to aluminum concentrations: 041M640201, 041M640301, 041M640501, and 041M641001. Mercury concentrations at sample locations 041M640301 through 041M640501, 041M641901, and 041M642401 were identified as outliers, when compared to aluminum concentrations.

During regression analysis comparison between iron concentrations and copper and zinc concentrations, sample locations 041M640301 and 041M640501 were identified as outliers, where as barium concentrations were identified as outliers, only at sample location 041M640301. Chromium and lead concentrations were identified as outliers when compared to iron at sample locations 041M640201 through 041M640501. Lead concentrations were also identified as sample locations 041M640601 and 041M641001. When iron and cadmium concentrations were compared, sample locations 041M640201, 041M640301, 041M640501, and 041M641101 were identified as outliers. Sample locations 041M640301, 041M640401, 041M641901, and 041M642401 were identified as outliers, during the comparison of mercury concentrations to iron concentrations.

Several additional organic constituents were detected and retained during the ERA process due to exceeding HQs or no appropriate screening values. Nine PAHs, seven pesticides, 10 SVOCs, and four VOCs were detected and retained. When normalized to detected TOC concentrations, both VOCs and PAHs do not appear to be risk drivers for Wetland 64. Normalized Total PAHs are presented in Figure 11-6. Carbon disulfide was not addressed by this method and will be carried forward as a COPC in the ERA process.

Table 11-3-11 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Based on this approach, eight locations (041M6407, 041M6409, 041M6412, 041M6415, 041M6418, 041M6420, 041M6421, and 041M6423) were determined to be Category 1, indicating that these sediments were considered

nontoxic. Five locations (041M6404, 041M6408, 041M6417, 041M6422, and 041M6424) were determined to be Category 2, indicating sediments in these wetlands, according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this Category also has the highest level of uncertainly in predicting toxicity. Sample locations 041M6401 through 041M6403, 041M6405, 041M6406, 041M6410, 041M6411, 041M6413, 041M6414, 041M6416, and 041M6419 were determined to be Category 3, which according to the studies, about 50% of the samples were found to be toxic and average survival was about 60-70%. Figure 11-7 shows the Mean ERM quotient for each sediment sample location at Wetland 64.

At Wetland 64, the highest inorganic exceedances were all detected at sample location 041M640301. Cadmium generated the largest inorganic SV and RV HQs (57.1 and 9.17, respectively). Of the 24 sediment samples, 10 locations exceeded the cadmium RV. The other RV exceedances were for chromium, copper, lead, mercury, silver, and zinc, all of which were exceedances at location 041M640301. Based on the analysis of the inorganic constituents detected at Wetland 64, cadmium and chromium were the primary concern for potential risk due to high HQs and relatively widespread detections. Fifteen of 24 sample locations exceeded SVs, and 10 of 24 samples exceeded the RV for cadmium. Twelve of 24 sample locations exceeded SVs, and 11 of 24 exceeded the RV for chromium. Copper, lead, mercury, and zinc were present at concentrations that may affect ecological receptors and were carried forward as COPCs.

Sample location 041M640201 was the station with the highest 4,4'-DDD and 4,4'-DDT levels. This location is in the southern end of the wetland, where Wetland 6 discharges into Wetland 64. Total DDT and its daughter products were detected throughout the entire wetland. Based on total DDT widespread exceedance of SV and RV and magnitude of the HQs generated, it was included as a COPC and evaluated further. Total DDT was included as a COPC in the OU-wide food-chain models.

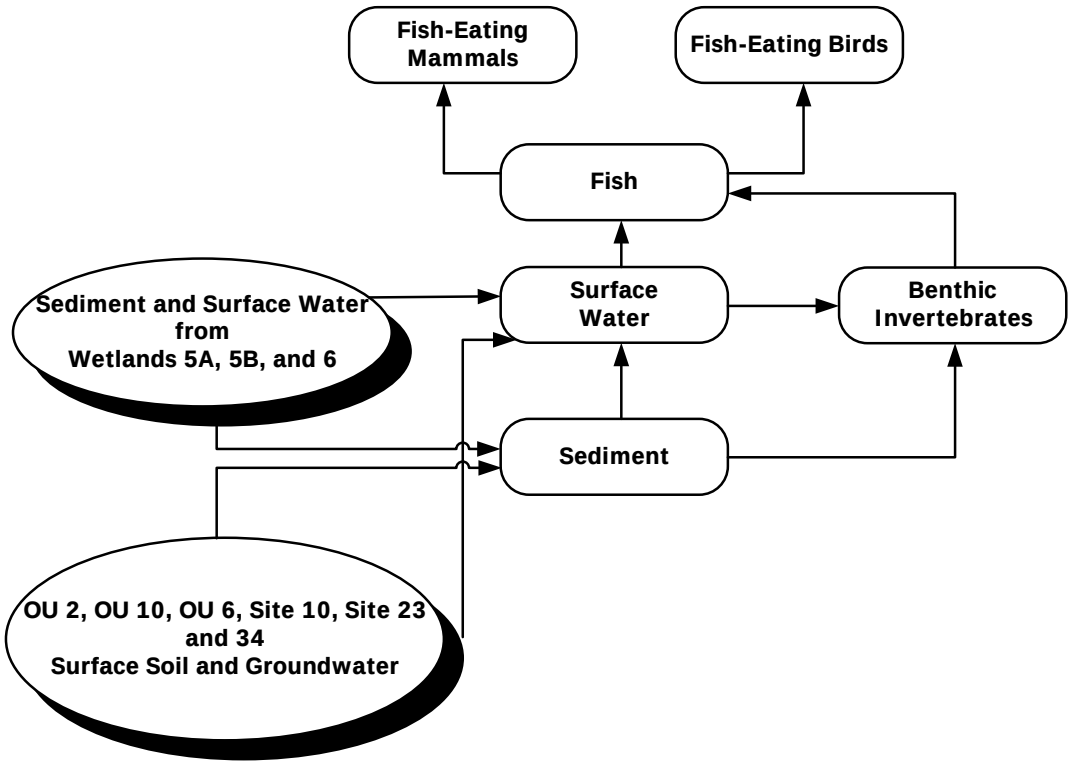
The remaining pesticides, PCBs, and SVOCs were detected at various locations throughout the wetland.

COPCs appeared clustered around the man-made spoil point adjacent to sample locations 041M640201 through 041M640701. The highest inorganic exceedances were consistently detected at location 041M640301 during the Phase II investigation. Boat activity is very high in this naturally sheltered inlet, and boat mooring has increased over 150%, since initial investigations were begun in 1992. PAH detections in sediments during Phase II and III may be attributable to surface water runoff from the parking area associated with the Navy Yacht Club and marina and nearby Site 11.

No surface water samples were collected during the Phase II investigation at Wetland 64.

The conceptual model below symbolizes which environmental habitats may be impacted by Wetland 64 Phase II sediment constituents retained during the ERA process. Wetland 6 was previously identified as a Red-Coded Wetland, indicating contaminants were detected and appear to be directly related to nearby IR sites.

Wetland 64 Complex
Conceptual Site Model



Note: The Wetland 64 Complex is composed of Wetlands 7, 8 and 64.

11.3.4.2 Phase III Investigation Summary

Additional investigation was determined to be necessary at Wetland 64 based on the Phase II results. The following assessment and measurement endpoints were selected:

Wetland Groups and Representative Wetlands(s)	Assessment Endpoints	Measurement Endpoints
Wetland 64	A) Survival of macro-invertebrates associated with the benthic environment	A1) 10-day amphipod, *Leptocheirus plumulosus*, survival A2) 10-day polychaete, Neanthes arnaceodentata, survival and growth (by weight) A3) Benthic community indicies
Wetland 64	B) Bioaccumulation in wading birds, mammals, and birds	B1) These endpoints will be evaluated in the Food-chain Model in Section 11.4

As detailed in the *Final RI/FS SAP Addendum* E/A&H, 1997d), additional data were collected from three locations (041M6404 through 041M6406) within Wetland 64 in 1997, where COPC concentrations were high.

These samples were analyzed for the following parameters:

- Laboratory analysis of full TAL/TCL List except for mercury
- TOC and other physical parameters
- Sediment toxicity testing
- Benthic Community Indices

In 2001, additional sediment and fish samples were collected for laboratory analysis for use in the Food-chain Models in Section 11.4.

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-3-12, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-3-13.

Baseline Problem Formulation — Sediment COPC Refinement

The same approach (Section 11.3.4.1) used to refine Wetland 64 Phase II sediments were applied to Wetland 64 Phase III sediments.

The methods used in the COPC refinement for the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 11-3-14. COCPs retained after refinement are presented in Table 11-3-15. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 64 concentrations to reference concentrations.

At Wetland 64, total DDT and 4,4'-DDD were detected at concentrations greater than basewide and were retained as COPCs. To address this further, total DDT will be included as a COPC in the OU-wide food-chain models. Aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, potassium, selenium, silver, sodium, vanadium, and zinc exceeded their Site 41 estuarine reference concentrations.

Based on regression analysis of the Phase III Wetland 64 data collected in 1997, when compared to aluminum concentrations, copper was identified as an outlier for sample location 041M640501. When compared to iron concentrations, cadmium and chromium were identified as outliers at sample location 041M640601. Sample location 041M640401 was identified as an outlier during the comparison of zinc to iron concentrations.

Several organic constituents were detected and retained during the ERA process due to HQ exceedances or no appropriate screening values. Nine PAH constituents were detected and retained. Four pesticides (dieldrin, endosulfan I, total chlordane, and total BHC) were also evaluated further. Seven SVOCs and one VOC (acetone) were retained. When normalized to detected TOC concentrations, both VOCs and PAHs do not appear to be risk drivers for Wetland 64.

Table 11-3-16 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Based on this approach, two locations (041M640401 and 041M640501) were determined to be Category 3, which according to the studies, about 50% of the samples were found to be toxic and average survival was about 60-70%. Location 041M640601 was determined to be Category 4, indicating that sediments from this site have a high probability to cause adverse effects. Figure 11-7 shows the Mean ERM category for each 1997 Phase III sediment sample location at Wetland 64.

Surface Water Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-3-17, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with

no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-3-18.

Baseline Problem Formulation — Wetland 64 Surface Water COPC Refinement

During the surface water COPC refinement, additional information was used to help evaluate the potential for risk at Site 41 based on exposure to the constituents included as preliminary COPCs.

The COPC refinement process included:

- Comparison of maximum SV concentrations to average SV concentrations
- Comparison of inorganic constituents to reference wetland values
- Description of surface water exceedances and their extent

The methods used in the COPC refinement in the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 11-3-19. COPCs retained after refinement are presented in Table 11-3-20. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 64, barium, calcium, magnesium, manganese, potassium, and sodium exceeded their Site 41 estuarine reference surface water concentrations (Table 11-3-19) and were retained as COPCs for Wetland 64 surface water. One pesticide (total BHC), and four VOCs (1,1-dichloroethane, 1,2-dichloroethene (total), acetone, and trichloroethene) were detected at sample location 041W640101 and were retained as surface water COPCs.

11.3.4.3 Comparison of Phase II and III Sediment Results

Both the Phase II and III results indicated inorganic constituents, pesticides, and SVOCs were of greatest concern in Wetland 64. Concentrations decreased among inorganic constituents common between the two phases; however, organic compound generally increased. Surface water was only collected during the 1997 Phase III site investigation; therefore, comparisons to Phase II cannot be made.

The differences between the Phase II and III sampling efforts are presented below.

Sediment

Constituent	Wetland 64 Phase II	Wetland 64 Phase III	Difference
Metals (mg/kg)			
Aluminum	26,800	8,900	-17,900 decrease
Barium	1,280	17.1	-1,262.9 decrease
Beryllium	1.3	0.34	-0.96 decrease
Cadmium	38.6	21	-17.6 decrease
Calcium	6,630	3,210	-3,420 decrease
Chromium	1,800	868	-932 decrease
Cobalt	6.1	3.4	-2.7 decrease
Copper	255	146	-109 decrease
Iron	38,200	13,600	24,600 decrease
Lead	634	346	-288 decrease
Magnesium	9,390	4,190	-5,200 decrease
Potassium	3,560	1,350	-2,210 decrease
Selenium	3.1	1.6	-1.5 decrease
Silver	5.1	3	-2.1 decrease
Sodium	30,200	18,300	-11,900 decrease
Vanadium	43.4	18.4	-25 decrease
Zinc	481	468	-13 decrease
Organics (µg/kg)			
Endosulfan I	0.76	2.4	+1.64 increase
Total BHCs	2.98	21.7	+18.72 increase
Total Chlordanes	18.5	11.7	-6.8 decrease
4,4′-DDD	140	89	-51 decrease
Total DDT	214	196	-18 decrease
Total PCBs	640	1,220	+580 increase
Benzo(b)fluoranthene	2,600	1,800	-800 decrease
Benzo(g,h,i)perylene	590	980	+390 increase
Benzo(k)fluoranthene	250	1,900	+1,650 increase
Carbazole	400	800	+400 increase
Dibenzofuran	85	250	+165 increase
Indeno(1,2,3-cd)pyrene	600	1,000	+400 increase
Acetone	420	32	-388 decrease

Notes:
mg/kg = Milligrams per Kilograms
µg/kg = Micrograms per Kilograms

Evaluation of Assessment Endpoints

In addition to the chemical analyses during the Phase III sampling effort, three sediment samples were collected for whole sediment toxicity tests, as well as species diversity analysis. Section 8 describes the rationale and intent for this additional information.

Assessment Endpoint A — Survival, Growth, and Emergence of Macroinvertebrates Associated with the Benthic Environment

The benthic invertebrate communities inhabiting the sediments in the fresh and salt water marshes included in Site 41 were selected as important biological resources to be evaluated in these habitats. This assessment endpoint is aimed at maintaining an ecologically viable benthic community and organism sustainability.

The benthic macroinvertebrates were selected because:

- Their relatively sessile life habits cause potential for increased exposure to contaminated sediments
- They are important component in the aquatic food web
- They are a food source for many species of fish and crustaceans harvested for recreational and commercial purposes
- Benthos has been documented to be an excellent indicator of habitat condition

Risk Questions

- Is the toxicity of COPCs to benthic macroinvertebrates in onsite sediments significantly greater that those of control sediments?
- Are the toxic responses lethal or sublethal?
- Do the results of this study show any stressor-response relationship?

To address the risk questions for this assessment endpoint, the following measurement endpoints were proposed:

- Measurement Endpoint A1: Evaluate the toxicity of COPCs in sediment to the *Neanthes arenaceodentata* by conducting the 10-day, whole-sediment laboratory, toxicity tests measuring the survival and growth (measured by weight)
- Measurement Endpoint A2: Evaluate the toxicity of COPCs in sediment to the amphipod *Leptocheirus plumulosus* by conducting the acute, whole sediment toxicity tests measuring survival.

- Measurement Endpoint A3: Evaluate the health of the onsite benthic community using benthic community indices.

Measurement Endpoints A1 and A2

Additional sediments were collected at locations 041M640401 through 041M640601 during the Phase III portion of the investigation. Sediments from this estuarine wetland were prepared for testing with the epibenthic amphipod, *Leptocheirus plumulosus*, and the burrowing polychaete, *Neanthes arnaceodentata.* Both organisms represent species which are an integral part of the food web. The endpoint for the amphipod test was survival. The endpoint for the polychaete test was survival and growth, in which growth was determined by weight. Wetland 64 sediments were also tested against a laboratory control, which has a documented record of good survival and growth, to determine if Wetland 64 sediments could be impacting benthic species. The test results are shown and explained below:

Sample Location	Leptocheirus Survival/100	Neanthes Survival/100	Neanthes Weight (mg)
Laboratory Control	98	100	8.5
041M640401	78*	100	8.0
041M640501	96	96	7.2*
041M640601	74*	88	8.5

Note:
* = Statistically significant difference from the control

The TAC are met when control survival rates are 90% or above for the laboratory control and 80% or above for the sediment being tested. The TAC for the control performance includes a minimum weight of 2.5 mg and at least 50% emergence. A simple T-test can be performed on sediment performance compared to the control performance once the TAC is met.

Two sample locations (041M640401 and 041M640601) were statistically different from the control sample in the survival portion of the test. Sample location 041M640501 was found to be statistically different, when compared to the control performance for growth, which was measured by weight. These differences were denoted with an asterisk in the table above.

Measurement Endpoint A3

In addition to collecting sediments for chemical characterization and toxicity tests, sediments were also collected at locations 041M640401 through 041M640601 during the 1997 Phase III portion of the investigation for species identification. Section 8 describes the process for diversity sampling and

explains the importance of evenness and richness. The diversity findings for Wetland 64 are presented below:

Sample Location	Diversity Results
041M640401	2.42 Diversity 1.01 Evenness 10.76 Richness
041M640501	3.30 Diversity 1.22 Evenness 14.76 Richness
041M640601	2.64 Diversity 1.14 Evenness 9.79 Richness

Diversity, evenness, and richness of organisms were best at location 041M640501, when compared to the other locations. Sample location 041M640401 exhibited a lower diversity (2.42) when compared to the other locations within this wetland. A total of 37 organisms were collected and sorted into five dominant species. Representation was fairly even between namtodes, gastropods, polychaetes, and isopods. Between seven and 15 representatives from the 'pollution tolerant' polychaete species were found, which would be expected in a highly organic environment that has experienced an impact. Cumacean representatives found at locations 041M640501 and 041M640601 indicated a healthy environment, and their appearance in this area may indicate an overall improvement. Blue crabs (*Callinectes sapidus*) and other decapods were sampled in this area, as were isopods and copepods. These crustaceans and zooplankton were identified as a major part of the food web.

Assessment Endpoint A: Conclusions

This assessment endpoint was assessed by evaluating sediment chemistry, two toxicity test results and community analysis. The Wetland 64 Phase II investigation identified several constituents which were retained through the ERA process. Based on the results of the chemistry and toxicity data, sample locations 041M640401 and 041M640601 exhibited conditions in which toxic chemicals were probably stressing the system. Sediment samples from 041M640401 and 041M640601 were noted to have strong petroleum odors, which may account for the effects noted in the toxicity and chemistry results at these locations.

Assessment Endpoint B: Bioaccumulation in Wading Birds, Mammals, and Fish

To assess risk from contaminants that bioaccumulate, the results from Wetland 64 are used in the OU 2 food-chain models presented in Section 11.4.

11.3.4.4 Phase IV/2001 Investigation Summary

A review of activity at and around Wetland 64 (including the Naval Yacht Club expansion) and the previously collected data from Phase II (1995) and Phase III (1997) revealed several data gaps, which could be alleviated by an additional sampling effort. An additional sampling event was conducted, with the emphasis focused on mercury contamination in forage fish at Wetland 64. Sediment and fish tissue samples were analyzed for TAL metals, TCL SVOCs, and TCL pesticides and PCBs.

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 11-3-21, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than 1 or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 11-3-22.

Baseline Problem Formulation — Phase IV Sediment COPC Refinement

The same approach (Section 11.3.4.1) used to refine Wetland 64 Phase II sediments were applied to Wetland 64 Phase IV sediment data.

The methods used in the COPC refinement for the Site 41 ERA process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 11-3-23. COPCs retained after refinement are presented in Table 11-3-24. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 64 concentrations to reference concentrations.

At Wetland 64, 4,4'-DDD and total DDT were above the basewide levels, indicating that applications of this pesticide may have been above recommended usage. As a result, these pesticides were carried forward as COPCs.

For Wetland 64, aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, potassium, silver, sodium, vanadium, and zinc exceeded their Site 41 estuarine sediment reference concentrations (Table 11-3-23). Calcium, magnesium, potassium, and sodium are essential nutrients and are not carried forward in the ERA process.

Sample location 041M641102 was identified as an outlier through regression analysis for barium, cadmium, chromium, copper, lead, and zinc, when compared to aluminum and iron concentrations. Sediment sample 041M640502 was identified as an outlier during the comparison of copper to

aluminum concentrations, and sample 041M640702 was identified when barium concentrations were compared to iron concentration during regression analysis.

Several organic constituents were detected and retained due to values exceeding HQs or no appropriate screening values. Two pesticides (heptachlor epoxide and total BHC) were retained. Three SVOCs, benzo(b)fluoranthene, benzo(g,h,i)perylene, and benzo(k)fluoranthene, were also detected and retained. Total PAHs appeared to be of concern at this wetland. Five PAHs were detected and retained: benzo(a)anthracene, benzo(a)pyrene, chrysene, fluoranthene, and pyrene. Total PAHs exceeded the screening level TEC, and the refinement level MEC and were retained as COPCs in the ERA process. VOCs were not analyzed for during the Phase IV investigation.

Table 11-3-25 presents the Mean ERL and ERM values, the Mean ERM Quotients, and the Mean ERM Quotient Category by individual sample location. Figure 11-7 shows the Mean ERM Category of the sediment samples collected at Wetland 64 during the 2001 investigation. Based on the methods and the approach detailed in Section 8, sediments from sample locations 041M640702 and 041M642402 were determined to be Category 1, indicating sediments were considered nontoxic. Sample locations 041M640202 and 041M641102 were determined to be Category 2, which according to tests evaluated in developing this methodology, had average survival rates of approximately 80% of control sediments; however, this Category also has the highest level of uncertainty in predicting toxicity. Sample locations 041M640302, 041M640502, and 041M640602 were determined to be Category 3, which according to the studies, about 50% of the samples were found to be toxic and average survival was about 60-70%.

For Wetland 64 Phase IV sediments, a majority of the maximum inorganic detections occurred at location 041M640502 and 041M641102. Pesticide detections were divided between locations 041M640202, 041M640602, and 041M641102. All the maximum detections for PAHs were identified at sediment sample 041M640502.

Surface water samples were not collected during the Phase IV investigation of Wetland 64.

11.3.4.5 Comparison of Phase II, Phase III, and Phase IV Sediment Results

Based on all three sampling event results, inorganic constituents, pesticides and PAHs were of concern for Wetland 64. The majority of inorganic constituents detected have decreased over time. Several of the inorganic constituents considered essential nutrients increased, specifically, magnesium, manganese, potassium, and sodium. A decrease in pesticides and PAHs was also noted.

The differences between the Phase II, Phase III, and Phase IV sampling efforts are presented below.

Sediments

Constituent	Phase II (1995)	Phase III (1997)	Phase IV (2001)	Difference from 1995 to 2001
Metals (mg/kg)				
Aluminum	26,800	8,900	18,000	-8,800 decrease
Barium	1,280	17.1	18	-1,262 decrease
Beryllium	1.3	0.34	1.1	-0.2 decrease
Cadmium	38.6	21	23	-15.6 decrease
Chromium	1,800	868	700	-1,100 decrease
Cobalt	6.1	3.4	4.8	-1.3 decrease
Copper	255	146	200	-55 decrease
Iron	38,200	13,600	33,000	-5,200 decrease
Lead	634	346	430	-204 decrease
Magnesium	9,390	4,190	10,000	+610 increase
Manganese	203	65.8	230	+27 increase
Potassium	3,560	1,350	4,200	+640 increase
Silver	5.1	3	4	-1.1 decrease
Sodium	30,200	18,300	48,000	+17,800 increase
Vanadium	43.4	18.4	37	-6.4 decrease
Zinc	481	468	380	-101 decrease
Organics (µg/kg)				
4,4'-DDD	140	89	100	-40 decrease
Total DDT	214	196	154	-60 decrease
Benzo(b)fluoranthene	2,600	1,800	780	-1,820 decrease
Benzo(g,h,i)perylene	590	980	490	-100 decrease

Notes:
mg/kg = Milligrams per Kilograms
µg/kg = Micrograms per Kilograms

11.3.4.6 Fish Tissue Analysis — Wetland 64 — Phase IV/2001

Approximately, 60 pinfish, Lagodon rhomboids, and killifish, *Fundulus grandis*, were collected in Wetland 64 during the 2001 site investigation. The length of these fish ranged from 1.5 to 2 inches. Fish tissue samples were analyzed for TAL metals, TCL SVOCs, and TCL pesticides and PCBs. The pinfish and killifish were collected to develop models for the protection of fish viability, which would be expected to inhabit this wetland. The following table provides the size, number, and species of fish collected, as well as levels of mercury detected in tissue analysis, and lipid content.

Fish Tissue Mercury Results
Wetland 64

Sample Location	Fish Species Collected	Size (inches)	Approximate #	Mercury in Fish Tissue (ppm)	% Lipid
041M6402	Pinfish			0.009[a]	
041J640202	Pinfish	2	8		0.34%
041M6403	Diamond killifish			0.012[a]	
041J640302	Diamond killifish	1.5	12		0.71%
041M6403-K	Gulf killifish			0.028	
041J64030-K	Gulf killifish	1.8	12		1.1%
041M6405	Pinfish			0.011	
041J640502	Pinfish	2	8		0.5%
041M6406	Gulf killifish			0.045	
041M640602	Gulf killifish	1.8	8		0.92%
041M6407	Gulf killifish			0.078	
041M640702	Gulf killifish	1.8	8		1.3%
041M6411	No fish collected			—	
041M6411	No fish collected		0		
041M6424	Pinfish			0.096	
041M642402	Pinfish	2	4		0.41%

These data are used in the food-chain model presented in Section 11.4 for OU 2 to assess impact.

Wetland 64 Phase IV Summary

Wetland 64 sediments have retained similar constituents over time. The constituent levels have decreased over time, as have the TOC levels detected in the sediments.

11.3.5 Wetland 64 — Human Health Risk Assessment

Wetland 64 is described in Section 11.3.2, and the HHRA is summarized below.

11.3.5.1 Site Data

Section 11.3.3 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland 64 during Phases II and III and of the RI. Additional sediment and fish tissue data were collected in 2001. Surface water and sediment data are summarized in Table 11-3-3 (Phase II data), Tables 11-3-4 and 11-3-6 (Phase III data), and Table 11-3-5 (Phase IV data).

11.3.5.2 Conceptual Site Model

As described in Section 11.3.1, Wetland 64 is an approximately 41-acre area of the NAS Pensacola Yacht Basin. Because Wetland 64 is located in an unrestricted area of the base, the wetland is accessible to both trespassers and Navy personnel.

Wetland 64 is continually inundated. Therefore, in accordance with USEPA Region IV Supplemental Guidance to RAGS Bulletins (USEPA Region 4, 2000) described in Section 9, sediment exposure was not assessed in this HHRA, because it was assumed to be an insignificant exposure pathway. Based on the species present, depth of surface water, and available habitat, fishing could occur. Contact with surface water, while wading and game fish ingestion, would be the likely exposure scenarios. In addition, a subsistence fishing scenario is possible at this wetland, because wetland access is not restricted.

The following scenarios and exposure pathways were evaluated for this wetland:

Scenario	Medium	Ingestion	Dermal
Maintenance	Surface water	√	√
Trespasser	Surface water	√	√
Fishermen	Fish Tissue	√	NA

11.3.5.3 Risk Characterization

The child trespasser and adult maintenance worker scenarios for surface water (Phase III data) and the recreational and subsistence fishermen scenarios for game fish tissue ingestion (all sampling phases) were assessed for this wetland as described in Section 9.

Phase II Data

Recreational Fisherman

As shown in Tables 11-3-26, game fish tissue ingestion risk estimates for recreational fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, aldrin, aroclor-1254, and aroclor-1260. The hazard index was above 1.0 for aroclor-1254.

Subsistence Fishermen

As shown in Tables 11-3-26, game fish tissue ingestion risk estimates for subsistence fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, alpha-BHC, alpha-chlordane, aroclor-1254, aroclor-1260, and gamma-chlordane. The hazard index was above 1.0 for aroclor-1254.

Summary of Wetland 64 Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Fishermen	Fish tissue	2.90E+00	1.35E-04

Based on Phase II data, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, aldrin, alpha-BHC, alpha-chlordane, aroclor-1254, aroclor-1260, and gamma-chlordane were identified as COCs for Wetland 64.

Phase III Data

Trespasser

As shown in Tables 11-3-27 through 11-3-29, surface water ingestion and dermal contact risk estimates for trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Maintenance Worker

As shown in Tables 11-3-27 through 11-3-29, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Recreational Fisherman

As shown in Table 11-3-30, game fish tissue ingestion risk estimates for recreational fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, and aroclor-1260. Hazard indices were below 1.0.

Subsistence Fishermen

As shown in Table 11-3-30, game fish tissue ingestion risk estimates for subsistence fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, aroclor-1260, delta-BHC, and BEHP. Hazard indices were below 1.0.

Summary of Wetland 64 Phase III Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	1.72E-02	1.02E-06
Trespasser	Surface water	1.15E-02	3.05E-07
Fishermen	Fish tissue	1.78E-01	8.98E-05

Based on Phase III data, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, aroclor-1260, delta-BHC, and BEHP were identified as COCs for Wetland 64.

Phase IV Data

Recreational Fisherman

As shown in Table 11-3-31, game fish tissue ingestion risk estimates for recreational fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, and delta-BHC. Hazard indices were below 1.0.

Subsistence Fishermen

As shown in Table 11-3-31, game fish tissue ingestion risk estimates for subsistence fishermen exceeded the FDEP risk threshold of 1E-6 for 4,4'-DDD, 4,4'-DDE, delta-BHC, and BEHP. Hazard indices were below 1.0.

Summary of Wetland 64 Phase IV Risk Estimates

Scenario	Medium	Hazard Index	Risk
Fishermen	Fish tissue	2.10E-01	4.95E-06

Based on Phase IV data collected in 2001, 4,4'-DDD, 4,4'-DDE, delta-BHC, and BEHP were identified as COCs for Wetland 64.

Wetland 64 HHRA COC Summary

The following parameters were determined in the HHRA to be COCs for Wetland 64:

- 4-4'-DDD
- 4,4'-DDE
- 4,4'-DDT
- Aldrin
- Alpha-BHC
- Delta-BHC
- Alpha-Chlordane
- Aroclor-1254
- Aroclor-1260
- Gamma-Chlordane
- BEHP

11.3.6 Wetland 64 — Fate and Transport Analysis

Because these two wetlands (Wetlands 7 and 64) are contiguous and inherently connected, they were evaluated as a single complex. This wetland complex connects to the upper channelized reaches of Wetland 6 and flows out into the Yacht Basin on the north side of the facility, eventually emptying into the area where Bayou Grande meets Pensacola Bay proper. Wetland 7 encompasses the shallower tidal flat portion of the wetland complex; Wetland 64 encompasses the Yacht Basin, a more open portion of the wetland (see Figure 11-1). This complex drains the northeastern side of OU 2, and generally flows from south to north under static (non-storm and normal tides) conditions.

Twenty-five sediment samples and two surface water samples were collected from this wetland prior to its intersection with Pensacola Bay proper. Although this wetland spans a large distance, this fate and transport evaluation was not segmented and utilized the entire span because of the tidal flux potential.

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Tables 11-3-10 (sediment, Phase II), 11-3-15 (sediment, Phase III), 11-3-20 (surface water, Phase III) and 11-3-24 (sediment, Phase IV). Also provided are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis.

Associated Monitoring Wells for Wetlands 7/64: 011GS011, 011GI012, 011GI51, 011GI010, 011GS009, 030GS103, 011GI015, 011GLF01, 011GS049, 011GI008, 011GS007, 011GGS48, 033GGM77, 033GGI08, 033GGS03, 011GGS47, 011GLF11, 033GGM78, 011GGS28, 011GGS46

Associated Borings for Wetlands 7/64: 011SS011, 011SLF09, 011SLF05, 011SRA09, 011SRA05, 030S0103, 011SI015, 030S0102, 011SLF08, 011SRA08, 011SLF01, 011SRA01, 011SRA07, 011SLF07, 011SS007, 033SS45D, 011SRA03, 011SLF03, 011SRA11

Surface Water/Sediment Transport into the Wetland Medias:

Surface Water — Although there is significant storm water drainage into this wetland, there is no directly comparable storm water data from the area proximal to this wetland complex. Because of the lack of data, no definitive statement can be made regarding the validation of the pathway via storm water runoff into the wetland complex. The vast majority of surface drainage to this wetland is from the northeastern side of OU 2 (including Sites 12, 26, and 11), direct drainage from Wetland 6, storm water inflow from the northern part of the former Chevalier Field area, and from the western side of OU 10 (encompassing the NASP Wastewater treatment plant).

Sediment — Based on the data from surface soil proximal to this wetland complex, the storm water to wetland sediment pathway was validated for the following parameters:

Phase II	Phase III	Phase IV
Aluminum	Aluminum	Aluminum
Barium	Barium	Barium
Beryllium	Beryllium	Beryllium
Cadmium	Cadmium	Cadmium
Chromium	Chromium	Chromium
Cobalt	Cobalt	Cobalt
Copper	Copper	Copper
Iron	Iron	Iron

Phase II	Phase III	Phase IV
Lead	Lead	Lead
Manganese	Manganese	Manganese
Mercury	Selenium	Silver
Selenium	Silver	Vanadium
Silver	Vanadium	Zinc
Vanadium	Zinc	4,4'-DDD
Zinc	Dieldrin	Total DDT
alpha-Chlordane	Endosulfan I	
gamma-Chlordane	4,4'-DDD	
4,4'-DDD	Aroclor-1260	
Total Chlordane	Total Chlordane	
Total DDT	Total DDT	
4,4 DDE	Total PCBs	
4,4 DDT	bis(2-Ethylhexyl)phthalate (BEHP)	
Total PCBs	Carbazole	
BEHP	Dibenzofuran	
Carbon disulfide		

Groundwater Discharge into the Wetland Media:

Surface Water — Based on the data from associated monitoring wells, this groundwater to wetland surface water pathway was validated and significant for the following parameters (note that metals data from the 1993 sampling were not used due to potential bias introduced by the sampling methodology):

Phase III
Barium
Manganese
1,1-Dichloroethane

Sediment — Based on the data from associated monitoring wells, the groundwater to wetland sediment pathway was validated and significant for the following parameters (note that metals data from the 1993 sampling were not used due to potential bias introduced by the sampling methodology):

Phase II	Phase III	Phase IV/2001
Aluminum	Aluminum	Aluminum
Barium	Barium	Barium
Cadmium	Cadmium	Cadmium
Iron	Iron	Manganese
Lead	Lead	Vanadium
Manganese	Manganese	Zinc
Mercury	Vanadium	4,4'-DDD
Vanadium	4,4'-DDD	Total BHCs
Alpha-chlordane	Total BHC	Total DDT

Phase II	Phase III	Phase IV/2001
Gamma chlordane	Total Chlordane	
4,4'-DDD	Total DDT	
Total BHC	Bis(2-Ethylhexyl)phthalate (BEHP)	
Total Chlordane	Dibenzofuran	
Total DDT		

Surface Water/Sediment Transport within the Wetlands:

To more easily evaluate these pathways in the Wetland 7/64 complex, the complex was segmented into the marshier Wetland 7 and the more open water Wetland 64. The rationale behind this involved the principle of brackish water mixing zones: fresh water (or water relatively lower in TDS) will tend to precipitate and flocculate particulate matter upon contact with salt water. Therefore, the surface water and sediment chemistry can be expected to be different between these two parts of the wetland complex based upon physical chemistry alone, not to mention potential differences due to potential contaminant influx. In order to evaluate these pathways in Wetland 7, upstream location 041M6401/041W6401 (sediment sampled in Phase II, surface water sampled in Phase III) was compared with downstream location 041M6405/041W6405 (sediment sampled in Phase II, surface water sampled in Phase III). To evaluate these pathways in Wetland 64, a trend along the deeper central portion of the wetland was chosen. Shallower waters along the perimeter experience much more random movement due to storm and tide currents, whereas the deeper samples will exhibit more consistent trends.

The locations compared were 041M6408 (upstream, at the Wetland 7 and 64 transition); 041M6417 (midpoint, in the central area of the Yacht Basin); and 041M6423 (downstream, at the entry point into Pensacola Bay proper). Comparison criteria of note were the number of detected parameters and the apparent general trend in concentrations.

Wetland 7

Surface Water — Evaluation of locations 041W6401 and 041W6405 (both sampled during Phase III for surface water) indicated a decrease in detected parameters (15 metals and six organics versus 14 metals and two organics, respectively). For metals, there was no clear trend in concentrations. One parameter was present downgradient that was not detected upgradient, and ones detected at both locations, six constituents decreased in concentration and seven increased. Organics detected upgradient were primarily low concentration VOCs. For downgradient organics, which were also low concentration VOCs, one compound was present downgradient that was not detected upgradient, and one compound decreased in concentration.

Sediment — Evaluation of Wetland 7 upstream location 041W6401 and downstream location 041W6405 (both sampled during Phase II) indicated a higher number of detections in the downgradient location (16 metals and 27 organics upgradient versus 19 metals and 30 metals downgradient). In general, both metals and organics increased from upgradient to downgradient. For metals, 17 constituents exhibited an increase, while two metals were present in the downgradient locations that were not detected in the upgradient. For organics, 19 compounds exhibited an increase in concentrations downgradient, two organics exhibited a decrease, and nine compounds were present in the downgradient locations that were not detected in the upgradient locations. The organics consisted of PCBs, pesticides, and SVOCs. TOC exhibited a marked increase and may account for the increases in detected parameters and concentrations by providing more adsorption sites. Input from runoff and groundwater discharge from IR Site 11 may also be contributing to the general increases.

Wetland 64

Sediment — Surface water was not sampled in the more open portion of this wetland complex; therefore, this fate and transport evaluation was based on sediment concentrations. For metals, evaluation of upgradient and mid-point locations 041M6408 and 041M6417 indicated an increase in inorganic detections and a decrease in the number of organics (17 metals and 21 organics upgradient versus 19 metals and six organics downgradient). For the metals, two parameters were present at the downgradient locations that were not detected upgradient. Of the 17 metals detected at both locations, all parameters increased in concentration. For the detected organics, most of which were pesticides and SVOCs, a marked decrease in detections and concentrations was notable. One compound was present at the downgradient location that was not detected upgradient, but the remaining five all exhibited a decrease. TOC also increased downgradient. Overall, this evaluation suggested that some mechanism(s), perhaps binding to TOC and biodegradation (or uptake) of organics was fixing the contaminants in the more upgradient reaches of the wetland. Clearly, the increase in TOC was playing a role by increasing the adsorption sites for metals. There may also be some hydraulic separation by Pensacola Bay and/or tidal currents, which were stronger in the more downstream portions of the wetland.

Evaluation of the mid-point location 041M6417 with the most downstream central location 041M6423 indicated a marked decrease in the number and concentration of detected parameters (19 metals and six organics at mid-point location 041M6417 and 16 metals and three organics at the downgradient location 041M6423). All 16 detected metals and three organics at the downstream location exhibited a decrease in concentration. TOC also exhibited a marked decrease downgradient.

Again, this suggests some mechanism(s) we efficiently fixing the contaminants in the more upgradient areas of the wetland complex.

Evaluation of Phase II Versus Phase III Data:

Sediment — This section includes a brief comparison of Phase II and Phase III sediment data (surface water was only sampled during Phase III and was therefore not evaluated) to define general trends in sediment contamination (disregarding to some degree the inherent heterogeneity of sediment media). Three locations (041M6404, 041M6405, and 041M6406) were sampled during both phases. These were located in the transitional area between Wetlands 7 and 64. Criteria to be noted included the number of parameters detected and the apparent trend of parameter concentrations.

- **Location 041M6404** — 18 metals and 11 organics were detected at this location in Phase II, while 21 metals and 26 organics were detected in Phase III. For the metals, five parameters were present in Phase III that were not detected in Phase II. Of 16 the metals detected during both events, three exhibited a decrease, and 13 parameters exhibited an increase. For the organics, 21 compounds were present in Phase III that were not detected during Phase II. Of the five organics detected during both events, all compounds exhibited an increase. The most notable change was the increase in SVOCs. TOC exhibited a decrease in concentration from Phase II to Phase III.

- **Location 041M6405** — 19 metals and 30 organics were detected during Phase II versus 22 metals and 24 organics during Phase III. For the metals, four parameters were present in Phase III that were not detected in Phase II. Of the 8 detected metals during both phases, 17 constituents exhibited an increase and one a decrease. For the organics, three compounds were present during Phase III that were not detected in Phase II. Of the 21 detected organics during both events, 19 compounds exhibited an increase and two a decrease. Again the majority of organics were pesticides and SVOCs. TOC exhibited a decrease in concentration from Phase II to Phase III.

- **Location 041M6406** — 21 metals and eight organics were detected in Phase II, while 21 metals and 25 organics were detected in Phase III. For the metals, only one parameter was present in Phase III that was not detected in Phase II. Of the 20 detected metals in both phases, 19 parameters exhibited an increase, and one metal exhibited a decrease. For the organics, 20 compounds were present in Phase III that were not detected during Phase II. Of

the five detected compounds in both phases, all five organics exhibited an increase in concentration. TOC exhibited an increase in Phase III.

Overall, the trend in sediment contamination was upward, both in terms of parameters detected and in concentrations. Most of the organics were pesticides and SVOCs, which suggests the source, may be related to storm water runoff supplemented by hydraulic sediment mobilization. It was doubtful that groundwater discharges play a large role, as most of the proximal well samples did not yield large detections of SVOCs. Because of the setting of the wetland area, storm water runoff would be expected to have concentrations of pesticides (from routine application over the years) and SVOCs (runoff from asphalt-paved areas such as former Chevalier Field). In the absence of dredging or storm surges to remove sediment, as is the case with the Yacht Basin over this time period, accumulation of sediment containing these parameters is to be expected.

Table 11-3-1
Wetland 64 Phase II
Sediment Physical Parameters

	November 1995 Data							
Parameter	**041M640101**	**041M640201**	**041M640301**	**041M640401**	**041M640501**	**041M640601**	**041M640701**	**041M640801**
TOC (%)	0.752	4.42	19.4	18.7	8.35	2.81	0.478	0.851
Percent Solids (%)	71.8	60.7	12.8	11.6	19	56.3	76	73
Grain Size Analysis (percent of composition[1])								
Coarse Gravel	No Data	0	0	No Data	0	0	0	No Data
Fine Gravel	No Data	0	0	No Data	0	0	1	No Data
Coarse Sand	No Data	0	0	No Data	2	2	1	No Data
Medium Sand	No Data	4	7	No Data	21	25	13	No Data
Fine Sand	No Data	25	5	No Data	70	59	82	No Data
Silt and Clay	No Data	71	88	No Data	7	14	3	No Data
Description	N/A	Dark Brown Sandy Organic Silt	Dark Brown Sandy Organic Silt	N/A	Dark Brown Sand with Silt, Organics	Black Silty Sand with Organics	Dark Brown Poorly Graded Sand, Fine	N/A

Parameter	**041M640901**	**041M641001**	**041M641101**	**041M641201**	**041M641301**	**041M641401**	**041M641501**	**041M641601**
TOC (mg/kg)	1,620	89,700	40,100	1,760	76,100	68,700	1,990	67,500
TOC(%)	0.162	8.97	4.01	0.176	7.61	6.87	0.199	6.75
Percent Solids (%)	79.9	16.4	25.4	80.1	16.3	15.6	75.4	17.9
Grain Size Analysis (percent of composition[1])								
Coarse Gravel	0	0	0	0	0	0	0	0
Fine Gravel	0	0	0	0	0	0	1	0
Coarse Sand	0	0	0	0	0	0	0	0
Medium Sand	54	0	7	45	2	1	11	1
Fine Sand	43	6	57	54	3	10	87	10
Silt and Clay	3	94	36	1	95	89	1	89
Description	Light Brown and Dark Gray Poorly Graded Sand	Dark Gray Organic Silt	Dark Gray Silty Sand with Organics	Brown Poorly Graded Sand, Fine	Dark Gray Organic Silt	Dark Gray Sandy Organic Silt	Brown Poorly Graded Sand, Fine	Dark Gray Sandy Organic Silt

Parameter	**041M641701**	**041M641801**	**041M641901**	**041M642001**	**041M642101**	**041M642201**	**041M642301**	**041M642401**
TOC (mg/kg)	14,600	3,680	64,000	4,200	1,380	9,270	4,040	739
TOC (%)	1.46	0.368	6.4	0.42	0.138	0.927	0.404	0.0739
Percent Solids (%)	54.9	79.5	15.8	78.9	73.4	41.1	69.7	73.2
Grain Size Analysis (percent of composition[1])								
Coarse Gravel	0	No Data	No Data	0	0	0	0	0
Fine Gravel	10	No Data	No Data	0	0	36	0	0
Coarse Sand	1	No Data	No Data	0	0	4	0	0
Medium Sand	19	No Data	No Data	17	20	13	13	15
Fine Sand	64	No Data	No Data	78	78	41	86	83
Silt and Clay	6	No Data	No Data	5	2	6	1	2
Description	Dark Gray Sand with Silt, Organics	N/A	N/A	Olive Brown Poorly Graded Sand, Medium to Fine	Light Gray Poorly Graded Sand, Medium to Fine	Dark Brown Silty Sand with Gravel, Organics	Dark Brown Poorly Graded Sand, Medium to Fine	Light Brown Poorly Graded Sand, Medium to Fine

Note:
1 = Derived from sieve analyses.

Table 11-3-2
Wetland 64 Phase III
Sediment Physical Parameters

Parameter	041M640401	041M640501	041M640601
TOC (%)	7	6	8.6
Grain Size Analysis (percent of composition[1])			
Fine Gravel	1.4	0.4	0
Coarse Sand	2.2	1.3	1.1
Medium Sand	10.6	6	6.4
Fine Sand	50.7	39	49.1
Clay	35.1	53.3	43.4

Note:
[1] = Derived from sieve analyses.

Table 11-3-3
Wetland 64 Phase II
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	4,274.0	8	24	24	28.90	26,800.0	7,430.0	041M641601
Antimony	0.260	7	4	10	0.190	10.80	1.510	041M640401
Arsenic	2.140	11	19	24	0.160	18.70	5.550	041M641601
Barium	3.840	14	22	24	0.350	1,280.0	60.90	041M640301
Beryllium	0.130	10	10	24	0.110	1.30	0.355	041M641901
Cadmium	0.390	18	22	24	0.190	38.60	8.680	041M640301
Calcium	1,978.80	10	24	24	64.40	6,630.0	1,960.0	041M641701
Chromium	13.10	17	24	24	0.550	1,800.0	426.0	041M640301
Cobalt	0.910	10	15	24	0.130	6.10	1.50	041M640301
Copper	8.440	13	22	24	0.740	255.0	47.40	041M640301
Iron	2,684.40	12	24	24	26.0	38,200.0	11,000.0	041M641601
Lead	21.040	14	23	24	0.650	634.0	132.0	041M640301
Magnesium	2,943.60	8	24	24	47.10	9,390.0	2,770.0	041M641601
Manganese	9.810	14	24	24	0.120	203.0	59.70	041M641601
Mercury	0.110	13	14	24	0.10	0.880	0.231	041M640301
Nickel	3.690	11	17	24	0.790	27.10	6.510	041M640301
Potassium	899.720	7	24	24	19.90	3,560.0	940.0	041M641901
Selenium	0.660	10	11	24	0.340	3.10	0.771	041M640301
Silver	0.520	8	4	24	0.370	5.10	0.569	041M640301
Sodium	11,439.60	6		24	43.80	30,200.0	8,130.0	041M641901
Thallium	0.390	8	2	24	0.650	1.20	0.314	041M640301
Vanadium	8.590	9	22	24	0.420	43.40	13.30	041M641601
Zinc	14.360	18	23	24	2.20	481.0	123.0	041M640301
PAHs (µg/kg)								
2-Methylnaphthalene	N/A	0	1	24	30.0	30.0	161.0	041M640101
Acenaphthene	N/A	0	2	24	120.0	230.0	91.60	041M640501
Acenaphthylene	N/A	0	1	24	90.0	90.0	196.0	041M640501
Anthracene	N/A	0	2	24	230.0	330.0	216.0	041M640501
Benzo(a)anthracene	N/A	0	12	24	27.0	1,400.0	255.0	041M640201
Benzo(a)pyrene	N/A	0	13	24	25.0	910.0	266.0	041M640501
Chrysene	N/A	0	13	24	23.0	1,500.0	271.0	041M640201
Dibenz(a,h)anthracene	N/A	0	1	24	25.0	25.0	161.0	041M640101
Fluoranthene	N/A	0	19	24	24.0	5,700.0	624.0	041M640201
Fluorene	N/A	0	2	24	160.0	210.0	92.40	041M640501
Naphthalene	N/A	0	2	24	56.0	71.0	163.0	041M640501
Phenanthrene	N/A	0	12	24	42.0	2,800.0	358.0	041M640201
Pyrene	N/A	0	19	24	22.0	4,600.0	533.0	041M640201
Total PAHs	N/A	0	19	24	255.0	25,100.0	3,390.0	041M640201
Pesticides and PCBs (µg/kg)								
Aroclor-1254	N/A	0	8	24	1.30	370.0	28.90	041M640201
Aroclor-1260	N/A	0	12	24	1.30	50.0	14.60	041M641901
Total PCBs	N/A	0	20	24	8.950	640.0	88.30	041M640301
Aldrin	N/A	0	6	24	0.170	4.0	0.521	041M640301
Dieldrin	N/A	0	5	24	0.790	3.30	0.703	041M640201
Endosulfan I	N/A	0	1	24	0.760	0.760	0.402	041M641401
Endosulfan II	N/A	0	1	24	1.70	1.70	0.517	041M641901
Heptachlor	N/A	0	1	24	0.120	0.120	0.233	041M640101
alpha-Chlordane	N/A	0	4	24	0.280	10.0	0.864	041M640301
gamma-Chlordane	N/A	0	5	24	0.650	8.50	0.712	041M640301
Total Chlordane	N/A	0	6	24	0.345	18.50	1.580	041M640301
Endrin	N/A	0	5	24	0.460	8.0	1.140	041M640101
Endrin aldehyde	N/A	0	1	24	0.290	0.290	0.475	041M640801
Total Endrin	N/A	0	5	24	0.880	8.230	2.080	041M640101
alpha-BHC	N/A	0	9	24	0.120	0.940	0.356	041M641401
gamma-BHC (Lindane)	N/A	0	5	24	0.130	1.60	0.305	041M640401
Total BHC	N/A	0	11	24	0.315	2.980	1.120	041M640401
4,4'-DDD	50.0	1	14	24	0.20	140.0	12.20	041M640201
4,4'-DDE	40.0	2	14	24	0.350	78.0	9.480	041M640301
4,4'-DDT	20.0	0	6	24	0.60	14.0	1.580	041M640301
Total DDT	110.0	2	15	24	0.470	213.650	23.20	041M640201
SVOCs (µg/kg)								
1,2-Dichlorobenzene	N/A	0	1	24	190.0	190.0	1,540.0	041M640401
1,4-Dichlorobenzene	N/A	0	2	24	70.0	260.0	1,520.0	041M640401
Benzo(b)fluoranthene	N/A	0	16	24	21.0	2,600.0	424.0	041M640201
Benzo(g,h,i)perylene	N/A	0	9	24	29.0	590.0	213.0	041M640501
Benzo(k)fluoranthene	N/A	0	7	24	35.0	250.0	190.0	041M640301
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	24	33.0	530.0	1,670.0	041M641901
Butylbenzylphthalate	N/A	0	8	24	28.0	280.0	1,410.0	041M640501
Carbazole	N/A	0	2	24	230.0	400.0	1,600.0	041M640501
Dibenzofuran	N/A	0	2	24	72.0	85.0	1,580.0	041M640501
Diethylphthalate	N/A	0	3	24	80.0	2,000.0	1,680.0	041M640101
Dimethylphthalate	N/A	0	1	24	510.0	510.0	1,620.0	041M642201
Di-n-butylphthalate	N/A	0	9	24	28.0	430.0	1,430.0	041M641501
Indeno(1,2,3-cd)pyrene	N/A	0	8	24	39.0	600.0	214.0	041M640501
Phenol	N/A	0	1	24	220.0	220.0	1,540.0	041M640401
VOCs (µg/kg)								
Acetone	N/A	0	10	24	9.0	420.0	322.0	041M641401
Carbon disulfide	N/A	0	1	24	11.0	11.0	147.0	041M641601
Chlorobenzene	N/A	0	1	24	48.0	48.0	270.0	041M640401
Methylene chloride	N/A	0	5	24	64.0	400.0	345.0	041M641401

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-3-4
Wetland 64 Phase III
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	4,274.0	3	3	3	7,600.0	8,900.0	8,460.0	041M640601
Antimony	0.260	3	1	3	2.50	2.50	2.030	041M640501
Arsenic	2.140	3	3	3	6.90	7.80	7.230	041M640601
Barium	3.840	3	3	3	15.20	17.10	16.40	041M640401
Beryllium	0.130	3	3	3	0.30	0.340	0.327	041M640601
Cadmium	0.390	3	3	3	17.70	21.0	19.60	041M640601
Calcium	1,978.80	3	3	3	2,660.0	3,210.0	2,950.0	041M640401
Chromium	13.10	3	3	3	592.0	868.0	745.0	041M640601
Cobalt	0.910	3	3	3	2.70	3.40	3.030	041M640501
Copper	8.440	3	3	3	102.0	146.0	121.0	041M640501
Iron	2,684.40	3	3	3	12,100.0	13,600.0	13,000.0	041M640401
Lead	21.040	3	3	3	330.0	346.0	338.0	041M640401
Magnesium	2,943.60	3	3	3	3,230.0	4,190.0	3,650.0	041M640401
Manganese	9.810	3	3	3	44.90	65.80	53.20	041M640501
Mercury	0.110	3	3	3	0.250	0.260	0.257	041M640501
Nickel	3.690	3	3	3	9.80	12.30	11.10	041M640501
Potassium	899.720	3	3	3	1,090.0	1,350.0	1,200.0	041M640401
Selenium	0.660	3	3	3	1.30	1.60	1.470	041M640401
Silver	0.520	3	3	3	1.90	3.0	2.30	041M640501
Sodium	11,439.60	2	3	3	10,100.0	18,300.0	14,100.0	041M640401
Vanadium	8.590	3	3	3	15.90	18.40	17.20	041M640401
Zinc	14.360	3	3	3	306.0	468.0	368.0	041M640401
PAHs (µg/kg)								
Acenaphthene	N/A	0	3	3	260.0	750.0	440.0	041M640601
Anthracene	N/A	0	3	3	310.0	1,000.0	550.0	041M640601
Benzo(a)anthracene	N/A	0	3	3	1,100.0	2,100.0	1,500.0	041M640601
Benzo(a)pyrene	N/A	0	3	3	1,000.0	1,700.0	1,300.0	041M640601
Chrysene	N/A	0	3	3	1,200.0	2,100.0	1,530.0	041M640601
Fluoranthene	N/A	0	3	3	2,700.0	5,000.0	3,500.0	041M640601
Fluorene	N/A	0	3	3	210.0	750.0	417.0	041M640601
Naphthalene	N/A	0	3	3	110.0	310.0	177.0	041M640601
Phenanthrene	N/A	0	3	3	1,800.0	4,300.0	2,700.0	041M640601
Pyrene	N/A	0	3	3	3,000.0	4,800.0	3,630.0	041M640601
Total PAHs	N/A	0	3	3	13,740.0	24,460.0	17,400.0	041M640601
Pesticides and PCBs (µg/kg)								
Aroclor-1260	N/A	0	3	3	180.0	300.0	253.0	041M640401
Total PCBs	N/A	0	3	3	565.0	1,220.0	888.0	041M640401
Dieldrin	N/A	0	3	3	7.70	20.0	14.90	041M640401
Endosulfan I	N/A	0	2	3	1.30	2.40	1.380	041M640401
alpha-Chlordane	N/A	0	2	3	2.90	3.70	2.60	041M640401
Total Chlordane	N/A	0	2	3	4.650	11.70	6.450	041M640401
delta-BHC	N/A	0	2	3	0.690	0.940	2.030	041M640601
Total BHC	N/A	0	2	3	7.115	21.690	15.50	041M640401
4,4'-DDD	50.0	2	3	3	30.0	89.0	57.30	041M640401
4,4'-DDE	40.0	2	3	3	33.0	89.0	55.30	041M640401
4,4'-DDT	20.0	0	2	3	18.0	19.0	13.60	041M640601
Total DDT	110.0	2	3	3	66.850	196.0	126.0	041M640401
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	3	3	1,100.0	1,800.0	1,430.0	041M640601
Benzo(g,h,i)perylene	N/A	0	3	3	470.0	980.0	777.0	041M640601
Benzo(k)fluoranthene	N/A	0	3	3	1,300.0	1,900.0	1,500.0	041M640601
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	3	2,000.0	3,900.0	3,070.0	041M640601
Butylbenzylphthalate	N/A	0	3	3	240.0	710.0	427.0	041M640401
Carbazole	N/A	0	3	3	320.0	800.0	490.0	041M640601
Dibenzofuran	N/A	0	2	3	130.0	350.0	377.0	041M640601
Indeno(1,2,3-cd)pyrene	N/A	0	3	3	680.0	1,000.0	833.0	041M640601
VOCs (µg/kg)								
Acetone	N/A	0	2	3	32.0	32.0	31.20	041M640501

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-3-5
Wetland 64 Phase IV
Sediment Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections: Number Detected	Frequency of Detections: Number Analyzed	Range of Detections: Minimum Detection	Range of Detections: Maximum Detection	Average Detection	Maximum Detection Location
Metals (mg/kg)								
Aluminum	4,274.0	3	7	7	59.0	18,000.0	5,400.0	041M641102
Arsenic	2.140	5	5	7	3.20	13.0	5.430	041M641102
Barium	3.840	6	7	7	0.170	18.0	9.580	041M641102
Beryllium	0.130	5	5	7	0.150	1.10	0.314	041M641102
Cadmium	0.390	5	6	7	0.070	23.0	10.20	041M640502
Calcium	1,978.80	4	7	7	58.0	4,300.0	1,860.0	041M641102
Chromium	13.10	5	7	7	1.0	700.0	360.0	041M640502
Cobalt	0.910	5	5	7	1.0	4.80	1.840	041M640502
Copper	8.440	6	6	7	12.0	200.0	75.80	041M640502
Iron	2,684.40	5	7	7	48.0	33,000.0	11,300.0	041M641102
Lead	21.040	5	7	7	0.380	430.0	164.0	041M640502
Magnesium	2,943.60	2	7	7	110.0	10,000.0	2,900.0	041M641102
Manganese	9.810	5	7	7	0.310	230.0	59.90	041M641102
Mercury	0.110	5	6	7	0.007	0.460	0.188	041M641102
Nickel	3.690	5	6	7	0.260	15.0	7.060	041M640502
Potassium	899.720	2	7	7	44.0	4,200.0	1,090.0	041M641102
Silver	0.520	5	5	7	1.30	4.0	1.440	041M640502
Sodium	11,439.60	2	7	7	560.0	48,000.0	12,500.0	041M641102
Vanadium	8.590	4	7	7	0.120	37.0	13.20	041M641102
Zinc	14.360	5	6	7	3.0	380.0	180.0	041M640502
PAHs (µg/kg)								
Benzo(a)anthracene	N/A	0	2	7	660.0	870.0	2,000.0	041M640502
Benzo(a)pyrene	N/A	0	2	7	540.0	800.0	1,970.0	041M640502
Chrysene	N/A	0	2	7	840.0	860.0	2,020.0	041M640502
Fluoranthene	N/A	0	2	7	1,600.0	1,800.0	2,270.0	041M640502
Phenanthrene	N/A	0	3	7	230.0	1,100.0	1,800.0	041M640502
Pyrene	N/A	0	2	7	1,400.0	1,600.0	2,210.0	041M640502
Total PAHs	N/A	0	3	7	22,810.0	28,030.0	30,100.0	041M640502
Pesticides and PCBs (µg/kg)								
Heptachlor epoxide	N/A	0	2	7	4.40	6.20	10.70	041M640602
delta-BHC	N/A	0	5	7	0.660	6.90	4.240	041M641102
Total BHC	N/A	0	5	7	3.810	108.90	43.90	041M641102
4,4'-DDD	50.0	2	1	7	100.0	100.0	28.90	041M640602
4,4'-DDE	40.0	2	4	7	8.40	43.0	26.10	041M640202
Total DDT	110.0	2	4	7	36.90	154.0	80.50	041M640602
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	2	7	630.0	780.0	1,980.0	041M640502
Benzo(g,h,i)perylene	N/A	0	2	7	420.0	490.0	1,910.0	041M640502
Benzo(k)fluoranthene	N/A	0	2	7	510.0	910.0	1,980.0	041M640502
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	7	980.0	1,500.0	1,830.0	041M640502

Notes:
µg/kg = micrograms per kilogram
mg/kg = milligram per kilogram
N/A = Not Applicable

Table 11-3-6
Wetland 64 Phase III
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections		Range of Detections			Maximum Detection Location
			Number Detected	Number Analyzed	Minimum Detection	Maximum Detection	Average Detection	
Metals (µg/L)								
Aluminum	2,927.50	0	1	2	298.0	298.0	298.0	041W640501
Antimony	4.15	0	1	2	3.8	3.8	3.8	041W640101
Barium	9.43	2	2	2	33.6	36.4	35.0	041W640101
Cadmium	2.40	0	1	2	0.84	0.84	0.84	041W640101
Calcium	76,800.00	2	2	2	99,000.0	137,000.0	118,000.0	041W640501
Chromium	10.87	1	2	2	8.5	12.5	10.5	041W640501
Copper	7.03	0	2	2	4.2	5.8	5.0	041W640101
Iron	1,352.00	0	2	2	702.0	829.0	766.0	041W640101
Lead	13.75	0	2	2	5.8	8.6	7.2	041W640501
Magnesium	243,650.00	2	2	2	274,000.0	421,000.0	348,000.0	041W640501
Manganese	12.15	2	2	2	28.3	37.1	32.7	041W640101
Mercury	0.21	0	1	2	0.06	0.06	0.06	041W640501
Nickel	9.30	0	1	2	2.6	2.6	2.6	041W640101
Potassium	81,250.00	2	2	2	113,000.0	205,000.0	159,000.0	041W640501
Silver	3.01	0	2	2	0.04	0.05	0.045	041W640101
Sodium	1,952,000.00	2	2	2	2,290,000.0	3,600,000.0	2,950,000.0	041W640501
Zinc	12.88	1	2	2	10.1	24.1	17.1	041W640101
Pesticides (µg/L)								
beta-BHC	N/A	0	1	2	0.0072	0.0072	0.0072	041W640101
Total BHC	N/A	0	1	2	0.05845	0.05845	0.0585	041W640101
VOCs (µg/L)								
1,1,1-Trichloroethane	N/A	0	1	2	0.21	0.21	0.21	041W640101
1,1-Dichloroethane	N/A	0	1	2	0.9	0.9	0.9	041W640101
1,2-Dichloroethene (total)	N/A	0	2	2	0.21	0.59	0.4	041W640101
Acetone	N/A	0	1	2	24.0	24.0	24.0	041W640101
Toluene	N/A	0	1	2	0.36	0.36	0.36	041W640501
Trichloroethene	N/A	0	1	2	0.34	0.34	0.34	041W640101

Notes:
µg/L = micrograms per liter
N/A = Not Applicable

Table 11-3-7
Wetland 64 Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	24	24			28.9	26,800	041M641601	26,800			N/A		Yes	No SV
Antimony	4	10	0.065	1.6	0.19	10.8	041M640401	10.8	J	12	2	0.9	No	Max Detect < SV
Arsenic	**19**	**24**	**0.06**	**0.13**	**0.16**	**18.7**	**041M641601**	**18.7**		**7.24**	**1, 2**	**2.58**	**Yes**	**Max Detect > SV**
Barium	22	24	0.08	0.14	0.35	1,280	041M640301	1,280			N/A		Yes	No SV
Beryllium	10	24	0.03	0.22	0.11	1.3	041M641901	1.3	J		N/A		Yes	No SV
Cadmium	**22**	**24**	**0.1**	**0.105**	**0.19**	**38.6**	**041M640301**	**38.6**		**0.68**	**1**	**57.1**	**Yes**	**Max Detect > SV**
Calcium	24	24			64.4	6,630	041M641701	6,630			N/A		Yes	No SV
Chromium	**24**	**24**			**0.55**	**1,800**	**041M640301**	**1,800**		**52.3**	**1, 2**	**34.4**	**Yes**	**Max Detect > SV**
Cobalt	15	24	0.09	0.435	0.13	6.1	041M640301	6.1	J		N/A		Yes	No SV
Copper	**22**	**24**	**0.285**	**0.75**	**0.74**	**255**	**041M640301**	**255**	**J**	**18.7**	**1, 2**	**13.6**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	24	0.295	2.05			ND	2.05	U		N/A		Yes	No SV
Iron	24	24			26	38,200	041M641601	38,200			N/A		Yes	No SV
Lead	**23**	**24**	**0.145**	**0.145**	**0.65**	**634**	**041M640301**	**634**	**J**	**30.2**	**1, 2**	**21**	**Yes**	**Max Detect > SV**
Magnesium	24	24			47.1	9,390	041M641601	9,390			N/A		Yes	No SV
Manganese	24	24			0.12	203	041M641601	203			N/A		Yes	No SV
Mercury	**14**	**24**	**0.025**	**0.04**	**0.1**	**0.88**	**041M640301**	**0.88**		**0.13**	**1, 2**	**6.77**	**Yes**	**Max Detect > SV**
Nickel	**17**	**24**	**0.285**	**0.41**	**0.79**	**27.1**	**041M640301**	**27.1**		**15.9**	**1, 2**	**1.7**	**Yes**	**Max Detect > SV**
Potassium	24	24			19.9	3,560	041M641901	3,560			N/A		Yes	No SV
Selenium	11	24	0.09	0.85	0.34	3.1	041M640301	3.1	J		N/A		Yes	No SV
Silver	**4**	**24**	**0.12**	**1.1**	**0.37**	**5.1**	**041M640301**	**5.1**	**J**	**0.73**	**1**	**6.96**	**Yes**	**Max Detect > SV**
Sodium	23	24	2.5	2.5	43.8	30,200	041M641901	30,200			N/A		Yes	No SV
Thallium	2	24	0.09	0.85	0.65	1.2	041M640301	1.2	J		N/A		Yes	No SV
Vanadium	22	24	0.105	0.75	0.42	43.4	041M641601	43.4			N/A		Yes	No SV
Zinc	**23**	**24**	**0.7**	**0.7**	**2.2**	**481**	**041M640301**	**481**	**J**	**124**	**1, 2**	**3.88**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	**1**	**24**	**20.5**	**1,350**	**30**	**30**	**041M640101**	**30**	**J**	**20.2**	**1**	**1.49**	**Yes**	**Max Detect > SV**
Acenaphthene	**2**	**24**	**10**	**650**	**120**	**230**	**041M640501**	**230**		**6.71**	**1**	**34.3**	**Yes**	**Max Detect > SV**
Acenaphthylene	**1**	**24**	**20.5**	**1,350**	**90**	**90**	**041M640501**	**90**	**J**	**5.87**	**1**	**15.3**	**Yes**	**Max Detect > SV**
Anthracene	**2**	**24**	**20.5**	**1,350**	**230**	**330**	**041M640501**	**330**		**46.9**	**1**	**7.04**	**Yes**	**Max Detect > SV**
Benzo(a)anthracene	**12**	**24**	**20.5**	**1,350**	**27**	**1,400**	**041M640201**	**1,400**	**J**	**74.8**	**1**	**18.7**	**Yes**	**Max Detect > SV**
Benzo(a)pyrene	**13**	**24**	**20.5**	**1,350**	**25**	**910**	**041M640501**	**910**		**88.8**	**1**	**10.2**	**Yes**	**Max Detect > SV**
Chrysene	**13**	**24**	**18.5**	**1,350**	**23**	**1,500**	**041M640201**	**1,500**	**J**	**108**	**1**	**13.9**	**Yes**	**Max Detect > SV**
Dibenz(a,h)anthracene	**1**	**24**	**20.5**	**1,350**	**25**	**25**	**041M640101**	**25**	**J**	**6.22**	**1**	**4.02**	**Yes**	**Max Detect > SV**
Fluoranthene	**19**	**24**	**20.5**	**22**	**24**	**5,700**	**041M640201**	**5,700**		**113**	**1**	**50.4**	**Yes**	**Max Detect > SV**
Fluorene	**2**	**24**	**10**	**650**	**160**	**210**	**041M640501**	**210**		**21.2**	**1**	**9.91**	**Yes**	**Max Detect > SV**
Naphthalene	**2**	**24**	**20.5**	**1,350**	**56**	**71**	**041M640501**	**71**	**J**	**34.6**	**1**	**2.05**	**Yes**	**Max Detect > SV**
Phenanthrene	**12**	**24**	**20.5**	**1,350**	**42**	**2,800**	**041M640201**	**2,800**		**86.7**	**1**	**32.3**	**Yes**	**Max Detect > SV**
Pyrene	**19**	**24**	**20.5**	**21.5**	**22**	**4,600**	**041M640201**	**4,600**		**153**	**1**	**30.1**	**Yes**	**Max Detect > SV**
Total PAHs	**19**	**24**	**246**	**440**	**255**	**25,100**	**041M640201**	**25,100**		**1684**	**1, 2**	**14.9**	**Yes**	**Max Detect > SV**
TOC Normalized PAHs	**19**	**24**	**69.97**	**595.4**	**12.17**	**735.84**	**041M640101**	**735.8**		**290**	**3**	**2.54**	**Yes**	**Max Detect > SV**
PCBs (µg/kg)														
Aroclor-1016	0	24	1.05	70			ND	70	UJ	21.6	N/A	3.24	Yes	Max SQL > SV
Aroclor-1221	0	24	2.1	140			ND	140	UJ	67	2	2.09	Yes	Max SQL > SV
Aroclor-1232	0	24	1.05	70			ND	70	UJ	21.6	N/A	3.24	Yes	Max SQL > SV
Aroclor-1242	0	24	1.05	70			ND	70	UJ	21.6	N/A	3.24	Yes	Max SQL > SV
Aroclor-1248	0	24	1.05	70			ND	70	UJ	21.6	N/A	3.24	Yes	Max SQL > SV
Aroclor-1254	**8**	**24**	**1.05**	**9.5**	**1.3**	**370**	**041M641501**	**370**	**J**	**21.6**	**N/A**	**17.1**	**Yes**	**Max Detect > SV**
Aroclor-1260	**12**	**24**	**1.05**	**70**	**1.3**	**50**	**041M642001**	**50**	**J**	**21.6**	**N/A**	**2.31**	**Yes**	**Max Detect > SV**
Total PCBs	**20**	**24**	**8.4**	**18.5**	**8.95**	**640**	**041M642001**	**640**		**21.6**	**1**	**29.6**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	6	24	0.05	0.8	0.17	4	041M640301	4	J		N/A		Yes	No SV
Dieldrin	**5**	**24**	**0.105**	**3.5**	**0.79**	**3.3**	**041M640201**	**3.3**	**J**	**0.72**	**1**	**4.61**	**Yes**	**Max Detect > SV**
Endosulfan I	1	24	0.055	3.5	0.76	0.76	041M641401	0.76	J		N/A		Yes	No SV
Endosulfan II	1	24	0.105	3.5	1.7	1.7	041M641901	1.7	J		N/A		Yes	No SV
Endosulfan sulfate	0	24	0.105	3.5			ND	3.5	U		N/A		Yes	No SV
Heptachlor	1	24	0.05	1.7	0.12	0.12	041M640101	0.12	J		N/A		Yes	No SV
Heptachlor epoxide	0	24	0.05	1.7			ND	1.7	U		N/A		Yes	No SV
Methoxychlor	0	24	0.5	17			ND	17	U		N/A		Yes	No SV
Toxaphene	0	24	10.5	350			ND	350	U		N/A		Yes	No SV
alpha-Chlordane	**4**	**24**	**0.05**	**0.46**	**0.28**	**10**	**041M640301**	**10**	**J**	**1.7**	**1**	**5.88**	**Yes**	**Max Detect > SV**
gamma-Chlordane	**5**	**24**	**0.05**	**0.46**	**0.65**	**8.5**	**041M640301**	**8.5**	**J**	**1.7**	**1**	**5**	**Yes**	**Max Detect > SV**
Total Chlordane	**6**	**24**	**0.1**	**0.92**	**0.345**	**18.5**	**041M640301**	**18.5**		**1.7**	**1**	**10.9**	**Yes**	**Max Detect > SV**
Endrin	**5**	**24**	**0.105**	**3.5**	**0.46**	**8**	**041M640101**	**8**	**DJ**	**3.3**	**2**	**2.42**	**Yes**	**Max Detect > SV**
Endrin aldehyde	1	24	0.105	3.5	0.29	0.29	041M640801	0.29	J	3.3	2	0.09	No	Max Detect < SV
Endrin ketone	0	24	0.105	3.5			ND	3.5	U	3.3	2	1.06	Yes	Max SQL > SV
Total Endrin	**5**	**24**	**0.315**	**10.5**	**0.88**	**8.23**	**041M640101**	**8.23**		**3.3**	**2**	**2.49**	**Yes**	**Max Detect > SV**
alpha-BHC	9	24	0.055	1.7	0.12	0.94	041M642401	0.94	J		N/A		Yes	No SV
beta-BHC	0	24	0.05	1.7			ND	1.7	UJ	0.32	N/A	5.31	Yes	Max SQL > SV
delta-BHC	0	24	0.05	1.7			ND	1.7	UJ	0.32	N/A	5.31	Yes	Max SQL > SV
gamma-BHC (Lindane)	**5**	**24**	**0.05**	**1.7**	**0.13**	**1.6**	**041M641801**	**1.6**	**J**	**0.32**	**1**	**5**	**Yes**	**Max Detect > SV**
Total BHC	**11**	**24**	**0.22**	**6.8**	**0.315**	**2.98**	**041M642401**	**2.98**		**0.32**	**2**	**9.31**	**Yes**	**Max Detect > SV**
4,4'-DDD	**14**	**24**	**0.105**	**0.5**	**0.2**	**140**	**041M640201**	**140**	**D**	**1.22**	**1**	**115**	**Yes**	**Max Detect > SV**
4,4'-DDE	**14**	**24**	**0.105**	**0.5**	**0.35**	**78**	**041M640301**	**78**		**2.07**	**1**	**37.7**	**Yes**	**Max Detect > SV**
4,4'-DDT	**6**	**24**	**0.105**	**1.65**	**0.6**	**14**	**041M640301**	**14**	**J**	**1.19**	**1**	**11.8**	**Yes**	**Max Detect > SV**
Total DDT	**15**	**24**	**0.315**	**1.5**	**0.47**	**214**	**041M640201**	**214**		**3.3**	**2**	**64.7**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
1,2-Dichlorobenzene	1	24	205	13,500	190	190	041M640401	190	J		N/A		Yes	No SV
1,3-Dichlorobenzene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
1,4-Dichlorobenzene	2	24	205	13,500	70	260	041M640401	260	J		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	21	205	13,000			ND	13,000	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	24	495	33,000			ND	33,000	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	24	495	33,000			ND	33,000	UJ		N/A		Yes	No SV
2,4-Dinitrotoluene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2-Chloronaphthalene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2-Chlorophenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	24	495	33,000			ND	33,000	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2-Nitroaniline	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
2-Nitrophenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	24	205	13,500			ND	13,500	UJ		N/A		Yes	No SV
3-Nitroaniline	0	22	495	31,500			ND	31,500	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
4-Chloroaniline	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
4-Nitroaniline	0	24	495	33,000			ND	33,000	UJ		N/A		Yes	No SV
4-Nitrophenol	0	24	495	33,000			ND	33,000	U		N/A		Yes	No SV
Benzo(b)fluoranthene	16	24	20.5	1,350	21	2,600	041M640201	2,600			N/A		Yes	No SV

Table 11-3-7
Wetland 64 Phase II
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Benzo(g,h,i)perylene	9	24	20.5	1,350	29	590	041M640501	590			N/A		Yes	No SV
Benzo(k)fluoranthene	7	24	20.5	1,350	35	250	041M640301	250	J		N/A		Yes	No SV
bis(2-Chloroethoxy)methane	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	24	20.5	1,350			ND	1,350	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**24**	**205**	**13,500**	**33**	**530**	**041M641901**	**530**	**J**	**182**	**1, 2**	**2.91**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	**8**	**24**	**205**	**13,500**	**28**	**280**	**041M640501**	**280**	**J**	**182**	**1, 2**	**1.54**	**Yes**	**Max Detect > SV**
Carbazole	2	24	205	13,500	230	400	041M640501	400	J		N/A		Yes	No SV
Dibenzofuran	2	24	205	13,500	72	85	041M640501	85	J		N/A		Yes	No SV
Diethylphthalate	**3**	**24**	**205**	**13,500**	**80**	**2,000**	**041M640101**	**2,000**		**182**	**1, 2**	**11**	**Yes**	**Max Detect > SV**
Dimethylphthalate	**1**	**24**	**205**	**13,500**	**510**	**510**	**041M642201**	**510**		**182**	**1, 2**	**2.8**	**Yes**	**Max Detect > SV**
Di-n-butylphthalate	**9**	**24**	**205**	**13,500**	**28**	**430**	**041M641501**	**430**		**182**	**1, 2**	**2.36**	**Yes**	**Max Detect > SV**
Di-n-octylphthalate	0	24	205	13,500			ND	13,500	U	182	1, 2	74.2	Yes	Max SQL > SV
Hexachlorobenzene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
Hexachlorobutadiene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	24	205	13,500			ND	13,500	UJ		N/A		Yes	No SV
Hexachloroethane	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	8	24	20.5	1,350	39	600	041M640501	600			N/A		Yes	No SV
Isophorone	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
Nitrobenzene	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	24	20.5	1,350			ND	1,350	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	24	205	13,500			ND	13,500	U		N/A		Yes	No SV
Pentachlorophenol	0	24	495	33,000			ND	33,000	U		N/A		Yes	No SV
Phenol	1	24	205	13,500	220	220	041M640401	220	J		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,1-Dichloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,1-Dichloroethene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,2-Dichloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
1,2-Dichloropropane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
2-Butanone (MEK)	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
2-Hexanone	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Acetone	10	24	6	6,000	9	420	041M641401	420			N/A		Yes	No SV
Benzene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Bromodichloromethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Bromoform	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Bromomethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Carbon disulfide	1	24	6	3,100	11	11	041M641601	11	J		N/A		Yes	No SV
Carbon tetrachloride	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Chlorobenzene	1	24	6	6,000	48	48	041M640401	48			N/A		Yes	No SV
Chloroethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Chloroform	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Chloromethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Dibromochloromethane	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Ethylbenzene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Methylene chloride	5	24	6	7,000	64	400	041M641401	400	J		N/A		Yes	No SV
Styrene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Tetrachloroethene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Toluene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Trichloroethene	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV
Vinyl chloride	0	24	2	6,000			ND	6,000	U		N/A		Yes	No SV
Xylene (Total)	0	24	6	6,000			ND	6,000	U		N/A		Yes	No SV

Notes:

Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient
D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-3-8
Wetland 64 Phase II
Sediment Parameters Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	1,2-Dichlorobenzene	Acetone
Arsenic	4,4'-DDE	1,4-Dichlorobenzene	Carbon disulfide
Barium	4,4'-DDT	2-Methylnaphthalene	Chlorobenzene
Beryllium	Aldrin	Acenaphthene	Methylene chloride
Cadmium	alpha-BHC	Acenaphthylene	
Calcium	alpha-Chlordane	Anthracene	
Chromium	Dieldrin	Benzo(a)anthracene	
Cobalt	Endosulfan I	Benzo(a)pyrene	
Copper	Endosulfan II	Benzo(b)fluoranthene	
Iron	Endrin	Benzo(g,h,i)perylene	
Lead	gamma-BHC (Lindane)	Benzo(k)fluoranthene	
Magnesium	gamma-Chlordane	bis(2-Ethylhexyl)phthalate (BEHP)	
Manganese	Heptachlor	Butylbenzylphthalate	
Mercury	Total BHC	Carbazole	
Nickel	Total Chlordane	Chrysene	
Potassium	Total DDT	Dibenz(a,h)anthracene	
Selenium	Total Endrin	Dibenzofuran	
Silver	Aroclor-1254	Diethylphthalate	
Sodium	Aroclor-1260	Dimethylphthalate	
Thallium	Total PCBs	Di-n-butylphthalate	
Vanadium		Fluoranthene	
Zinc		Fluorene	
		Indeno(1,2,3-cd)pyrene	
		Naphthalene	
		Phenanthrene	
		Phenol	
		Pyrene	
		TOC Normalized PAHs	
		Total PAHs	
		Not Detected Parameters	
Cyanide (CN)	beta-BHC	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
	delta-BHC	1,3-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	Endosulfan sulfate	2,2'-oxybis(1-Chloropropane)/bis(2-chlor	1,1,2-Trichloroethane
	Endrin ketone	2,4,5-Trichlorophenol	1,1-Dichloroethane
	Heptachlor epoxide	2,4,6-Trichlorophenol	1,1-Dichloroethene
	Methoxychlor	2,4-Dichlorophenol	1,2-Dichloroethane
	Toxaphene	2,4-Dimethylphenol	1,2-Dichloroethene (total)
	Aroclor-1016	2,4-Dinitrophenol	1,2-Dichloropropane
	Aroclor-1221	2,4-Dinitrotoluene	2-Butanone (MEK)
	Aroclor-1232	2,6-Dinitrotoluene	2-Hexanone
	Aroclor-1242	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	Aroclor-1248	2-Chlorophenol	Benzene
		2-Methyl-4,6-Dinitrophenol	Bromodichloromethane
		2-Methylphenol (o-Cresol)	Bromoform
		2-Nitroaniline	Bromomethane
		2-Nitrophenol	Carbon tetrachloride
		3,3'-Dichlorobenzidine	Chloroethane
		3-Nitroaniline	Chloroform
		4-Bromophenyl-phenylether	Chloromethane
		4-Chloro-3-methylphenol	cis-1,3-Dichloropropene
		4-Chloroaniline	Dibromochloromethane
		4-Chlorophenylphenyl ether	Ethylbenzene
		4-Methylphenol (p-Cresol)	Styrene
		4-Nitroaniline	Tetrachloroethene
		4-Nitrophenol	Toluene
		bis(2-Chloroethoxy)methane	trans-1,3-Dichloropropene
		bis(2-Chloroethyl)ether	Trichloroethene
		Di-n-octylphthalate	Vinyl chloride
		Hexachlorobenzene	Xylene (Total)
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	

Table 11-3-9
Wetland 64 Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)
Metals (mg/kg)																						
Aluminum	24	24				7,430	28.9	26,800	26,800		041M641601			NA					0	4,274	8	Yes
Arsenic	19	24	0.078	0.06	0.13	5.55	0.16	18.7	18.7		041M641601	7.24	41.6	PEL	2.58	0.77	0.45	0.13	0	2.14	11	No
Barium	22	24	0.11	0.08	0.14	60.9	0.35	1,280	1,280		041M640301			NA					0	3.84	14	Yes
Beryllium	10	24	0.0557	0.03	0.22	0.355	0.11	1.3	1.3	J	041M641901			NA					0	0.13	10	Yes
Cadmium	**22**	**24**	**0.103**	**0.1**	**0.105**	**8.68**	**0.19**	**38.6**	**38.6**		**041M640301**	**0.676**	**4.21**	**PEL**	**57.1**	**12.8**	**9.17**	**2.06**	**10**	**0.39**	**18**	**Yes**
Calcium	24	24				1,960	64.4	6,630	6,630		041M641701			NA					0	1,978.80	10	No
Chromium	**24**	**24**				**426**	**0.55**	**1,800**	**1,800**		**041M640301**	**52.3**	**160**	**PEL**	**34.4**	**8.14**	**11.3**	**2.66**	**11**	**13.1**	**17**	**Yes**
Cobalt	15	24	0.147	0.09	0.435	1.5	0.13	6.1	6.1	J	041M640301			NA					0	0.91	10	Yes
Copper	**22**	**24**	**0.518**	**0.285**	**0.75**	**47.4**	**0.74**	**255**	**255**	**J**	**041M640301**	**18.7**	**108**	**PEL**	**13.6**	**2.54**	**2.36**	**0.44**	**4**	**8.44**	**13**	**Yes**
Cyanide (CN)	0	24	0.795	0.295	2.05	0.795			2.05	U	ND			NA					0	1.29	7	No
Iron	24	24				11,000	26	38,200	38,200		041M641601			NA					0	2,684.40	12	Yes
Lead	**23**	**24**	**0.145**	**0.145**	**0.145**	**132**	**0.65**	**634**	**634**	**J**	**041M640301**	**30.2**	**112**	**PEL**	**21**	**4.37**	**5.66**	**1.18**	**11**	**21.04**	**14**	**Yes**
Magnesium	24	24				2,770	47.1	9390	9390		041M641601			NA					0	2,943.60	8	No
Manganese	24	24				59.7	0.12	203	203		041M641601			NA					0	9.81	14	Yes
Mercury	**14**	**24**	**0.03**	**0.025**	**0.04**	**0.231**	**0.1**	**0.88**	**0.88**		**041M640301**	**0.13**	**0.696**	**PEL**	**6.77**	**1.78**	**1.26**	**0.33**	**1**	**0.11**	**13**	**Yes**
Nickel	17	24	0.374	0.285	0.41	6.51	0.79	27.1	27.1		041M640301	15.9	42.8	PEL	1.7	0.41	0.63	0.15	0	3.69	11	No
Potassium	24	24				940	19.9	3,560	3,560		041M641901			NA					0	899.72	7	No
Selenium	11	24	0.173	0.09	0.85	0.771	0.34	3.1	3.1	J	041M640301			NA					0	0.66	10	Yes
Silver	**4**	**24**	**0.353**	**0.12**	**1.1**	**0.569**	**0.37**	**5.1**	**5.1**	**J**	**041M640301**	**0.733**	**1.77**	**PEL**	**6.96**	**0.78**	**2.88**	**0.32**	**1**	**0.52**	**8**	**Yes**
Sodium	23	24	2.5	2.5	2.5	8,130	43.8	30,200	30,200		041M641901			NA					0	11,439.60	6	No
Thallium	2	24	0.259	0.09	0.85	0.314	0.65	1.2	1.2	J	041M640301			NA					0	0.39	8	Yes
Vanadium	22	24	0.427	0.105	0.75	13.3	0.42	43.4	43.4		041M641601			NA					0	8.59	9	Yes
Zinc	**23**	**24**	**0.7**	**0.7**	**0.7**	**123**	**2.2**	**481**	**481**	**J**	**041M640301**	**124**	**271**	**PEL**	**3.88**	**0.99**	**1.77**	**0.45**	**5**	**14.36**	**18**	**Yes**
PAHs (µg/kg)																						
2-Methylnaphthalene	1	24	167	20.5	1,350	161	30	30	30	J	041M640101	20.2	201	PEL	1.49	7.99	0.15	0.80	0		0	No
Acenaphthene	2	24	84	10	650	91.6	120	230	230		041M640501	6.71	88.9	PEL	34.3	13.7	2.59	1.03	2		0	No
Acenaphthylene	1	24	200	20.5	1,350	196	90	90	90	J	041M640501	5.87	128	PEL	15.3	33.3	0.70	1.53	0		0	No
Anthracene	2	24	211	20.5	1,350	216	230	330	330		041M640501	46.9	245	PEL	7.04	4.61	1.35	0.88	1		0	No
Benzo(a)anthracene	12	24	153	20.5	1,350	255	27	1,400	1,400	J	041M640201	74.8	693	PEL	18.7	3.41	2.02	0.37	2		0	No
Benzo(a)pyrene	13	24	273	20.5	1,350	266	25	910	910		041M640501	88.8	763	PEL	10.2	2.99	1.19	0.35	1		0	No
Chrysene	13	24	156	18.5	1,350	271	23	1,500	1,500	J	041M640201	108	846	PEL	13.9	2.51	1.77	0.32	1		0	No
Dibenz(a,h)anthracene	1	24	167	20.5	1,350	161	25	25	25	J	041M640101	6.22	135	PEL	4.02	25.9	0.19	1.19	0		0	No
Fluoranthene	19	24	20.8	20.5	21.5	624	24	5,700	5,700		041M640201	113	1,494	PEL	50.4	5.52	3.82	0.42	3		0	No
Fluorene	2	24	84	10	650	92.4	160	210	210		041M640501	21.2	144	PEL	9.91	4.36	1.46	0.64	2		0	No
Naphthalene	2	24	172	20.5	1,350	163	56	71	71	J	041M640501	34.6	391	PEL	2.05	4.7	0.18	0.42	0		0	No
Phenanthrene	12	24	176	20.5	1,350	358	42	2,800	2,800		041M640201	86.7	544	PEL	32.3	4.13	5.15	0.66	3		0	No
Pyrene	19	24	20.8	20.5	21.5	533	22	4,600	4,600		041M640201	153	1,398	PEL	30.1	3.48	3.29	0.38	3		0	No
Total PAHs	19	24	287	246	440	3,390	255	25,100	25,100		041M640201	1684	16,770	PEL	14.9	2.01	1.5	0.20	1		0	No
TOC Normalized PAHs	19	24	226.86	69.97	595.4	165.51	12.17	735.84	735.84		041M640101	290	1,800	MEC	2.54	0.57	0.41	0.09	0		0	No
PCBs (µg/kg)																						
Aroclor-1016	0	24	7.45	1.05	70	7.45			70	UJ	ND	21.6	189	PEL	3.24	0.35	0.37	0.04	0		0	No
Aroclor-1221	0	24	14.9	2.1	140	14.9			140	UJ	ND	67	189	PEL	2.09	0.22	0.74	0.08	0		0	No
Aroclor-1232	0	24	7.45	1.05	70	7.45			70	UJ	ND	21.6	189	PEL	3.24	0.35	0.37	0.04	0		0	No
Aroclor-1242	0	24	7.45	1.05	70	7.45			70	UJ	ND	21.6	189	PEL	3.24	0.35	0.37	0.04	0		0	No
Aroclor-1248	0	24	7.45	1.05	70	7.45			70	UJ	ND	21.6	189	PEL	3.24	0.35	0.37	0.04	0		0	No
Aroclor-1254	**8**	**24**	**3.19**	**1.05**	**9.5**	**28.9**	**1.3**	**370**	**370**	**J**	**041M641501**	**21.6**	**189**	**PEL**	**17.1**	**1.34**	**1.96**	**0.15**	**1**		**0**	**Yes**
Aroclor-1260	12	24	11.3	1.05	70	14.6	1.3	50	50	J	041M642001	21.6	189	PEL	2.31	0.68	0.27	0.08	0		0	No
Total PCBs	**20**	**24**	**15.4**	**8.4**	**18.5**	**88.3**	**8.95**	**640**	**640**		**041M642001**	**21.6**	**189**	**PEL**	**29.6**	**4.09**	**3.39**	**0.47**	**2**		**0**	**Yes**
Pesticides (µg/kg)																						
Aldrin	6	24	0.167	0.05	0.8	0.521	0.17	4	4	J	041M640301			NA					0		0	Yes
Dieldrin	5	24	0.431	0.105	3.5	0.703	0.79	3.3	3.3	J	041M640201	0.716	4.3	PEL	4.61	0.98	0.77	0.16	0		0	No
Endosulfan I	1	24	0.387	0.055	3.5	0.402	0.76	0.76	0.76	J	041M641401			NA					0		0	Yes
Endosulfan II	1	24	0.465	0.105	3.5	0.517	1.7	1.7	1.7	J	041M641901			NA					0		0	Yes
Endosulfan sulfate	0	24	0.469	0.105	3.5	0.469			3.5	U	ND			NA					0		0	No
Heptachlor	1	24	0.237	0.05	1.7	0.233	0.12	0.12	0.12	J	041M640101			NA					0		0	Yes
Heptachlor epoxide	0	24	0.23	0.05	1.7	0.23			1.7	U	ND			NA					0		0	No
Methoxychlor	0	24	2.3	0.5	17	2.3			17	U	ND			NA					0		0	No
Toxaphene	0	24	47.3	10.5	350	47.3			350	U	ND			NA					0		0	No
alpha-Chlordane	**4**	**24**	**0.143**	**0.05**	**0.46**	**0.864**	**0.28**	**10**	**10**	**J**	**041M640301**	**1.7**	**4.79**	**PEL**	**5.88**	**0.51**	**2.09**	**0.18**	**2**		**0**	**Yes**
gamma-Chlordane	**5**	**24**	**0.123**	**0.05**	**0.46**	**0.713**	**0.65**	**8.5**	**8.5**	**J**	**041M640301**	**1.7**	**4.79**	**PEL**	**5**	**0.42**	**1.77**		**1**		**0**	**Yes**
Total Chlordane	**6**	**24**	**0.253**	**0.1**	**0.92**	**1.58**	**0.345**	**18.5**	**18.5**		**041M640301**	**1.7**	**4.79**	**PEL**	**10.9**	**0.93**	**3.86**	**0.33**	**2**		**0**	**Yes**
Endrin	5	24	0.433	0.105	3.5	1.14	0.46	8	8	DJ	041M640101	3.3		NA	2.42	0.35			0		0	Yes
Endrin aldehyde	1	24	0.483	0.105	3.5	0.475	0.29	0.29	0.29	J	041M640801	3.3		NA	0.09	0.14			0		0	Yes
Endrin ketone	0	24	0.469	0.105	3.5	0.469			3.5	U	ND	3.3		NA	1.06	0.14			0		0	No
Total Endrin	5	24	1.3	0.315	10.5	2.08	0.88	8.23	8.23		041M640101	3.3		NA	2.49	0.63			0		0	Yes
alpha-BHC	9	24	0.312	0.055	1.7	0.356	0.12	0.94	0.94	J	041M642401		0.99	PEL			0.95	0.36	0		0	No
beta-BHC	0	24	0.23	0.05	1.7	0.23			1.7	UJ	ND	0.32	0.99	PEL	5.31	0.72	1.72	0.23	0		0	No
delta-BHC	0	24	0.23	0.05	1.7	0.23			1.7	UJ	ND	0.32	0.99	PEL	5.31	0.72	1.72	0.23	0		0	No
gamma-BHC (Lindane)	**5**	**24**	**0.255**	**0.05**	**1.7**	**0.305**	**0.13**	**1.6**	**1.6**	**J**	**041M641801**	**0.32**	**0.99**	**PEL**	**5**	**0.95**	**1.62**	**0.31**	**1**		**0**	**Yes**
Total BHC	**11**	**24**	**1.22**	**0.22**	**6.8**	**1.12**	**0.315**	**2.98**	**2.98**		**041M642401**	**0.32**	**0.99**	**PEL**	**9.31**	**3.5**	**3.01**	**1.13**	**4**		**0**	**Yes**
4,4'-DDD	**14**	**24**	**0.227**	**0.105**	**0.5**	**12.2**	**0.2**	**140**	**140**	**D**	**041M640201**	**1.22**	**7.81**	**PEL**	**115**	**9.98**	**17.9**	**1.56**	**7**	**50**	**1**	**Yes**
4,4'-DDE	14	24	0.191	0.105	0.5	9.48	0.35	78	78		041M640301	2.07	374	PEL	37.7	4.58	0.21	0.03	0	40	2	No
4,4'-DDT	**6**	**24**	**0.362**	**0.105**	**1.65**	**1.58**	**0.6**	**14**	**14**	**J**	**041M640301**	**1.19**	**4.77**	**PEL**	**11.8**	**1.33**	**2.94**	**0.33**	**2**	**20**	**0**	**No**
Total DDT	**15**	**24**	**0.602**	**0.315**	**1.5**	**23.2**	**0.47**	**214**	**214**		**041M640201**	**3.3**	**51.7**	**PEL**	**64.7**	**7.04**	**4.13**	**0.45**	**3**	**110**	**2**	**Yes**
SVOCs (µg/kg)																						
1,2,4-Trichlorobenzene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
1,2-Dichlorobenzene	1	24	1,600	205	13,500	1,540	190	190	190	J	041M640401			NA					0		0	Yes
1,3-Dichlorobenzene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
1,4-Dichlorobenzene	2	24	1,640	205	13,500	1,520	70	260	260	J	041M640401			NA					0		0	Yes
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	21	1,180	205	13,000	1,180			13,000	U	ND			NA					0		0	No
2,4,5-Trichlorophenol	0	24	3,920	495	33,000	3,920			33,000	U	ND			NA					0		0	No
2,4,6-Trichlorophenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2,4-Dichlorophenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No

Table 11-3-9
Wetland 64 Phase II
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)
SVOCs (µg/kg) - cont.																						
2,4-Dimethylphenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2,4-Dinitrophenol	0	24	3,920	495	33,000	3,920			33,000	UJ	ND			NA					0		0	No
2,4-Dinitrotoluene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2,6-Dinitrotoluene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2-Chloronaphthalene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2-Chlorophenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2-Methyl-4,6-Dinitrophenol	0	24	3,920	495	33,000	3,920			33,000	U	ND			NA					0		0	No
2-Methylphenol (o-Cresol)	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2-Nitroaniline	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
2-Nitrophenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
3,3'-Dichlorobenzidine	0	24	1,610	205	13,500	1,610			13,500	UJ	ND			NA					0		0	No
3-Nitroaniline	0	22	2,750	495	31,500	2,750			31,500	U	ND			NA					0		0	No
4-Bromophenyl-phenylether	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
4-Chloro-3-methylphenol	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
4-Chloroaniline	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
4-Chlorophenylphenyl ether	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
4-Methylphenol (p-Cresol)	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
4-Nitroaniline	0	24	3,920	495	33,000	3,920			33,000	UJ	ND			NA					0		0	No
4-Nitrophenol	0	24	3,920	495	33,000	3,920			33,000	U	ND			NA					0		0	No
Benzo(b)fluoranthene	16	24	208	20.5	1,350	424	21	2,600	2,600		041M640201			NA					0		0	No
Benzo(g,h,i)perylene	9	24	217	20.5	1,350	213	29	590	590		041M640501			NA					0		0	No
Benzo(k)fluoranthene	7	24	196	20.5	1,350	190	35	250	250	J	041M640301			NA					0		0	No
bis(2-Chloroethoxy)methane	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
bis(2-Chloroethyl)ether	0	24	161	20.5	1,350	161			1,350	U	ND			NA					0		0	No
bis(2-Ethylhexyl)phthalate (BEHP)	3	24	1,870	205	13,500	1,670	33	530	530	J	041M641901	182	2,647	PEL	2.91	9.19	0.2	0.63	0		0	No
Butylbenzylphthalate	8	24	2,050	205	13,500	1,410	28	280	280	J	041M640501	182	2,647	PEL	1.54	7.76	0.106	0.53	0		0	No
Carbazole	2	24	1,720	205	13,500	1,600	230	400	400	J	041M640501			NA					0		0	Yes
Dibenzofuran	2	24	1,720	205	13,500	1,580	72	85	85	J	041M640501			NA					0		0	Yes
Diethylphthalate	3	24	1,770	205	13,500	1,680	80	2,000	2,000		041M640101	182	2,647	PEL	11	9.22	0.76	0.63	0		0	No
Dimethylphthalate	1	24	1,670	205	13,500	1,620	510	510	510		041M642201	182	2,647	PEL	2.8	8.91	0.19	0.61	0		0	No
Di-n-butylphthalate	9	24	2,190	205	13,500	1,430	28	430	430		041M641501	182	2,647	PEL	2.36	7.84	0.16	0.54	0		0	No
Di-n-octylphthalate	0	24	1,610	205	13,500	1,610			13,500	U	ND	182	2,647	PEL	74.2	8.85	5.1	0.61	0		0	No
Hexachlorobenzene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
Hexachlorobutadiene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
Hexachlorocyclopentadiene	0	24	1,610	205	13,500	1,610			13,500	UJ	ND			NA					0		0	No
Hexachloroethane	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
Indeno(1,2,3-cd)pyrene	8	24	205	20.5	1,350	214	39	600	600		041M640501			NA					0		0	No
Isophorone	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
Nitrobenzene	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
N-Nitroso-di-n-propylamine	0	24	161	20.5	1,350	161			1,350	U	ND			NA					0		0	No
N-Nitrosodiphenylamine	0	24	1,610	205	13,500	1,610			13,500	U	ND			NA					0		0	No
Pentachlorophenol	0	24	3,920	495	33,000	3,920			33,000	U	ND			NA					0		0	No
Phenol	1	24	1,600	205	13,500	1,540	220	220	220	J	041M640401			NA					0		0	Yes
VOCs (µg/kg)																						
1,1,1-Trichloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,1,2,2-Tetrachloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,1,2-Trichloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,1-Dichloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,1-Dichloroethene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,2-Dichloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,2-Dichloroethene (total)	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
1,2-Dichloropropane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
2-Butanone (MEK)	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
2-Hexanone	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
4-Methyl-2-Pentanone (MIBK)	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Acetone	10	24	443	6	6,000	322	9	420	420		041M641401			NA					0		0	Yes
Benzene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Bromodichloromethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Bromoform	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Bromomethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Carbon disulfide	1	24	153	6	3,100	147	11	11	11	J	041M641601			NA					0		0	Yes
Carbon tetrachloride	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Chlorobenzene	1	24	279	6	6,000	270	48	48	48		041M640401			NA					0		0	Yes
Chloroethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Chloroform	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Chloromethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
cis-1,3-Dichloropropene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Dibromochloromethane	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Ethylbenzene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Methylene chloride	5	24	388	6	7,000	345	64	400	400	J	041M641401			NA					0		0	Yes
Styrene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Tetrachloroethene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Toluene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
trans-1,3-Dichloropropene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Trichloroethene	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No
Vinyl chloride	0	24	256	2	6,000	256			6,000	U	ND			NA					0		0	No
Xylene (Total)	0	24	268	6	6,000	268			6,000	U	ND			NA					0		0	No

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
Parameters in bold were detected and exceeded screening values.

J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected pa
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-3-10
Wetland 64 Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Aldrin	1,2-Dichlorobenzene	Carbon Disulfide
Barium	Endosulfan I	1,4-Dichlorobenzene	
Beryllium	Endosulfan II	Carbazole	
Cadmium	Heptachlor	Dibenzofuran	
Chromium	alpha-Chlordane	Phenol	
Cobalt	gamma-Chlordane		
Copper	Total Chlordane		
Iron	Endrin		
Lead	Endrin aldehyde		
Manganese	Total Endrin		
Mercury	gamma-BHC (Lindane)		
Selenium	Total BHC		
Silver	4,4'-DDD		
Thallium	Total DDT		
Vanadium	Aroclor-1254		
Zinc	Total PCBs		

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640101	2/9/1996	mg/kg	0.78	J	Arsenic	8.2	70	0.01
041M640101	2/9/1996	mg/kg	1.6		Cadmium	1.2	9.6	0.17
041M640101	2/9/1996	mg/kg	11.1		Chromium	81	370	0.03
041M640101	2/9/1996	mg/kg	4.3		Copper	34	270	0.02
041M640101	2/9/1996	mg/kg	38		Lead	46.7	218	0.17
041M640101	2/9/1996	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M640101	2/9/1996	mg/kg	0.79	J	Nickel	20.9	51.6	0.02
041M640101	2/9/1996	mg/kg	0.18	U	Silver	1	3.7	0.05
041M640101	2/9/1996	mg/kg	22.5		Zinc	150	410	0.05
041M640101	2/9/1996	µg/kg	3.7	J	4,4'-DDE	2.2	27	0.14
041M640101	2/9/1996	µg/kg	14	DJ	4,4'-DDT	1.58	46.1	0.30
041M640101	2/9/1996	µg/kg	20		Total PCBs	22.7	180	0.11
041M640101	2/9/1996	µg/kg	30	J	2-Methylnaphthalene	70	670	0.04
041M640101	2/9/1996	µg/kg	120		Acenaphthene	16	500	0.24
041M640101	2/9/1996	µg/kg	22.5	U	Acenaphthylene	44	640	0.04
041M640101	2/9/1996	µg/kg	230		Anthracene	85.3	1,100	0.21
041M640101	2/9/1996	µg/kg	590		Benzo(a)anthracene	261	1,600	0.37
041M640101	2/9/1996	µg/kg	470		Benzo(a)pyrene	430	1,600	0.29
041M640101	2/9/1996	µg/kg	580		Chrysene	384	2,800	0.21
041M640101	2/9/1996	µg/kg	25	J	Dibenz(a,h)anthracene	63.4	260	0.10
041M640101	2/9/1996	µg/kg	1,200		Fluoranthene	600	5,100	0.24
041M640101	2/9/1996	µg/kg	160		Fluorene	19	540	0.30
041M640101	2/9/1996	µg/kg	56		Naphthalene	160	2,100	0.03
041M640101	2/9/1996	µg/kg	950		Phenanthrene	240	1,500	0.63
041M640101	2/9/1996	µg/kg	1,100	J	Pyrene	665	2,600	0.42
041M640101	2/9/1996				ERM Quotient Sum			4.22
041M640101	2/9/1996				Mean ERM Quotient			0.17
041M640101	2/9/1996				Mean ERM Quotient without ND			0.16
041M640101	2/9/1996				Mean ERM Quotient Category			2
041M640201	11/15/1995	mg/kg	9.8		Arsenic	8.2	70	0.14
041M640201	**11/15/1995**	**mg/kg**	**18.9**		**Cadmium**	**1.2**	**9.6**	**1.97**
041M640201	**11/15/1995**	**mg/kg**	**1,600**		**Chromium**	**81**	**370**	**4.32**
041M640201	11/15/1995	mg/kg	39.8	J	Copper	34	270	0.15
041M640201	**11/15/1995**	**mg/kg**	**346**	**J**	**Lead**	**46.7**	**218**	**1.59**
041M640201	11/15/1995	mg/kg	0.17		Mercury	0.15	0.71	0.24
041M640201	11/15/1995	mg/kg	4.6		Nickel	20.9	51.6	0.09
041M640201	11/15/1995	mg/kg	0.42	J	Silver	1	3.7	0.11
041M640201	11/15/1995	mg/kg	145	J	Zinc	150	410	0.35
041M640201	**11/15/1995**	**µg/kg**	**72**	**DJ**	**4,4'-DDE**	**2.2**	**27**	**2.67**
041M640201	11/15/1995	µg/kg	1.65	U	4,4'-DDT	1.58	46.1	0.04
041M640201	**11/15/1995**	**µg/kg**	**597.5**		**Total PCBs**	**22.7**	**180**	**3.32**
041M640201	11/15/1995	µg/kg	1,300	U	2-Methylnaphthalene	70	670	1.94
041M640201	11/15/1995	µg/kg	650	U	Acenaphthene	16	500	1.30
041M640201	11/15/1995	µg/kg	1,300	U	Acenaphthylene	44	640	2.03
041M640201	11/15/1995	µg/kg	1,300	U	Anthracene	85.3	1,100	1.18
041M640201	11/15/1995	µg/kg	1,400	J	Benzo(a)anthracene	261	1,600	0.88
041M640201	11/15/1995	µg/kg	1,300	U	Benzo(a)pyrene	430	1,600	0.81
041M640201	11/15/1995	µg/kg	1,500	J	Chrysene	384	2,800	0.54
041M640201	11/15/1995	µg/kg	1,300	U	Dibenz(a,h)anthracene	63.4	260	5
041M640201	**11/15/1995**	**µg/kg**	**5,700**		**Fluoranthene**	**600**	**5,100**	**1.12**
041M640201	11/15/1995	µg/kg	650	U	Fluorene	19	540	1.20
041M640201	11/15/1995	µg/kg	1,300	U	Naphthalene	160	2,100	0.62
041M640201	**11/15/1995**	**µg/kg**	**2,800**		**Phenanthrene**	**240**	**1,500**	**1.87**
041M640201	**11/15/1995**	**µg/kg**	**4,600**		**Pyrene**	**665**	**2,600**	**1.77**
041M640201	11/15/1995				ERM Quotient Sum			35.24
041M640201	11/15/1995				Mean ERM Quotient			1.41
041M640201	11/15/1995				Mean ERM Quotient without ND			0.84
041M640201	11/15/1995				Mean ERM Quotient Category			3
041M640301	11/15/1995	mg/kg	11.2		Arsenic	8.2	70	0.16
041M640301	**11/15/1995**	**mg/kg**	**38.6**		**Cadmium**	**1.2**	**9.6**	**4.02**
041M640301	**11/15/1995**	**mg/kg**	**1,800**		**Chromium**	**81**	**370**	**4.86**
041M640301	11/15/1995	mg/kg	255	J	Copper	34	270	0.94
041M640301	**11/15/1995**	**mg/kg**	**634**	**J**	**Lead**	**46.7**	**218**	**2.91**
041M640301	**11/15/1995**	**mg/kg**	**0.88**		**Mercury**	**0.15**	**0.71**	**1.24**
041M640301	11/15/1995	mg/kg	27.1		Nickel	20.9	51.6	0.53
041M640301	**11/15/1995**	**mg/kg**	**5.1**	**J**	**Silver**	**1**	**3.7**	**1.38**
041M640301	**11/15/1995**	**mg/kg**	**481**	**J**	**Zinc**	**150**	**410**	**1.17**
041M640301	**11/15/1995**	**µg/kg**	**78**		**4,4'-DDE**	**2.2**	**27**	**2.89**
041M640301	11/15/1995	µg/kg	14	J	4,4'-DDT	1.58	46.1	0.30
041M640301	**11/15/1995**	**µg/kg**	**640**		**Total PCBs**	**22.7**	**180**	**3.56**
041M640301	11/15/1995	µg/kg	135	U	2-Methylnaphthalene	70	670	0.20
041M640301	11/15/1995	µg/kg	65	U	Acenaphthene	16	500	0.13
041M640301	11/15/1995	µg/kg	135	U	Acenaphthylene	44	640	0.21
041M640301	11/15/1995	µg/kg	135	U	Anthracene	85.3	1,100	0.12
041M640301	11/15/1995	µg/kg	340		Benzo(a)anthracene	261	1,600	0.21
041M640301	11/15/1995	µg/kg	580		Benzo(a)pyrene	430	1,600	0.36
041M640301	11/15/1995	µg/kg	500		Chrysene	384	2,800	0.18
041M640301	11/15/1995	µg/kg	135	U	Dibenz(a,h)anthracene	63.4	260	0.52
041M640301	11/15/1995	µg/kg	770		Fluoranthene	600	5,100	0.15
041M640301	11/15/1995	µg/kg	65	U	Fluorene	19	540	0.12
041M640301	11/15/1995	µg/kg	135	U	Naphthalene	160	2,100	0.06
041M640301	11/15/1995	µg/kg	230	J	Phenanthrene	240	1,500	0.15
041M640301	11/15/1995	µg/kg	660		Pyrene	665	2,600	0.25
041M640301	11/15/1995				ERM Quotient Sum			26.64
041M640301	11/15/1995				Mean ERM Quotient			1.07
041M640301	11/15/1995				Mean ERM Quotient without ND			1.01
041M640301	11/15/1995				Mean ERM Quotient Category			3

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640401	2/9/1996	mg/kg	3	J	Arsenic	8.2	70	0.04
041M640401	2/9/1996	mg/kg	2.8		Cadmium	1.2	9.6	0.29
041M640401	**2/9/1996**	**mg/kg**	**1,610**		**Chromium**	**81**	**370**	**4.35**
041M640401	2/9/1996	mg/kg	23.8		Copper	34	270	0.09
041M640401	2/9/1996	mg/kg	146		Lead	46.7	218	0.67
041M640401	2/9/1996	mg/kg	0.43	J	Mercury	0.15	0.71	0.61
041M640401	2/9/1996	mg/kg	5.3	J	Nickel	20.9	51.6	0.10
041M640401	2/9/1996	mg/kg	1.1	U	Silver	1	3.7	0.30
041M640401	2/9/1996	mg/kg	31.8		Zinc	150	410	0.08
041M640401	2/9/1996	µg/kg	18		4,4'-DDE	2.2	27	0.67
041M640401	2/9/1996	µg/kg	0.95	U	4,4'-DDT	1.58	46.1	0.02
041M640401	2/9/1996	µg/kg	88.5		Total PCBs	22.7	180	0.49
041M640401	2/9/1996	µg/kg	185	U	2-Methylnaphthalene	70	670	0.28
041M640401	2/9/1996	µg/kg	90	U	Acenaphthene	16	500	0.18
041M640401	2/9/1996	µg/kg	185	U	Acenaphthylene	44	640	0.29
041M640401	2/9/1996	µg/kg	185	U	Anthracene	85.3	1,100	0.17
041M640401	2/9/1996	µg/kg	185	U	Benzo(a)anthracene	261	1,600	0.12
041M640401	2/9/1996	µg/kg	185	U	Benzo(a)pyrene	430	1,600	0.12
041M640401	2/9/1996	µg/kg	185	U	Chrysene	384	2,800	0.07
041M640401	2/9/1996	µg/kg	185	U	Dibenz(a,h)anthracene	63.4	260	0.71
041M640401	2/9/1996	µg/kg	230	J	Fluoranthene	600	5,100	0.05
041M640401	2/9/1996	µg/kg	90	U	Fluorene	19	540	0.17
041M640401	2/9/1996	µg/kg	185	U	Naphthalene	160	2,100	0.09
041M640401	2/9/1996	µg/kg	185	U	Phenanthrene	240	1,500	0.12
041M640401	2/9/1996	µg/kg	200	J	Pyrene	665	2,600	0.08
041M640401	2/9/1996				ERM Quotient Sum			10.13
041M640401	2/9/1996				Mean ERM Quotient			0.41
041M640401	2/9/1996				Mean ERM Quotient without ND			0.30
041M640401	2/9/1996				Mean ERM Quotient Category			2
041M640501	11/15/1995	mg/kg	6.1		Arsenic	8.2	70	0.09
041M640501	**11/15/1995**	**mg/kg**	**18.5**		**Cadmium**	**1.2**	**9.6**	**1.93**
041M640501	**11/15/1995**	**mg/kg**	**466**		**Chromium**	**81**	**370**	**1.26**
041M640501	11/15/1995	mg/kg	88.6	J	Copper	34	270	0.33
041M640501	**11/15/1995**	**mg/kg**	**262**	**J**	**Lead**	**46.7**	**218**	**1.20**
041M640501	11/15/1995	mg/kg	0.27	J	Mercury	0.15	0.71	0.38
041M640501	11/15/1995	mg/kg	8.1	J	Nickel	20.9	51.6	0.16
041M640501	11/15/1995	mg/kg	0.5	UJ	Silver	1	3.7	0.14
041M640501	11/15/1995	mg/kg	290	J	Zinc	150	410	0.71
041M640501	11/15/1995	µg/kg	27	DJ	4,4'-DDE	2.2	27	1
041M640501	11/15/1995	µg/kg	0.74	J	4,4'-DDT	1.58	46.1	0.02
041M640501	11/15/1995	µg/kg	82		Total PCBs	22.7	180	0.46
041M640501	11/15/1995	µg/kg	70	U	2-Methylnaphthalene	70	670	0.10
041M640501	11/15/1995	µg/kg	230		Acenaphthene	16	500	0.46
041M640501	11/15/1995	µg/kg	90	J	Acenaphthylene	44	640	0.14
041M640501	11/15/1995	µg/kg	330		Anthracene	85.3	1,100	0.30
041M640501	11/15/1995	µg/kg	840		Benzo(a)anthracene	261	1,600	0.53
041M640501	11/15/1995	µg/kg	910		Benzo(a)pyrene	430	1,600	0.57
041M640501	11/15/1995	µg/kg	830		Chrysene	384	2,800	0.30
041M640501	11/15/1995	µg/kg	70	U	Dibenz(a,h)anthracene	63.4	260	0.27
041M640501	11/15/1995	µg/kg	2,300		Fluoranthene	600	5,100	0.45
041M640501	11/15/1995	µg/kg	210		Fluorene	19	540	0.39
041M640501	11/15/1995	µg/kg	71	J	Naphthalene	160	2,100	0.03
041M640501	11/15/1995	µg/kg	1,400		Phenanthrene	240	1,500	0.93
041M640501	11/15/1995	µg/kg	2,100		Pyrene	665	2,600	0.81
041M640501	11/15/1995				ERM Quotient Sum			12.93
041M640501	11/15/1995				Mean ERM Quotient			0.52
041M640501	11/15/1995				Mean ERM Quotient without ND			0.50
041M640501	11/15/1995				Mean ERM Quotient Category			2
041M640601	11/15/1995	mg/kg	1.6		Arsenic	8.2	70	0.02
041M640601	11/15/1995	mg/kg	8.8		Cadmium	1.2	9.6	0.92
041M640601	11/15/1995	mg/kg	324		Chromium	81	370	0.88
041M640601	11/15/1995	mg/kg	29.4	J	Copper	34	270	0.11
041M640601	11/15/1995	mg/kg	156	J	Lead	46.7	218	0.72
041M640601	11/15/1995	mg/kg	0.12	J	Mercury	0.15	0.71	0.17
041M640601	11/15/1995	mg/kg	3	J	Nickel	20.9	51.6	0.06
041M640601	11/15/1995	mg/kg	0.37	J	Silver	1	3.7	0.10
041M640601	11/15/1995	mg/kg	105	J	Zinc	150	410	0.26
041M640601	11/15/1995	µg/kg	16	J	4,4'-DDE	2.2	27	0.59
041M640601	11/15/1995	µg/kg	1.4	J	4,4'-DDT	1.58	46.1	0.03
041M640601	11/15/1995	µg/kg	151		Total PCBs	22.7	180	0.84
041M640601	11/15/1995	µg/kg	1,350	U	2-Methylnaphthalene	70	670	2.01
041M640601	11/15/1995	µg/kg	650	U	Acenaphthene	16	500	1.30
041M640601	11/15/1995	µg/kg	1,350	U	Acenaphthylene	44	640	2.11
041M640601	11/15/1995	µg/kg	1,350	U	Anthracene	85.3	1,100	1.23
041M640601	11/15/1995	µg/kg	1,350	U	Benzo(a)anthracene	261	1,600	0.84
041M640601	11/15/1995	µg/kg	1,350	U	Benzo(a)pyrene	430	1,600	0.84
041M640601	11/15/1995	µg/kg	1,350	U	Chrysene	384	2,800	0.48
041M640601	11/15/1995	µg/kg	1,350	U	Dibenz(a,h)anthracene	63.4	260	5.19
041M640601	11/15/1995	µg/kg	1,700	J	Fluoranthene	600	5,100	0.33
041M640601	11/15/1995	µg/kg	650	U	Fluorene	19	540	1.20
041M640601	11/15/1995	µg/kg	1,350	U	Naphthalene	160	2,100	0.64
041M640601	11/15/1995	µg/kg	1,350	U	Phenanthrene	240	1,500	0.90

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640601	11/15/1995	µg/kg	1,500	J	Pyrene	665	2,600	0.58
041M640601	11/15/1995				ERM Quotient Sum			22.36
041M640601	11/15/1995				Mean ERM Quotient			0.89
041M640601	11/15/1995				Mean ERM Quotient without ND			0.22
041M640601	11/15/1995				Mean ERM Quotient Category			2
041M640701	11/15/1995	mg/kg	0.26	J	Arsenic	8.2	70	0.00
041M640701	11/15/1995	mg/kg	0.53		Cadmium	1.2	9.6	0.06
041M640701	11/15/1995	mg/kg	19		Chromium	81	370	0.05
041M640701	11/15/1995	mg/kg	17.6	J	Copper	34	270	0.07
041M640701	11/15/1995	mg/kg	12.2	J	Lead	46.7	218	0.06
041M640701	11/15/1995	mg/kg	0.1	J	Mercury	0.15	0.71	0.14
041M640701	11/15/1995	mg/kg	0.98	J	Nickel	20.9	51.6	0.02
041M640701	11/15/1995	mg/kg	0.13	UJ	Silver	1	3.7	0.04
041M640701	11/15/1995	mg/kg	14.7	J	Zinc	150	410	0.04
041M640701	11/15/1995	µg/kg	0.61		4,4'-DDE	2.2	27	0.02
041M640701	11/15/1995	µg/kg	0.115	U	4,4'-DDT	1.58	46.1	0.00
041M640701	11/15/1995	µg/kg	18.75		Total PCBs	22.7	180	0.10
041M640701	11/15/1995	µg/kg	22	U	2-Methylnaphthalene	70	670	0.03
041M640701	11/15/1995	µg/kg	10.5	U	Acenaphthene	16	500	0.02
041M640701	11/15/1995	µg/kg	22	U	Acenaphthylene	44	640	0.03
041M640701	11/15/1995	µg/kg	22	U	Anthracene	85.3	1,100	0.02
041M640701	11/15/1995	µg/kg	27	J	Benzo(a)anthracene	261	1,600	0.02
041M640701	11/15/1995	µg/kg	40	J	Benzo(a)pyrene	430	1,600	0.03
041M640701	11/15/1995	µg/kg	23	J	Chrysene	384	2,800	0.01
041M640701	11/15/1995	µg/kg	22	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M640701	11/15/1995	µg/kg	78		Fluoranthene	600	5,100	0.02
041M640701	11/15/1995	µg/kg	10.5	U	Fluorene	19	540	0.02
041M640701	11/15/1995	µg/kg	22	U	Naphthalene	160	2,100	0.01
041M640701	11/15/1995	µg/kg	42	J	Phenanthrene	240	1,500	0.03
041M640701	11/15/1995	µg/kg	50		Pyrene	665	2,600	0.02
041M640701	11/15/1995				ERM Quotient Sum			0.93
041M640701	11/15/1995				Mean ERM Quotient			0.04
041M640701	11/15/1995				Mean ERM Quotient without ND			0.03
041M640701	11/15/1995				Mean ERM Quotient Category			1.00
041M640801	2/1/1996	mg/kg	0.59	J	Arsenic	8.2	70	0.01
041M640801	2/1/1996	mg/kg	1.2		Cadmium	1.2	9.6	0.13
041M640801	2/1/1996	mg/kg	32.3		Chromium	81	370	0.09
041M640801	2/1/1996	mg/kg	6.9		Copper	34	270	0.03
041M640801	2/1/1996	mg/kg	17.6		Lead	46.7	218	0.08
041M640801	2/1/1996	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M640801	2/1/1996	mg/kg	0.79	J	Nickel	20.9	51.6	0.02
041M640801	2/1/1996	mg/kg	0.18	U	Silver	1	3.7	0.05
041M640801	2/1/1996	mg/kg	21.1		Zinc	150	410	0.05
041M640801	2/1/1996	µg/kg	2.4		4,4'-DDE	2.2	27	0.09
041M640801	2/1/1996	µg/kg	0.66	J	4,4'-DDT	1.58	46.1	0.01
041M640801	2/1/1996	µg/kg	20.05		Total PCBs	22.7	180	0.11
041M640801	2/1/1996	µg/kg	25.5	U	2-Methylnaphthalene	70	670	0.04
041M640801	2/1/1996	µg/kg	12.5	U	Acenaphthene	16	500	0.03
041M640801	2/1/1996	µg/kg	25.5	U	Acenaphthylene	44	640	0.04
041M640801	2/1/1996	µg/kg	25.5	U	Anthracene	85.3	1,100	0.02
041M640801	2/1/1996	µg/kg	51		Benzo(a)anthracene	261	1,600	0.03
041M640801	2/1/1996	µg/kg	51		Benzo(a)pyrene	430	1,600	0.03
041M640801	2/1/1996	µg/kg	61		Chrysene	384	2,800	0.02
041M640801	2/1/1996	µg/kg	25.5	U	Dibenz(a,h)anthracene	63.4	260	0.10
041M640801	2/1/1996	µg/kg	120		Fluoranthene	600	5,100	0.02
041M640801	2/1/1996	µg/kg	12.5	U	Fluorene	19	540	0.02
041M640801	2/1/1996	µg/kg	25.5	U	Naphthalene	160	2,100	0.01
041M640801	2/1/1996	µg/kg	59		Phenanthrene	240	1,500	0.04
041M640801	2/1/1996	µg/kg	120	J	Pyrene	665	2,600	0.05
041M640801	2/1/1996				ERM Quotient Sum			1.15
041M640801	2/1/1996				Mean ERM Quotient			0.05
041M640801	2/1/1996				Mean ERM Quotient without ND			0.03
041M640801	2/1/1996				Mean ERM Quotient Category			2
041M640901	11/15/1995	mg/kg	0.06	U	Arsenic	8.2	70	0.00
041M640901	11/15/1995	mg/kg	0.38		Cadmium	1.2	9.6	0.04
041M640901	11/15/1995	mg/kg	9.4		Chromium	81	370	0.03
041M640901	11/15/1995	mg/kg	1.8	J	Copper	34	270	0.01
041M640901	11/15/1995	mg/kg	6.1	J	Lead	46.7	218	0.03
041M640901	11/15/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M640901	11/15/1995	mg/kg	0.37	U	Nickel	20.9	51.6	0.01
041M640901	11/15/1995	mg/kg	0.125	UJ	Silver	1	3.7	0.03
041M640901	11/15/1995	mg/kg	4.2	J	Zinc	150	410	0.01
041M640901	11/15/1995	µg/kg	0.35		4,4'-DDE	2.2	27	0.01
041M640901	11/15/1995	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M640901	11/15/1995	µg/kg	15.7		Total PCBs	22.7	180	0.09
041M640901	11/15/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M640901	11/15/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M640901	11/15/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M640901	11/15/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M640901	11/15/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M640901	11/15/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M640901	11/15/1995	µg/kg	20.5	U	Chrysene	384	2,800	0.01
041M640901	11/15/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M640901	11/15/1995	µg/kg	20.5	U	Fluoranthene	600	5,100	0.00
041M640901	11/15/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M640901	11/15/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640901	11/15/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M640901	11/15/1995	µg/kg	20.5	U	Pyrene	665	2,600	0.01
041M640901	11/15/1995				ERM Quotient Sum			0.56
041M640901	11/15/1995				Mean ERM Quotient			0.02
041M640901	11/15/1995				Mean ERM Quotient without ND			0.01
041M640901	11/15/1995				Mean ERM Quotient Category			1.00
041M641001	11/16/1995	mg/kg	16.2		Arsenic	8.2	70	0.23
041M641001	**11/16/1995**	**mg/kg**	**23.2**		**Cadmium**	**1.2**	**9.6**	**2.42**
041M641001	**11/16/1995**	**mg/kg**	**806**		**Chromium**	**81**	**370**	**2.18**
041M641001	11/16/1995	mg/kg	140		Copper	34	270	0.52
041M641001	**11/16/1995**	**mg/kg**	**324**		**Lead**	**46.7**	**218**	**1.49**
041M641001	11/16/1995	mg/kg	0.5	J	Mercury	0.15	0.71	0.70
041M641001	11/16/1995	mg/kg	20.1		Nickel	20.9	51.6	0.39
041M641001	11/16/1995	mg/kg	0.6	U	Silver	1	3.7	0.16
041M641001	11/16/1995	mg/kg	377		Zinc	150	410	0.92
041M641001	11/16/1995	µg/kg	2.5	J	4,4'-DDE	2.2	27	0.09
041M641001	11/16/1995	µg/kg	0.485	U	4,4'-DDT	1.58	46.1	0.01
041M641001	11/16/1995	µg/kg	57.75		Total PCBs	22.7	180	0.32
041M641001	11/16/1995	µg/kg	95	U	2-Methylnaphthalene	70	670	0.14
041M641001	11/16/1995	µg/kg	47	U	Acenaphthene	16	500	0.09
041M641001	11/16/1995	µg/kg	95	U	Acenaphthylene	44	640	0.15
041M641001	11/16/1995	µg/kg	95	U	Anthracene	85.3	1,100	0.09
041M641001	11/16/1995	µg/kg	240		Benzo(a)anthracene	261	1,600	0.15
041M641001	11/16/1995	µg/kg	290		Benzo(a)pyrene	430	1,600	0.18
041M641001	11/16/1995	µg/kg	320		Chrysene	384	2,800	0.11
041M641001	11/16/1995	µg/kg	95	U	Dibenz(a,h)anthracene	63.4	260	0.37
041M641001	11/16/1995	µg/kg	720		Fluoranthene	600	5,100	0.14
041M641001	11/16/1995	µg/kg	47	U	Fluorene	19	540	0.09
041M641001	11/16/1995	µg/kg	95	U	Naphthalene	160	2,100	0.05
041M641001	11/16/1995	µg/kg	300		Phenanthrene	240	1,500	0.20
041M641001	11/16/1995	µg/kg	590		Pyrene	665	2,600	0.23
041M641001	11/16/1995				ERM Quotient Sum			11.41
041M641001	11/16/1995				Mean ERM Quotient			0.46
041M641001	11/16/1995				Mean ERM Quotient without ND			0.41
041M641001	11/16/1995				Mean ERM Quotient Category			2
041M641101	11/16/1995	mg/kg	10.8		Arsenic	8.2	70	0.15
041M641101	**11/16/1995**	**mg/kg**	**20.1**		**Cadmium**	**1.2**	**9.6**	**2.09**
041M641101	**11/16/1995**	**mg/kg**	**659**		**Chromium**	**81**	**370**	**1.78**
041M641101	11/16/1995	mg/kg	66.4		Copper	34	270	0.25
041M641101	**11/16/1995**	**mg/kg**	**221**		**Lead**	**46.7**	**218**	**1.01**
041M641101	11/16/1995	mg/kg	0.3	J	Mercury	0.15	0.71	0.42
041M641101	11/16/1995	mg/kg	12.9		Nickel	20.9	51.6	0.25
041M641101	11/16/1995	mg/kg	0.4	U	Silver	1	3.7	0.11
041M641101	11/16/1995	mg/kg	192		Zinc	150	410	0.47
041M641101	11/16/1995	µg/kg	2	J	4,4'-DDE	2.2	27	0.07
041M641101	11/16/1995	µg/kg	0.295	U	4,4'-DDT	1.58	46.1	0.01
041M641101	11/16/1995	µg/kg	49.75		Total PCBs	22.7	180	0.28
041M641101	11/16/1995	µg/kg	60	U	2-Methylnaphthalene	70	670	0.09
041M641101	11/16/1995	µg/kg	28.5	U	Acenaphthene	16	500	0.06
041M641101	11/16/1995	µg/kg	60	U	Acenaphthylene	44	640	0.09
041M641101	11/16/1995	µg/kg	60	U	Anthracene	85.3	1,100	0.05
041M641101	11/16/1995	µg/kg	130		Benzo(a)anthracene	261	1,600	0.08
041M641101	11/16/1995	µg/kg	150		Benzo(a)pyrene	430	1,600	0.09
041M641101	11/16/1995	µg/kg	96	J	Chrysene	384	2,800	0.03
041M641101	11/16/1995	µg/kg	60	U	Dibenz(a,h)anthracene	63.4	260	0.23
041M641101	11/16/1995	µg/kg	220		Fluoranthene	600	5,100	0.04
041M641101	11/16/1995	µg/kg	28.5	U	Fluorene	19	540	0.05
041M641101	11/16/1995	µg/kg	60	U	Naphthalene	160	2,100	0.03
041M641101	11/16/1995	µg/kg	100	J	Phenanthrene	240	1,500	0.07
041M641101	11/16/1995	µg/kg	200		Pyrene	665	2,600	0.08
041M641101	11/16/1995				ERM Quotient Sum			7.90
041M641101	11/16/1995				Mean ERM Quotient			0.32
041M641101	11/16/1995				Mean ERM Quotient without ND			0.29
041M641101	11/16/1995				Mean ERM Quotient Category			2
041M641201	11/15/1995	mg/kg	0.06	U	Arsenic	8.2	70	0.00
041M641201	11/15/1995	mg/kg	0.27	J	Cadmium	1.2	9.6	0.03
041M641201	11/15/1995	mg/kg	7.2		Chromium	81	370	0.02
041M641201	11/15/1995	mg/kg	1.9	J	Copper	34	270	0.01
041M641201	11/15/1995	mg/kg	3.6	J	Lead	46.7	218	0.02
041M641201	11/15/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M641201	11/15/1995	mg/kg	0.365	U	Nickel	20.9	51.6	0.01
041M641201	11/15/1995	mg/kg	0.12	UJ	Silver	1	3.7	0.03
041M641201	11/15/1995	mg/kg	4.2	J	Zinc	150	410	0.01
041M641201	11/15/1995	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M641201	11/15/1995	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M641201	11/15/1995	µg/kg	16.1		Total PCBs	22.7	180	0.09
041M641201	11/15/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M641201	11/15/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M641201	11/15/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M641201	11/15/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M641201	11/15/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M641201	11/15/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M641201	11/15/1995	µg/kg	20.5	U	Chrysene	384	2,800	0.01
041M641201	11/15/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M641201	11/15/1995	µg/kg	20.5	U	Fluoranthene	600	5,100	0.00
041M641201	11/15/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M641201	11/15/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M641201	11/15/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M641201	11/15/1995	µg/kg	20.5	U	Pyrene	665	2,600	0.01
041M641201	11/15/1995				ERM Quotient Sum			0.52
041M641201	11/15/1995				Mean ERM Quotient			0.02
041M641201	11/15/1995				Mean ERM Quotient without ND			0.01
041M641201	11/15/1995				Mean ERM Quotient Category			1
041M641301	11/16/1995	mg/kg	15.3		Arsenic	8.2	70	0.22
041M641301	**11/16/1995**	**mg/kg**	**16.9**		**Cadmium**	**1.2**	**9.6**	**1.76**
041M641301	**11/16/1995**	**mg/kg**	**699**		**Chromium**	**81**	**370**	**1.89**
041M641301	11/16/1995	mg/kg	102		Copper	34	270	0.38
041M641301	**11/16/1995**	**mg/kg**	**231**		**Lead**	**46.7**	**218**	**1.06**
041M641301	11/16/1995	mg/kg	0.46	J	Mercury	0.15	0.71	0.65
041M641301	11/16/1995	mg/kg	13.4		Nickel	20.9	51.6	0.26
041M641301	11/16/1995	mg/kg	0.65	U	Silver	1	3.7	0.18
041M641301	11/16/1995	mg/kg	268		Zinc	150	410	0.65
041M641301	11/16/1995	µg/kg	1.4	J	4,4'-DDE	2.2	27	0.05
041M641301	11/16/1995	µg/kg	0.46	UJ	4,4'-DDT	1.58	46.1	0.01
041M641301	11/16/1995	µg/kg	59		Total PCBs	22.7	180	0.33
041M641301	11/16/1995	µg/kg	90	U	2-Methylnaphthalene	70	670	0.13
041M641301	11/16/1995	µg/kg	44.5	U	Acenaphthene	16	500	0.09
041M641301	11/16/1995	µg/kg	900	U	Acenaphthylene	44	640	1.41
041M641301	11/16/1995	µg/kg	90	U	Anthracene	85.3	1,100	0.08
041M641301	11/16/1995	µg/kg	180	J	Benzo(a)anthracene	261	1,600	0.11
041M641301	11/16/1995	µg/kg	190		Benzo(a)pyrene	430	1,600	0.12
041M641301	11/16/1995	µg/kg	160	J	Chrysene	384	2,800	0.06
041M641301	11/16/1995	µg/kg	90	U	Dibenz(a,h)anthracene	63.4	260	0.35
041M641301	11/16/1995	µg/kg	410		Fluoranthene	600	5,100	0.08
041M641301	11/16/1995	µg/kg	44.5	U	Fluorene	19	540	0.08
041M641301	11/16/1995	µg/kg	90	U	Naphthalene	160	2,100	0.04
041M641301	11/16/1995	µg/kg	190		Phenanthrene	240	1,500	0.13
041M641301	11/16/1995	µg/kg	370		Pyrene	665	2,600	0.14
041M641301	11/16/1995				ERM Quotient Sum			10.25
041M641301	11/16/1995				Mean ERM Quotient			0.41
041M641301	11/16/1995				Mean ERM Quotient without ND			0.32
041M641301	11/16/1995				Mean ERM Quotient Category			2
041M641401	11/16/1995	mg/kg	16.1		Arsenic	8.2	70	0.23
041M641401	**11/16/1995**	**mg/kg**	**17.2**		**Cadmium**	**1.2**	**9.6**	**1.79**
041M641401	**11/16/1995**	**mg/kg**	**631**		**Chromium**	**81**	**370**	**1.71**
041M641401	11/16/1995	mg/kg	83.9		Copper	34	270	0.31
041M641401	11/16/1995	mg/kg	205		Lead	46.7	218	0.94
041M641401	11/16/1995	mg/kg	0.41	J	Mercury	0.15	0.71	0.58
041M641401	11/16/1995	mg/kg	15.1		Nickel	20.9	51.6	0.29
041M641401	11/16/1995	mg/kg	0.65	U	Silver	1	3.7	0.18
041M641401	11/16/1995	mg/kg	260		Zinc	150	410	0.63
041M641401	11/16/1995	µg/kg	0.5	U	4,4'-DDE	2.2	27	0.02
041M641401	11/16/1995	µg/kg	0.5	U	4,4'-DDT	1.58	46.1	0.01
041M641401	11/16/1995	µg/kg	51.5		Total PCBs	22.7	180	0.29
041M641401	11/16/1995	µg/kg	100	U	2-Methylnaphthalene	70	670	0.15
041M641401	11/16/1995	µg/kg	49.5	U	Acenaphthene	16	500	0.10
041M641401	11/16/1995	µg/kg	100	U	Acenaphthylene	44	640	0.16
041M641401	11/16/1995	µg/kg	100	U	Anthracene	85.3	1,100	0.09
041M641401	11/16/1995	µg/kg	100	U	Benzo(a)anthracene	261	1,600	0.06
041M641401	11/16/1995	µg/kg	120	J	Benzo(a)pyrene	430	1,600	0.08
041M641401	11/16/1995	µg/kg	130	J	Chrysene	384	2,800	0.05
041M641401	11/16/1995	µg/kg	100	U	Dibenz(a,h)anthracene	63.4	260	0.38
041M641401	11/16/1995	µg/kg	250		Fluoranthene	600	5,100	0.05
041M641401	11/16/1995	µg/kg	49.5	U	Fluorene	19	540	0.09
041M641401	11/16/1995	µg/kg	100	U	Naphthalene	160	2,100	0.05
041M641401	11/16/1995	µg/kg	100	U	Phenanthrene	240	1,500	0.07
041M641401	11/16/1995	µg/kg	190	J	Pyrene	665	2,600	0.07
041M641401	11/16/1995				ERM Quotient Sum			8.37
041M641401	11/16/1995				Mean ERM Quotient			0.33
041M641401	11/16/1995				Mean ERM Quotient without ND			0.28
041M641401	11/16/1995				Mean ERM Quotient Category			2
041M641501	11/15/1995	mg/kg	0.16	J	Arsenic	8.2	70	0.00
041M641501	11/15/1995	mg/kg	0.21	J	Cadmium	1.2	9.6	0.02
041M641501	11/15/1995	mg/kg	9.4		Chromium	81	370	0.03
041M641501	11/15/1995	mg/kg	2.6	J	Copper	34	270	0.01
041M641501	11/15/1995	mg/kg	5.7	J	Lead	46.7	218	0.03
041M641501	11/15/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M641501	11/15/1995	mg/kg	0.395	U	Nickel	20.9	51.6	0.01
041M641501	11/15/1995	mg/kg	0.13	UJ	Silver	1	3.7	0.04
041M641501	11/15/1995	mg/kg	4.4	J	Zinc	150	410	0.01
041M641501	11/15/1995	µg/kg	0.43	J	4,4'-DDE	2.2	27	0.02
041M641501	11/15/1995	µg/kg	0.6	J	4,4'-DDT	1.58	46.1	0.01
041M641501	11/15/1995	µg/kg	18.45		Total PCBs	22.7	180	0.10
041M641501	11/15/1995	µg/kg	21.5	U	2-Methylnaphthalene	70	670	0.03
041M641501	11/15/1995	µg/kg	10.5	U	Acenaphthene	16	500	0.02
041M641501	11/15/1995	µg/kg	21.5	U	Acenaphthylene	44	640	0.03
041M641501	11/15/1995	µg/kg	21.5	U	Anthracene	85.3	1,100	0.02
041M641501	11/15/1995	µg/kg	21.5	U	Benzo(a)anthracene	261	1,600	0.01
041M641501	11/15/1995	µg/kg	21.5	U	Benzo(a)pyrene	430	1,600	0.01
041M641501	11/15/1995	µg/kg	21.5	U	Chrysene	384	2,800	0.01
041M641501	11/15/1995	µg/kg	21.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M641501	11/15/1995	µg/kg	28	J	Fluoranthene	600	5,100	0.01
041M641501	11/15/1995	µg/kg	10.5	U	Fluorene	19	540	0.02
041M641501	11/15/1995	µg/kg	21.5	U	Naphthalene	160	2,100	0.01

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M641501	11/15/1995	µg/kg	21.5	U	Phenanthrene	240	1,500	0.01
041M641501	11/15/1995	µg/kg	25	J	Pyrene	665	2,600	0.01
041M641501	11/15/1995				ERM Quotient Sum			0.60
041M641501	11/15/1995				Mean ERM Quotient			0.02
041M641501	11/15/1995				Mean ERM Quotient without ND			0.01
041M641501	11/15/1995				Mean ERM Quotient Category			1
041M641601	11/16/1995	mg/kg	18.7		Arsenic	8.2	70	0.27
041M641601	**11/16/1995**	**mg/kg**	**19**		**Cadmium**	**1.2**	**9.6**	**1.98**
041M641601	**11/16/1995**	**mg/kg**	**756**		**Chromium**	**81**	**370**	**2.04**
041M641601	11/16/1995	mg/kg	119		Copper	34	270	0.44
041M641601	**11/16/1995**	**mg/kg**	**249**		**Lead**	**46.7**	**218**	**1.14**
041M641601	11/16/1995	mg/kg	0.49	J	Mercury	0.15	0.71	0.69
041M641601	11/16/1995	mg/kg	18.6		Nickel	20.9	51.6	0.36
041M641601	11/16/1995	mg/kg	0.55	U	Silver	1	3.7	0.15
041M641601	11/16/1995	mg/kg	300		Zinc	150	410	0.73
041M641601	11/16/1995	µg/kg	0.485	U	4,4'-DDE	2.2	27	0.02
041M641601	11/16/1995	µg/kg	0.485	U	4,4'-DDT	1.58	46.1	0.01
041M641601	11/16/1995	µg/kg	49.75		Total PCBs	22.7	180	0.28
041M641601	11/16/1995	µg/kg	95	U	2-Methylnaphthalene	70	670	0.14
041M641601	11/16/1995	µg/kg	47	U	Acenaphthene	16	500	0.09
041M641601	11/16/1995	µg/kg	95	U	Acenaphthylene	44	640	0.15
041M641601	11/16/1995	µg/kg	95	U	Anthracene	85.3	1,100	0.09
041M641601	11/16/1995	µg/kg	120	J	Benzo(a)anthracene	261	1,600	0.08
041M641601	11/16/1995	µg/kg	140	J	Benzo(a)pyrene	430	1,600	0.09
041M641601	11/16/1995	µg/kg	160	J	Chrysene	384	2,800	0.06
041M641601	11/16/1995	µg/kg	95	U	Dibenz(a,h)anthracene	63.4	260	0.37
041M641601	11/16/1995	µg/kg	330		Fluoranthene	600	5,100	0.06
041M641601	11/16/1995	µg/kg	47	U	Fluorene	19	540	0.09
041M641601	11/16/1995	µg/kg	95	U	Naphthalene	160	2,100	0.05
041M641601	11/16/1995	µg/kg	140	J	Phenanthrene	240	1,500	0.09
041M641601	11/16/1995	µg/kg	250		Pyrene	665	2,600	0.10
041M641601	11/16/1995				ERM Quotient Sum			9.55
041M641601	11/16/1995				Mean ERM Quotient			0.38
041M641601	11/16/1995				Mean ERM Quotient without ND			0.34
041M641601	11/16/1995				Mean ERM Quotient Category			2
041M641701	11/16/1995	mg/kg	3.3		Arsenic	8.2	70	0.05
041M641701	11/16/1995	mg/kg	2.4		Cadmium	1.2	9.6	0.25
041M641701	11/16/1995	mg/kg	78.2		Chromium	81	370	0.21
041M641701	11/16/1995	mg/kg	16.3		Copper	34	270	0.06
041M641701	11/16/1995	mg/kg	31.9		Lead	46.7	218	0.15
041M641701	11/16/1995	mg/kg	0.04	U	Mercury	0.15	0.71	0.06
041M641701	11/16/1995	mg/kg	2.2	J	Nickel	20.9	51.6	0.04
041M641701	11/16/1995	mg/kg	0.185	U	Silver	1	3.7	0.05
041M641701	11/16/1995	mg/kg	52.4		Zinc	150	410	0.13
041M641701	11/16/1995	µg/kg	0.155	U	4,4'-DDE	2.2	27	0.01
041M641701	11/16/1995	µg/kg	0.155	U	4,4'-DDT	1.58	46.1	0.00
041M641701	11/16/1995	µg/kg	15.65		Total PCBs	22.7	180	0.09
041M641701	11/16/1995	µg/kg	30.5	U	2-Methylnaphthalene	70	670	0.05
041M641701	11/16/1995	µg/kg	15	U	Acenaphthene	16	500	0.03
041M641701	11/16/1995	µg/kg	30.5	U	Acenaphthylene	44	640	0.05
041M641701	11/16/1995	µg/kg	305	U	Anthracene	85.3	1,100	0.28
041M641701	11/16/1995	µg/kg	30.5	U	Benzo(a)anthracene	261	1,600	0.02
041M641701	11/16/1995	µg/kg	45	J	Benzo(a)pyrene	430	1,600	0.03
041M641701	11/16/1995	µg/kg	18.5	U	Chrysene	384	2,800	0.01
041M641701	11/16/1995	µg/kg	30.5	U	Dibenz(a,h)anthracene	63.4	260	0.12
041M641701	11/16/1995	µg/kg	83		Fluoranthene	600	5,100	0.02
041M641701	11/16/1995	µg/kg	15	U	Fluorene	19	540	0.03
041M641701	11/16/1995	µg/kg	30.5	U	Naphthalene	160	2,100	0.01
041M641701	11/16/1995	µg/kg	305	U	Phenanthrene	240	1,500	0.20
041M641701	11/16/1995	µg/kg	74		Pyrene	665	2,600	0.03
041M641701	11/16/1995				ERM Quotient Sum			1.95
041M641701	11/16/1995				Mean ERM Quotient			0.08
041M641701	11/16/1995				Mean ERM Quotient without ND			0.04
041M641701	11/16/1995				Mean ERM Quotient Category			2
041M641801	2/6/1996	mg/kg	0.19	J	Arsenic	8.2	70	0.00
041M641801	2/6/1996	mg/kg	0.19	J	Cadmium	1.2	9.6	0.02
041M641801	2/6/1996	mg/kg	5.2		Chromium	81	370	0.01
041M641801	2/6/1996	mg/kg	0.75	U	Copper	34	270	0.00
041M641801	2/6/1996	mg/kg	2.6		Lead	46.7	218	0.01
041M641801	2/6/1996	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M641801	2/6/1996	mg/kg	0.285	U	Nickel	20.9	51.6	0.01
041M641801	2/6/1996	mg/kg	0.16	U	Silver	1	3.7	0.04
041M641801	2/6/1996	mg/kg	2.6		Zinc	150	410	0.01
041M641801	2/6/1996	µg/kg	0.11	U	4,4'-DDE	2.2	27	0.00
041M641801	2/6/1996	µg/kg	0.11	U	4,4'-DDT	1.58	46.1	0.00
041M641801	2/6/1996	µg/kg	8.95		Total PCBs	22.7	180	0.05
041M641801	2/6/1996	µg/kg	21.5	U	2-Methylnaphthalene	70	670	0.03
041M641801	2/6/1996	µg/kg	10.5	U	Acenaphthene	16	500	0.02
041M641801	2/6/1996	µg/kg	21.5	U	Acenaphthylene	44	640	0.03
041M641801	2/6/1996	µg/kg	21.5	U	Anthracene	85.3	1,100	0.02
041M641801	2/6/1996	µg/kg	21.5	U	Benzo(a)anthracene	261	1,600	0.01
041M641801	2/6/1996	µg/kg	21.5	U	Benzo(a)pyrene	430	1,600	0.01
041M641801	2/6/1996	µg/kg	21.5	U	Chrysene	384	2,800	0.01
041M641801	2/6/1996	µg/kg	21.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M641801	2/6/1996	µg/kg	21.5	U	Fluoranthene	600	5,100	0.00
041M641801	2/6/1996	µg/kg	10.5	U	Fluorene	19	540	0.02
041M641801	2/6/1996	µg/kg	21.5	U	Naphthalene	160	2,100	0.01

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M641801	2/6/1996	µg/kg	21.5	U	Phenanthrene	240	1,500	0.01
041M641801	2/6/1996	µg/kg	21.5	U	Pyrene	665	2,600	0.01
041M641801	2/6/1996				ERM Quotient Sum			0.48
041M641801	2/6/1996				Mean ERM Quotient			0.02
041M641801	2/6/1996				Mean ERM Quotient without ND			0.00
041M641801	2/6/1996				Mean ERM Quotient Category			1
041M641901	2/1/1996	mg/kg	17		Arsenic	8.2	70	0.24
041M641901	**2/1/1996**	**mg/kg**	**14.8**		**Cadmium**	**1.2**	**9.6**	**1.54**
041M641901	**2/1/1996**	**mg/kg**	**638**		**Chromium**	**81**	**370**	**1.72**
041M641901	2/1/1996	mg/kg	121		Copper	34	270	0.45
041M641901	**2/1/1996**	**mg/kg**	**224**		**Lead**	**46.7**	**218**	**1.03**
041M641901	2/1/1996	mg/kg	0.66		Mercury	0.15	0.71	0.93
041M641901	2/1/1996	mg/kg	15.9		Nickel	20.9	51.6	0.31
041M641901	2/1/1996	mg/kg	0.85	U	Silver	1	3.7	0.23
041M641901	2/1/1996	mg/kg	308		Zinc	150	410	0.75
041M641901	2/1/1996	µg/kg	1.3	J	4,4'-DDE	2.2	27	0.05
041M641901	2/1/1996	µg/kg	0.55	U	4,4'-DDT	1.58	46.1	0.01
041M641901	2/1/1996	µg/kg	88		Total PCBs	22.7	180	0.49
041M641901	2/1/1996	µg/kg	95	U	2-Methylnaphthalene	70	670	0.14
041M641901	2/1/1996	µg/kg	47	U	Acenaphthene	16	500	0.09
041M641901	2/1/1996	µg/kg	95	U	Acenaphthylene	44	640	0.15
041M641901	2/1/1996	µg/kg	95	U	Anthracene	85.3	1,100	0.09
041M641901	2/1/1996	µg/kg	340		Benzo(a)anthracene	261	1,600	0.21
041M641901	2/1/1996	µg/kg	360		Benzo(a)pyrene	430	1,600	0.23
041M641901	2/1/1996	µg/kg	390		Chrysene	384	2,800	0.14
041M641901	2/1/1996	µg/kg	95	U	Dibenz(a,h)anthracene	63.4	260	0.37
041M641901	2/1/1996	µg/kg	580		Fluoranthene	600	5,100	0.11
041M641901	2/1/1996	µg/kg	47	U	Fluorene	19	540	0.09
041M641901	2/1/1996	µg/kg	95	U	Naphthalene	160	2,100	0.05
041M641901	2/1/1996	µg/kg	210		Phenanthrene	240	1,500	0.14
041M641901	2/1/1996	µg/kg	550		Pyrene	665	2,600	0.21
041M641901	2/1/1996				ERM Quotient Sum			9.76
041M641901	2/1/1996				Mean ERM Quotient			0.39
041M641901	2/1/1996				Mean ERM Quotient without ND			0.34
041M641901	2/1/1996				Mean ERM Quotient Category			2
041M642001	11/16/1995	mg/kg	0.8		Arsenic	8.2	70	0.01
041M642001	11/16/1995	mg/kg	0.56		Cadmium	1.2	9.6	0.06
041M642001	11/16/1995	mg/kg	13.8		Chromium	81	370	0.04
041M642001	11/16/1995	mg/kg	4.3		Copper	34	270	0.02
041M642001	11/16/1995	mg/kg	7.5		Lead	46.7	218	0.03
041M642001	11/16/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M642001	11/16/1995	mg/kg	0.39	U	Nickel	20.9	51.6	0.01
041M642001	11/16/1995	mg/kg	0.13	U	Silver	1	3.7	0.04
041M642001	11/16/1995	mg/kg	15.8		Zinc	150	410	0.04
041M642001	11/16/1995	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M642001	11/16/1995	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M642001	11/16/1995	µg/kg	9.3		Total PCBs	22.7	180	0.05
041M642001	11/16/1995	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M642001	11/16/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M642001	11/16/1995	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M642001	11/16/1995	µg/kg	21	U	Anthracene	85.3	1,100	0.02
041M642001	11/16/1995	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M642001	11/16/1995	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M642001	11/16/1995	µg/kg	21	U	Chrysene	384	2,800	0.01
041M642001	11/16/1995	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M642001	11/16/1995	µg/kg	24	J	Fluoranthene	600	5,100	0.00
041M642001	11/16/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M642001	11/16/1995	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M642001	11/16/1995	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M642001	11/16/1995	µg/kg	22	J	Pyrene	665	2,600	0.01
041M642001	11/16/1995				ERM Quotient Sum			0.61
041M642001	11/16/1995				Mean ERM Quotient			0.02
041M642001	11/16/1995				Mean ERM Quotient without ND			0.01
041M642001	11/16/1995				Mean ERM Quotient Category			1.00
041M642101	11/16/1995	mg/kg	0.07	U	Arsenic	8.2	70	0.00
041M642101	11/16/1995	mg/kg	0.105	U	Cadmium	1.2	9.6	0.01
041M642101	11/16/1995	mg/kg	1.2		Chromium	81	370	0.00
041M642101	11/16/1995	mg/kg	0.74	J	Copper	34	270	0.00
041M642101	11/16/1995	mg/kg	0.65		Lead	46.7	218	0.00
041M642101	11/16/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M642101	11/16/1995	mg/kg	0.41	U	Nickel	20.9	51.6	0.01
041M642101	11/16/1995	mg/kg	0.135	U	Silver	1	3.7	0.04
041M642101	11/16/1995	mg/kg	2.2		Zinc	150	410	0.01
041M642101	11/16/1995	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M642101	11/16/1995	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M642101	11/16/1995	µg/kg	8.4	U	Total PCBs	22.7	180	0.05
041M642101	11/16/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M642101	11/16/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M642101	11/16/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M642101	11/16/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M642101	11/16/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M642101	11/16/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M642101	11/16/1995	µg/kg	20.5	U	Chrysene	384	2,800	0.01
041M642101	11/16/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M642101	11/16/1995	µg/kg	20.5	U	Fluoranthene	600	5,100	0.00
041M642101	11/16/1995	µg/kg	10	U	Fluorene	19	540	0.02

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M642101	11/16/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01
041M642101	11/16/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M642101	11/16/1995	µg/kg	20.5	U	Pyrene	665	2,600	0.01
041M642101	11/16/1995				ERM Quotient Sum			0.43
041M642101	11/16/1995				Mean ERM Quotient			0.02
041M642101	11/16/1995				Mean ERM Quotient without ND			0.00
041M642101	11/16/1995				Mean ERM Quotient Category			1
041M642201	11/17/1995	mg/kg	0.13	UJ	Arsenic	8.2	70	0.00
041M642201	11/17/1995	mg/kg	1.6		Cadmium	1.2	9.6	0.17
041M642201	11/17/1995	mg/kg	21.3		Chromium	81	370	0.06
041M642201	11/17/1995	mg/kg	7.2		Copper	34	270	0.03
041M642201	11/17/1995	mg/kg	36.3	J	Lead	46.7	218	0.17
041M642201	11/17/1995	mg/kg	0.15	J	Mercury	0.15	0.71	0.21
041M642201	11/17/1995	mg/kg	3.9	J	Nickel	20.9	51.6	0.08
041M642201	11/17/1995	mg/kg	0.72	J	Silver	1	3.7	0.19
041M642201	11/17/1995	mg/kg	21.3		Zinc	150	410	0.05
041M642201	11/17/1995	µg/kg	0.12	U	4,4'-DDE	2.2	27	0.00
041M642201	11/17/1995	µg/kg	0.12	U	4,4'-DDT	1.58	46.1	0.00
041M642201	11/17/1995	µg/kg	18.5	U	Total PCBs	22.7	180	0.10
041M642201	11/17/1995	µg/kg	23	U	2-Methylnaphthalene	70	670	0.03
041M642201	11/17/1995	µg/kg	11	U	Acenaphthene	16	500	0.02
041M642201	11/17/1995	µg/kg	23	U	Acenaphthylene	44	640	0.04
041M642201	11/17/1995	µg/kg	230	U	Anthracene	85.3	1,100	0.21
041M642201	11/17/1995	µg/kg	38	J	Benzo(a)anthracene	261	1,600	0.02
041M642201	11/17/1995	µg/kg	25	J	Benzo(a)pyrene	430	1,600	0.02
041M642201	11/17/1995	µg/kg	35	J	Chrysene	384	2,800	0.01
041M642201	11/17/1995	µg/kg	23	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M642201	11/17/1995	µg/kg	92		Fluoranthene	600	5,100	0.02
041M642201	11/17/1995	µg/kg	11	U	Fluorene	19	540	0.02
041M642201	11/17/1995	µg/kg	23	U	Naphthalene	160	2,100	0.01
041M642201	11/17/1995	µg/kg	57		Phenanthrene	240	1,500	0.04
041M642201	11/17/1995	µg/kg	68		Pyrene	665	2,600	0.03
041M642201	11/17/1995				ERM Quotient Sum			1.62
041M642201	11/17/1995				Mean ERM Quotient			0.06
041M642201	11/17/1995				Mean ERM Quotient without ND			0.04
041M642201	11/17/1995				Mean ERM Quotient Category			2
041M642301	11/17/1995	mg/kg	0.88	J	Arsenic	8.2	70	0.01
041M642301	11/17/1995	mg/kg	0.44		Cadmium	1.2	9.6	0.05
041M642301	11/17/1995	mg/kg	19.4		Chromium	81	370	0.05
041M642301	11/17/1995	mg/kg	4.4		Copper	34	270	0.02
041M642301	11/17/1995	mg/kg	8.8	J	Lead	46.7	218	0.04
041M642301	11/17/1995	mg/kg	0.035	U	Mercury	0.15	0.71	0.05
041M642301	11/17/1995	mg/kg	0.96	J	Nickel	20.9	51.6	0.02
041M642301	11/17/1995	mg/kg	0.145	UJ	Silver	1	3.7	0.04
041M642301	11/17/1995	mg/kg	18.8		Zinc	150	410	0.05
041M642301	11/17/1995	µg/kg	0.11	U	4,4'-DDE	2.2	27	0.00
041M642301	11/17/1995	µg/kg	0.11	U	4,4'-DDT	1.58	46.1	0.00
041M642301	11/17/1995	µg/kg	16.85	U	Total PCBs	22.7	180	0.09
041M642301	11/17/1995	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M642301	11/17/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M642301	11/17/1995	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M642301	11/17/1995	µg/kg	210	U	Anthracene	85.3	1,100	0.19
041M642301	11/17/1995	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M642301	11/17/1995	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M642301	11/17/1995	µg/kg	21	U	Chrysene	384	2,800	0.01
041M642301	11/17/1995	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M642301	11/17/1995	µg/kg	26	J	Fluoranthene	600	5,100	0.01
041M642301	11/17/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M642301	11/17/1995	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M642301	11/17/1995	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M642301	11/17/1995	µg/kg	22	J	Pyrene	665	2,600	0.01
041M642301	11/17/1995				ERM Quotient Sum			0.87
041M642301	11/17/1995				Mean ERM Quotient			0.03
041M642301	11/17/1995				Mean ERM Quotient without ND			0.01
041M642301	11/17/1995				Mean ERM Quotient Category			1
041M642401	11/17/1995	mg/kg	0.07	UJ	Arsenic	8.2	70	0.00
041M642401	11/17/1995	mg/kg	0.1	U	Cadmium	1.2	9.6	0.01
041M642401	11/17/1995	mg/kg	0.55	J	Chromium	81	370	0.00
041M642401	11/17/1995	mg/kg	0.285	U	Copper	34	270	0.00
041M642401	11/17/1995	mg/kg	0.145	UJ	Lead	46.7	218	0.00
041M642401	11/17/1995	mg/kg	0.3		Mercury	0.15	0.71	0.42
041M642401	11/17/1995	mg/kg	0.405	U	Nickel	20.9	51.6	0.01
041M642401	11/17/1995	mg/kg	0.135	UJ	Silver	1	3.7	0.04
041M642401	11/17/1995	mg/kg	0.7	U	Zinc	150	410	0.00
041M642401	11/17/1995	µg/kg	0.115	UJ	4,4'-DDE	2.2	27	0.00
041M642401	11/17/1995	µg/kg	0.115	UJ	4,4'-DDT	1.58	46.1	0.00
041M642401	11/17/1995	µg/kg	17.7	U	Total PCBs	22.7	180	0.10
041M642401	11/17/1995	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M642401	11/17/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M642401	11/17/1995	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M642401	11/17/1995	µg/kg	210	U	Anthracene	85.3	1,100	0.19
041M642401	11/17/1995	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M642401	11/17/1995	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M642401	11/17/1995	µg/kg	21	U	Chrysene	384	2,800	0.01
041M642401	11/17/1995	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M642401	11/17/1995	µg/kg	21	U	Fluoranthene	600	5,100	0.00
041M642401	11/17/1995	µg/kg	10	U	Fluorene	19	540	0.02

Table 11-3-11
Wetland 64 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M642401	11/17/1995	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M642401	11/17/1995	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M642401	11/17/1995	µg/kg	21	U	Pyrene	665	2,600	0.01
041M642401	11/17/1995				ERM Quotient Sum			1.03
041M642401	11/17/1995				Mean ERM Quotient			0.04
041M642401	11/17/1995				Mean ERM Quotient without ND			0.02
041M642401	11/17/1995				Mean ERM Quotient Category			2

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-3-12
Wetland 64 Phase III
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	3	3			7,600	8,900	041M640601	8,900	J		N/A		Yes	No SV
Antimony	1	3	1.6	2	2.5	2.5	041M640501	2.5	J	12	2	0.21	No	Max Detect < SV
Arsenic	**3**	**3**			**6.9**	**7.8**	**041M640601**	**7.8**		**7.24**	**1, 2**	**1.08**	**Yes**	**Max Detect > SV**
Barium	3	3			15.2	17.1	041M640401	17.1			N/A		Yes	No SV
Beryllium	3	3			0.3	0.34	041M640601	0.34			N/A		Yes	No SV
Cadmium	**3**	**3**			**17.7**	**21**	**041M640601**	**21**		**0.68**	**1**	**31.1**	**Yes**	**Max Detect > SV**
Calcium	3	3			2,660	3,210	041M640401	3,210			N/A		Yes	No SV
Chromium	**3**	**3**			**592**	**868**	**041M640601**	**868**		**52.3**	**1, 2**	**16.6**	**Yes**	**Max Detect > SV**
Cobalt	3	3			2.7	3.4	041M640501	3.4			N/A		Yes	No SV
Copper	**3**	**3**			**102**	**146**	**041M640501**	**146**		**18.7**	**1, 2**	**7.81**	**Yes**	**Max Detect > SV**
Iron	3	3			12,100	13,600	041M640401	13,600			N/A		Yes	No SV
Lead	**3**	**3**			**330**	**346**	**041M640401**	**346**		**30.2**	**1, 2**	**11.5**	**Yes**	**Max Detect > SV**
Magnesium	3	3			3,230	4,190	041M640401	4,190			N/A		Yes	No SV
Manganese	3	3			44.9	65.8	041M640501	65.8			N/A		Yes	No SV
Mercury	**3**	**3**			**0.25**	**0.26**	**041M640501**	**0.26**		**0.13**	**1, 2**	**2**	**Yes**	**Max Detect > SV**
Nickel	3	3			9.8	12.3	041M640501	12.3		15.9	1, 2	0.77	No	Max Detect < SV
Potassium	3	3			1,090	1,350	041M640401	1,350			N/A		Yes	No SV
Selenium	3	3			1.3	1.6	041M640401	1.6	J		N/A		Yes	No SV
Silver	**3**	**3**			**1.9**	**3**	**041M640501**	**3**		**0.73**	**1**	**4.09**	**Yes**	**Max Detect > SV**
Sodium	3	3			10,100	18,300	041M640401	18,300			N/A		Yes	No SV
Thallium	0	3	0.5	0.8			ND	0.8	UJ		N/A		Yes	No SV
Vanadium	3	3			15.9	18.4	041M640401	18.4			N/A		Yes	No SV
Zinc	**3**	**3**			**306**	**468**	**041M640401**	**468**		**124**	**1, 2**	**3.77**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	3	435	650			ND	650	U	20.2	1	32.2	No	TOC normalized PAHs<TEC
Acenaphthene	3	3			260	750	041M640601	750	J	6.71	1	112	No	TOC normalized PAHs<TEC
Acenaphthylene	0	3	435	650			ND	650	U	5.87	1	111	No	TOC normalized PAHs<TEC
Anthracene	3	3			310	1,000	041M640601	1,000	J	46.9	1	21.3	No	TOC normalized PAHs<TEC
Benzo(a)anthracene	3	3			1,100	2,100	041M640601	2,100		74.8	1	28.1	No	TOC normalized PAHs<TEC
Benzo(a)pyrene	3	3			1,000	1,700	041M640601	1,700		88.8	1	19.1	No	TOC normalized PAHs<TEC
Chrysene	3	3			1,200	2,100	041M640601	2,100		108	1	19.4	No	TOC normalized PAHs<TEC
Dibenz(a,h)anthracene	0	3	435	650			ND	650	UJ	6.22	1	105	No	TOC normalized PAHs<TEC
Fluoranthene	3	3			2,700	5,000	041M640601	5,000		113	1	44.2	No	TOC normalized PAHs<TEC
Fluorene	3	3			210	750	041M640601	750	J	21.2	1	35.4	No	TOC normalized PAHs<TEC
Naphthalene	3	3			110	310	041M640601	310	J	34.6	1	8.96	No	TOC normalized PAHs<TEC
Phenanthrene	3	3			1,800	4,300	041M640601	4,300		86.7	1	49.6	No	TOC normalized PAHs<TEC
Pyrene	3	3			3,000	4,800	041M640601	4,800	J	153	1	31.4	No	TOC normalized PAHs<TEC
Total PAHs	3	3			13,700	24,500	041M640601	24,500		1,684	1, 2	14.5	No	TOC normalized PAHs<TEC
TOC Normalized PAHs	3	3			196.29	284.42	041M640601	284.42		290	3	0.98	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	3	55	130			ND	130	U	21.6	N/A	6.02	Yes	Max SQL > SV
Aroclor-1221	0	3	110	270			ND	270	U	67	2	4.03	Yes	Max SQL > SV
Aroclor-1232	0	3	55	130			ND	130	U	21.6	N/A	6.02	Yes	Max SQL > SV
Aroclor-1242	0	3	55	130			ND	130	U	21.6	N/A	6.02	Yes	Max SQL > SV
Aroclor-1248	0	3	55	130			ND	130	U	21.6	N/A	6.02	Yes	Max SQL > SV
Aroclor-1254	0	3	55	130			ND	130	U	21.6	N/A	6.02	Yes	Max SQL > SV
Aroclor-1260	**3**	**3**			**180**	**300**	**041M640601**	**300**		**21.6**	**N/A**	**13.9**	**Yes**	**Max Detect > SV**
Total PCBs	**3**	**3**			**565**	**1,220**	**041M640601**	**1,220**		**21.6**	**1**	**56.5**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	0	3	0.455	0.85			ND	0.85	U		N/A		Yes	No SV
Dieldrin	**3**	**3**			**7.7**	**20**	**041M640401**	**20**	**J**	**0.72**	**1**	**27.9**	**Yes**	**Max Detect > SV**
Endosulfan I	2	3	0.43	0.43	1.3	2.4	041M640401	2.4	J		N/A		Yes	No SV
Endosulfan II	0	3	5.5	13			ND	13	U		N/A		Yes	No SV
Endosulfan sulfate	0	3	5.5	13			ND	13	U		N/A		Yes	No SV
Heptachlor	0	3	2.85	7			ND	7	U		N/A		Yes	No SV
Heptachlor epoxide	0	3	0.49	7			ND	7	U		N/A		Yes	No SV
Methoxychlor	0	3	28.5	70			ND	70	U		N/A		Yes	No SV
Toxaphene	0	3	285	700			ND	700	U		N/A		Yes	No SV
alpha-Chlordane	**2**	**3**	**1.2**	**1.2**	**2.9**	**3.7**	**041M640401**	**3.7**	**J**	**1.7**	**1**	**2.18**	**Yes**	**Max Detect > SV**
gamma-Chlordane	0	3	1.75	8			ND	8	U	1.7	1	4.71	Yes	Max SQL > SV
Total Chlordane	**2**	**3**	**3**	**3**	**4.65**	**11.7**	**041M640401**	**11.7**		**1.7**	**1**	**6.88**	**Yes**	**Max Detect > SV**
Endrin	0	3	5.5	13			ND	13	U	3.3	2	3.94	Yes	Max SQL > SV
Endrin aldehyde	0	3	5.5	13			ND	13	U	3.3	2	3.94	Yes	Max SQL > SV
Endrin ketone	0	3	5.5	13			ND	13	U	3.3	2	3.94	Yes	Max SQL > SV
Total Endrin	0	3	16.5	39			ND	39	U	3.3	2	11.8	Yes	Max SQL > SV
alpha-BHC	0	3	2.85	7			ND	7	U		N/A		Yes	No SV
beta-BHC	0	3	2.85	7			ND	7	U	0.32	N/A	21.9	Yes	Max SQL > SV
delta-BHC	**2**	**3**	**4.45**	**4.45**	**0.69**	**0.94**	**041M640601**	**0.94**	**NJ**	**0.32**	**N/A**	**2.94**	**Yes**	**Max Detect > SV**
gamma-BHC (Lindane)	0	3	0.475	7			ND	7	U	0.32	1	21.9	Yes	Max SQL > SV
Total BHC	**2**	**3**	**17.8**	**17.8**	**7.12**	**21.7**	**041M640601**	**21.7**		**0.32**	**2**	**67.8**	**Yes**	**Max Detect > SV**
4,4'-DDD	**3**	**3**			**30**	**89**	**041M640401**	**89**		**1.22**	**1**	**73**	**Yes**	**Max Detect > SV**
4,4'-DDE	**3**	**3**			**33**	**89**	**041M640401**	**89**		**2.07**	**1**	**43**	**Yes**	**Max Detect > SV**
4,4'-DDT	**2**	**3**	**3.85**	**3.85**	**18**	**19**	**041M640601**	**19**		**1.19**	**1**	**16**	**Yes**	**Max Detect > SV**
Total DDT	**3**	**3**			**66.8**	**196**	**041M640401**	**196**		**3.3**	**2**	**59.4**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	3	435	650			ND	650	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	3	435	650			ND	650	U		N/A		Yes	No SV
2-Chloronaphthalene	0	3	435	650			ND	650	U		N/A		Yes	No SV
2-Chlorophenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	3	435	650			ND	650	U		N/A		Yes	No SV
2-Nitroaniline	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
2-Nitrophenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	3	850	1,300			ND	1,300	U		N/A		Yes	No SV
3-Methylphenol/4-Methylphenol	0	3	435	650			ND	650	U				Yes	No SV
3-Nitroaniline	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	3	435	650			ND	650	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
4-Chloroaniline	0	3	435	650			ND	650	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	3	435	650			ND	650	U		N/A		Yes	No SV
4-Nitroaniline	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
4-Nitrophenol	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
Benzo(b)fluoranthene	3	3			1,100	1,800	041M640601	1,800			N/A		No	TOC normalized PAHs<TEC
Benzo(g,h,i)perylene	3	3			470	980	041M640601	980	J		N/A		No	TOC normalized PAHs<TEC
Benzo(k)fluoranthene	3	3			1,300	1,900	041M640601	1,900			N/A		No	TOC normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	3	435	650			ND	650	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	3	435	650			ND	650	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**3**			**2,000**	**3,900**	**041M640601**	**3,900**		**182**	**1, 2**	**21.4**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	**3**	**3**			**240**	**710**	**041M640401**	**710**	**J**	**182**	**1, 2**	**3.9**	**Yes**	**Max Detect > SV**
Carbazole	3	3			320	800	041M640601	800	J		N/A		Yes	No SV
Dibenzofuran	2	3	650	650	130	350	041M640601	350	J		N/A		Yes	No SV
Diethylphthalate	0	3	435	650			ND	650	U	182	1, 2	3.57	Yes	Max SQL > SV
Dimethylphthalate	0	3	435	650			ND	650	U	182	1, 2	3.57	Yes	Max SQL > SV
Di-n-butylphthalate	0	3	435	650			ND	650	U	182	1, 2	3.57	Yes	Max SQL > SV

Table 11-3-12
Wetland 64 Phase III
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Di-n-octylphthalate	0	3	435	650			ND	650	UJ	182	1, 2	3.57	Yes	Max SQL > SV
Hexachlorobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
Hexachlorobutadiene	0	3	435	650			ND	650	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	3	435	650			ND	650	U		N/A		Yes	No SV
Hexachloroethane	0	3	435	650			ND	650	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	3	3			680	1,000	041M640601	1,000	J		N/A		No	TOC normalized PAHs<TEC
Isophorone	0	3	435	650			ND	650	U		N/A		Yes	No SV
Nitrobenzene	0	3	435	650			ND	650	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	3	435	650			ND	650	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	3	435	650			ND	650	U		N/A		Yes	No SV
Pentachlorophenol	0	3	1,050	1,600			ND	1,600	U		N/A		Yes	No SV
Phenol	0	3	435	650			ND	650	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,1-Dichloroethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,1-Dichloroethene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,2-Dichloroethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
1,2-Dichloropropane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
2-Hexanone	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
Acetone	2	3	29.5	29.5	32	32	041M640501	32	J		N/A		Yes	No SV
Benzene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Bromodichloromethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Bromoform	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Bromomethane	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
Carbon disulfide	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Chlorobenzene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Chloroethane	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
Chloroform	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Chloromethane	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Dibromochloromethane	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Ethylbenzene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Methylene chloride	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Styrene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Tetrachloroethene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Toluene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Trichloroethene	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV
Vinyl chloride	0	3	13	29.5			ND	29.5	U		N/A		Yes	No SV
Xylene (Total)	0	3	6.5	14.5			ND	14.5	U		N/A		Yes	No SV

Notes:
Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Sectio
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient
D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-3-13
Wetland 64 Phase III
Sediment Parameters Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	bis(2-Ethylhexyl)phthalate (BEHP)	Acetone
Arsenic	4,4'-DDE	Butylbenzylphthalate	
Barium	4,4'-DDT	Carbazole	
Beryllium	alpha-Chlordane	Dibenzofuran	
Cadmium	delta-BHC		
Calcium	Dieldrin		
Chromium	Endosulfan I		
Cobalt	Total BHC		
Copper	Total Chlordane		
Iron	Total DDT		
Lead	Aroclor-1260		
Magnesium	Total PCBs		
Manganese			
Mercury			
Potassium			
Selenium			
Silver			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Thallium	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
	alpha-BHC	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
	beta-BHC	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan II	1,4-Dichlorobenzene	1,1-Dichloroethane
	Endosulfan sulfate	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Endrin	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Endrin aldehyde	2,4,6-Trichlorophenol	1,2-Dichloroethene (total)
	Endrin ketone	2,4-Dichlorophenol	1,2-Dichloropropane
	gamma-BHC (Lindane)	2,4-Dimethylphenol	2-Butanone (MEK)
	gamma-Chlordane	2,4-Dinitrophenol	2-Hexanone
	Heptachlor	2,4-Dinitrotoluene	4-Methyl-2-Pentanone (MIBK)
	Heptachlor epoxide	2,6-Dinitrotoluene	Benzene
	Methoxychlor	2-Chloronaphthalene	Bromodichloromethane
	Total Endrin	2-Chlorophenol	Bromoform
	Toxaphene	2-Methyl-4,6-Dinitrophenol	Bromomethane
	Aroclor-1016	2-Methylphenol (o-Cresol)	Carbon disulfide
	Aroclor-1221	2-Nitroaniline	Carbon tetrachloride
	Aroclor-1232	2-Nitrophenol	Chlorobenzene
	Aroclor-1242	3,3'-Dichlorobenzidine	Chloroethane
	Aroclor-1248	3-Methylphenol/4-Methylphenol	Chloroform
	Aroclor-1254	3-Nitroaniline	Chloromethane
		4-Bromophenyl-phenylether	cis-1,3-Dichloropropene
		4-Chloro-3-methylphenol	Dibromochloromethane
		4-Chloroaniline	Ethylbenzene
		4-Chlorophenylphenyl ether	Methylene chloride
		4-Nitroaniline	Styrene
		4-Nitrophenol	Tetrachloroethene
		bis(2-Chloroethoxy)methane	Toluene
		bis(2-Chloroethyl)ether	trans-1,3-Dichloropropene
		Dibenz(a,h)anthracene	Trichloroethene
		Diethylphthalate	Vinyl chloride
		Dimethylphthalate	Xylene (Total)
		Di-n-butylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 11-3-14
Wetland 64 Phase III
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	3	3				8,460	7,600	8,900	8,900	J	041M640601			NA					0	4,274	3	Yes	EPC > RC and no RV
Arsenic	3	3				7.23	6.9	7.8	7.8		041M640601	7.24	41.6	PEL	1.08	1.00	0.19	0.17	0	2.14	3	No	EPC > RC, but < RV
Barium	3	3				16.4	15.2	17.1	17.1		041M640401			NA					0	3.84	3	Yes	EPC > RC and no RV
Beryllium	3	3				0.327	0.3	0.34	0.34		041M640601			NA					0	0.13	3	Yes	EPC > RC and no RV
Cadmium	**3**	**3**				**19.6**	**17.7**	**21**	**21**		**041M640601**	**0.676**	**4.21**	**PEL**	**31.1**	**29**	**4.99**	**4.66**	**3**	**0.39**	**3**	**Yes**	**EPC > RV and RC**
Calcium	3	3				2,950	2,660	3,210	3,210		041M640401			NA					0	1,978.80	3	No	Essential Nutrient
Chromium	**3**	**3**				**745**	**592**	**868**	**868**		**041M640601**	**52.3**	**160**	**PEL**	**16.6**	**14.2**	**5.42**	**4.65**	**3**	**13.1**	**3**	**Yes**	**EPC > RV and RC**
Cobalt	3	3				3.03	2.7	3.4	3.4		041M640501			NA					0	0.91	3	Yes	EPC > RC and no RV
Copper	**3**	**3**				**121**	**102**	**146**	**146**		**041M640501**	**18.7**	**108**	**PEL**	**7.81**	**6.47**	**1.35**	**1.12**	**2**	**8.44**	**3**	**Yes**	**EPC > RV and RC**
Iron	3	3				13,000	12,100	13,600	13,600		041M640401			NA					0	2,684.40	3	Yes	EPC > RC and no RV
Lead	**3**	**3**				**338**	**330**	**346**	**346**		**041M640401**	**30.2**	**112**	**PEL**	**11.5**	**11.2**	**3.09**	**3.02**	**3**	**21.04**	**3**	**Yes**	**EPC > RV and RC**
Magnesium	3	3				3,650	3,230	4,190	4,190		041M640401			NA					0	2,943.60	3	No	Essential Nutrient
Manganese	3	3				53.2	44.9	65.8	65.8		041M640501			NA					0	9.81	3	Yes	EPC > RC and no RV
Mercury	3	3				0.257	0.25	0.26	0.26		041M640501	0.13	0.696	PEL	2	1.97	0.37	0.37	0	0.11	3	No	EPC > RC, but < RV
Potassium	3	3				1,200	1,090	1,350	1,350		041M640401			NA					0	899.72	3	No	Essential Nutrient
Selenium	3	3				1.47	1.3	1.6	1.6	J	041M640401			NA					0	0.66	3	Yes	EPC > RC and no RV
Silver	**3**	**3**				**2.3**	**1.9**	**3**	**3**		**041M640501**	**0.733**	**1.77**	**PEL**	**4.09**	**3.14**	**1.69**	**1.3**	**3**	**0.52**	**3**	**Yes**	**EPC > RV and RC**
Sodium	3	3				14,100	10,100	18,300	18,300		041M640401			NA					0	11,439.60	2	No	Essential Nutrient
Thallium	0	3	0.65	0.5	0.8	0.65			0.8	UJ	ND			NA					0	0.39	3	No	Parameter Not Detected
Vanadium	3	3				17.2	15.9	18.4	18.4		041M640401			NA					0	8.59	3	Yes	EPC > RC and no RV
Zinc	**3**	**3**				**368**	**306**	**468**	**468**		**041M640401**	**124**	**271**	**PEL**	**3.77**	**2.97**	**1.73**	**1.36**	**3**	**14.36**	**3**	**Yes**	**EPC > RV and RC**
PCBs (µg/kg)																							
Aroclor-1016	0	3	90	55	130	90			130	U	ND	21.6	189	PEL	6.02	4.17	0.69	0.48	0		0	No	Parameter Not Detected
Aroclor-1221	0	3	185	110	270	185			270	U	ND	67	189	PEL	4.03	2.76	1.43	0.98	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1232	0	3	90	55	130	90			130	U	ND	21.6	189	PEL	6.02	4.17	0.69	0.48	0		0	No	Parameter Not Detected
Aroclor-1242	0	3	90	55	130	90			130	U	ND	21.6	189	PEL	6.02	4.17	0.69	0.48	0		0	No	Parameter Not Detected
Aroclor-1248	0	3	90	55	130	90			130	U	ND	21.6	189	PEL	6.02	4.17	0.69	0.48	0		0	No	Parameter Not Detected
Aroclor-1254	0	3	90	55	130	90			130	U	ND	21.6	189	PEL	6.02	4.17	0.69	0.48	0		0	No	Parameter Not Detected
Aroclor-1260	**3**	**3**				**253**	**180**	**300**	**300**		**041M640401**	**21.6**	**189**	**PEL**	**13.9**	**11.7**	**1.59**	**1.34**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
Total PCBs	**3**	**3**				**888**	**565**	**1,220**	**1,220**		**041M640401**	**21.6**	**189**	**PEL**	**56.5**	**41.1**	**6.46**	**4.7**	**3**		**0**	**Yes**	**RV HQ > 1 and no RC**
Pesticides (µg/kg)																							
Aldrin	0	3	0.652	0.455	0.85	0.652			0.85	U	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	**3**	**3**				**14.9**	**7.7**	**20**	**20**	**J**	**041M640401**	**0.716**	**4.3**	**PEL**	**27.9**	**20.8**	**4.65**	**3.47**	**3**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endosulfan I	2	3	0.43	0.43	0.43	1.38	1.3	2.4	2.4	J	041M640401			NA					0		0	Yes	No SV, no RV, and no RC
Endosulfan II	0	3	9	5.5	13	9			13	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	0	3	9	5.5	13	9			13	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	0	3	4.77	2.85	7	4.77			7	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	3	2.81	0.49	7	2.81			7	U	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	3	47.7	28.5	70	47.7			70	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	3	477	285	700	477			700	U	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	2	3	1.2	1.2	1.2	2.6	2.9	3.7	3.7	J	041M640401	1.7	4.79	PEL	2.18	1.53	0.77	0.54	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	0	3	3.85	1.75	8	3.85			8	U	ND	1.7	4.79	PEL	4.71	2.26	1.67	0.80	0		0	No	Parameter Not Detected; Max SQL > RV
Total Chlordane	**2**	**3**	**3**	**3**	**3**	**6.45**	**4.65**	**11.7**	**11.7**		**041M640401**	**1.7**	**4.79**	**PEL**	**6.88**	**3.79**	**2.44**	**1.35**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Endrin	0	3	9	5.5	13	9			13	U	ND	3.3		NA	3.94	2.73			0		0	No	Parameter Not Detected
Endrin aldehyde	0	3	9	5.5	13	9			13	U	ND	3.3		NA	3.94	2.73			0		0	No	Parameter Not Detected
Endrin ketone	0	3	9	5.5	13	9			13	U	ND	3.3		NA	3.94	2.73			0		0	No	Parameter Not Detected
Total Endrin	0	3	27	16.5	39	27			39	U	ND	3.3		NA	11.8	8.18			0		0	No	Parameter Not Detected
alpha-BHC	0	3	4.77	2.85	7	4.77			7	U	ND		0.99	PEL			7.07	4.81	0		0	No	Parameter Not Detected; Max SQL > RV
beta-BHC	0	3	4.77	2.85	7	4.77			7	U	ND	0.32	0.99	PEL	21.9	14.9	7.07	4.81	0		0	No	Parameter Not Detected; Max SQL > RV
delta-BHC	2	3	4.45	4.45	4.45	2.03	0.69	0.94	0.94	NJ	041M640601	0.32	0.99	PEL	2.94	6.33	0.95	2.05	0		0	No	RV HQ <1 and no RC
gamma-BHC (Lindane)	0	3	3.98	0.475	7	3.98			7	U	ND	0.32	0.99	PEL	21.9	12.4	7.07	4.02	0		0	No	Parameter Not Detected; Max SQL > RV
Total BHC	**2**	**3**	**17.8**	**17.8**	**17.8**	**15.5**	**7.12**	**21.7**	**21.7**		**041M640401**	**0.32**	**0.99**	**PEL**	**67.8**	**48.5**	**21.9**	**15.7**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	**3**	**3**				**57.3**	**30**	**89**	**89**		**041M640401**	**1.22**	**7.81**	**PEL**	**73**	**47**	**11.4**	**7.34**	**3**	**50**	**2**	**Yes**	**EPC > RV and RC**
4,4'-DDE	3	3				55.3	33	89	89		041M640401	2.07	374	PEL	43	26.7	0.24	0.15	0	40	2	No	EPC > RC, but < RV
4,4'-DDT	**2**	**3**	**3.85**	**3.85**	**3.85**	**13.6**	**18**	**19**	**19**		**041M640601**	**1.19**	**4.77**	**PEL**	**16**	**11.4**	**3.98**	**2.85**	**2**	**20**	**0**	**No**	**EPC > RV, but < RC**
Total DDT	**3**	**3**				**126**	**66.8**	**196**	**196**		**041M640401**	**3.3**	**51.7**	**PEL**	**59.4**	**38.3**	**3.79**	**2.44**	**3**	**110**	**2**	**Yes**	**EPC > RV and RC**
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	3	1,080	850	1,300	1,080			1300	U	ND			NA					0		0	No	Parameter Not Detected
3-Methylphenol/4-Methylphenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-3-14
Wetland 64 Phase III
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQL	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference	COPC Retained (Y/N)	Rationale
SVOCs (µg/kg) - cont.																							
4-Chlorophenylphenyl ether	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**3**				**3,070**	**2,000**	**3,900**	**3900**		**041M640601**	**182**	**2,647**	**PEL**	**21.4**	**16.8**	**1.47**	**1.16**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
Butylbenzylphthalate	3	3				427	240	710	710	J	041M640401	182	2,647	PEL	3.9	2.34	0.27	0.16	0		0	No	RV HQ <1 and no RC
Carbazole	3	3				490	320	800	800	J	041M640601			NA					0		0	Yes	No SV, no RV, and no RC
Dibenzofuran	2	3	650	650	650	377	130	350	350	J	041M640601			NA					0		0	Yes	No SV, no RV, and no RC
Diethylphthalate	0	3	545	435	650	545			650	U	ND	182	2,647	PEL	3.57	2.99	0.25	0.21	0		0	No	Parameter Not Detected
Dimethylphthalate	0	3	545	435	650	545			650	U	ND	182	2,647	PEL	3.57	2.99	0.25	0.21	0		0	No	Parameter Not Detected
Di-n-butylphthalate	0	3	545	435	650	545			650	U	ND	182	2,647	PEL	3.57	2.99	0.25	0.21	0		0	No	Parameter Not Detected
Di-n-octylphthalate	0	3	545	435	650	545			650	UJ	ND	182	2,647	PEL	3.57	2.99	0.25	0.21	0		0	No	Parameter Not Detected
Hexachlorobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	3	1,330	1,050	1,600	1,330			1600	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	3	545	435	650	545			650	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	2	3	29.5	29.5	29.5	31.2	32	32	32	J	041M640501			NA					0		0	Yes	No SV, no RV, and no RC
Benzene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroethane	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Toluene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	0	3	20.8	13	29.5	20.8			29.5	U	ND			NA					0		0	No	Parameter Not Detected
Xylene (Total)	0	3	10.3	6.5	14.5	10.3			14.5	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result
Parameters in bold were detected and exceeded screening values.

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
PEL = Probable effects level.

N/R = No refinement value available.
N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detections
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 11-3-15
Wetland 64 Phase III
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
	Detected Parameters		
Aluminum	Dieldrin	bis(2-Ethylhexyl)phthalate (BEHP)	None
Barium	Endosulfan I	Carbazole	
Beryllium	Total Chlordane	Dibenzofuran	
Cadmium	Total BHC		
Chromium	4,4'-DDD		
Cobalt	Total DDT		
Copper	Aroclor-1260		
Iron	Total PCBs		
Lead			
Manganese			
Selenium			
Silver			
Vanadium			
Zinc			

Table 11-3-16
Wetland 64 Phase III
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640401	9/4/1997	mg/kg	7		Arsenic	8.2	70	0.10
041M640401	**9/4/1997**	**mg/kg**	**20.2**		**Cadmium**	**1.2**	**9.6**	**2.10**
041M640401	**9/4/1997**	**mg/kg**	**774**		**Chromium**	**81**	**370**	**2.09**
041M640401	9/4/1997	mg/kg	102		Copper	34	270	0.38
041M640401	**9/4/1997**	**mg/kg**	**346**		**Lead**	**46.7**	**218**	**1.59**
041M640401	9/4/1997	mg/kg	0.26		Mercury	0.15	0.71	0.37
041M640401	9/4/1997	mg/kg	9.8		Nickel	20.9	51.6	0.19
041M640401	9/4/1997	mg/kg	2	J	Silver	1	3.7	0.54
041M640401	**9/4/1997**	**mg/kg**	**468**		**Zinc**	**150**	**410**	**1.14**
041M640401	**9/4/1997**	**µg/kg**	**89**		**4,4'-DDE**	**2.2**	**27**	**3.30**
041M640401	9/4/1997	µg/kg	18	J	4,4'-DDT	1.58	46.1	0.39
041M640401	**9/4/1997**	**µg/kg**	**1,220**		**Total PCBs**	**22.7**	**180**	**6.78**
041M640401	9/4/1997	µg/kg	650	U	2-Methylnaphthalene	70	670	0.97
041M640401	9/4/1997	µg/kg	260	J	Acenaphthene	16	500	0.52
041M640401	9/4/1997	µg/kg	650	U	Acenaphthylene	44	640	1.02
041M640401	9/4/1997	µg/kg	310	J	Anthracene	85.3	1,100	0.28
041M640401	9/4/1997	µg/kg	1,100	J	Benzo(a)anthracene	261	1,600	0.69
041M640401	9/4/1997	µg/kg	1,000	J	Benzo(a)pyrene	430	1,600	0.63
041M640401	9/4/1997	µg/kg	1,200	J	Chrysene	384	2,800	0.43
041M640401	9/4/1997	µg/kg	650	UJ	Dibenz(a,h)anthracene	63.4	260	2.50
041M640401	9/4/1997	µg/kg	2,700		Fluoranthene	600	5,100	0.53
041M640401	9/4/1997	µg/kg	210	J	Fluorene	19	540	0.39
041M640401	9/4/1997	µg/kg	110	J	Naphthalene	160	2,100	0.05
041M640401	**9/4/1997**	**µg/kg**	**1,800**		**Phenanthrene**	**240**	**1,500**	**1.20**
041M640401	**9/4/1997**	**µg/kg**	**3,100**	**J**	**Pyrene**	**665**	**2,600**	**1.19**
041M640401	9/4/1997				ERM Quotient Sum			29.36
041M640401	9/4/1997				Mean ERM Quotient			1.17
041M640401	9/4/1997				Mean ERM Quotient without ND			0.99
041M640401	9/4/1997				Mean ERM Quotient Category			3
041M640501	9/4/1997	mg/kg	6.9		Arsenic	8.2	70	0.10
041M640501	**9/4/1997**	**mg/kg**	**17.7**		**Cadmium**	**1.2**	**9.6**	**1.84**
041M640501	**9/4/1997**	**mg/kg**	**592**		**Chromium**	**81**	**370**	**1.60**
041M640501	9/4/1997	mg/kg	146		Copper	34	270	0.54
041M640501	**9/4/1997**	**mg/kg**	**330**		**Lead**	**46.7**	**218**	**1.51**
041M640501	9/4/1997	mg/kg	0.26		Mercury	0.15	0.71	0.37
041M640501	9/4/1997	mg/kg	12.3		Nickel	20.9	51.6	0.24
041M640501	9/4/1997	mg/kg	3		Silver	1	3.7	0.81
041M640501	9/4/1997	mg/kg	306		Zinc	150	410	0.75
041M640501	**9/4/1997**	**µg/kg**	**33**		**4,4'-DDE**	**2.2**	**27**	**1.22**
041M640501	9/4/1997	µg/kg	3.85	U	4,4'-DDT	1.58	46.1	0.08
041M640501	**9/4/1997**	**µg/kg**	**880**		**Total PCBs**	**22.7**	**180**	**4.89**
041M640501	9/4/1997	µg/kg	435	U	2-Methylnaphthalene	70	670	0.65
041M640501	9/4/1997	µg/kg	310	J	Acenaphthene	16	500	0.62
041M640501	9/4/1997	µg/kg	435	U	Acenaphthylene	44	640	0.68
041M640501	9/4/1997	µg/kg	340	J	Anthracene	85.3	1,100	0.31
041M640501	9/4/1997	µg/kg	1,300		Benzo(a)anthracene	261	1,600	0.81
041M640501	9/4/1997	µg/kg	1,200	J	Benzo(a)pyrene	430	1,600	0.75
041M640501	9/4/1997	µg/kg	1,300		Chrysene	384	2,800	0.46
041M640501	9/4/1997	µg/kg	435	UJ	Dibenz(a,h)anthracene	63.4	260	1.67
041M640501	9/4/1997	µg/kg	2,800		Fluoranthene	600	5,100	0.55
041M640501	9/4/1997	µg/kg	290	J	Fluorene	19	540	0.54
041M640501	9/4/1997	µg/kg	110	J	Naphthalene	160	2,100	0.05
041M640501	**9/4/1997**	**µg/kg**	**2,000**		**Phenanthrene**	**240**	**1,500**	**1.33**
041M640501	**9/4/1997**	**µg/kg**	**3,000**	**J**	**Pyrene**	**665**	**2,600**	**1.15**

Table 11-3-16
Wetland 64 Phase III
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640501	9/4/1997				ERM Quotient Sum			23.54
041M640501	9/4/1997				Mean ERM Quotient			0.94
041M640501	9/4/1997				Mean ERM Quotient without ND			0.82
041M640501	9/4/1997				Mean ERM Quotient Category			3
041M640601	9/3/1997	mg/kg	7.8		Arsenic	8.2	70	0.11
041M640601	**9/3/1997**	**mg/kg**	**21**		**Cadmium**	**1.2**	**9.6**	**2.19**
041M640601	**9/3/1997**	**mg/kg**	**868**		**Chromium**	**81**	**370**	**2.35**
041M640601	9/3/1997	mg/kg	115		Copper	34	270	0.43
041M640601	**9/3/1997**	**mg/kg**	**339**		**Lead**	**46.7**	**218**	**1.56**
041M640601	9/3/1997	mg/kg	0.25		Mercury	0.15	0.71	0.35
041M640601	9/3/1997	mg/kg	11.3		Nickel	20.9	51.6	0.22
041M640601	9/3/1997	mg/kg	1.9	J	Silver	1	3.7	0.51
041M640601	9/3/1997	mg/kg	330		Zinc	150	410	0.80
041M640601	**9/3/1997**	**µg/kg**	**44**		**4,4'-DDE**	**2.2**	**27**	**1.63**
041M640601	9/3/1997	µg/kg	19		4,4'-DDT	1.58	46.1	0.41
041M640601	**9/3/1997**	**µg/kg**	**565**		**Total PCBs**	**22.7**	**180**	**3.14**
041M640601	9/3/1997	µg/kg	550	U	2-Methylnaphthalene	70	670	0.82
041M640601	**9/3/1997**	**µg/kg**	**750**	**J**	**Acenaphthene**	**16**	**500**	**1.50**
041M640601	9/3/1997	µg/kg	550	U	Acenaphthylene	44	640	0.86
041M640601	9/3/1997	µg/kg	1,000	J	Anthracene	85.3	1,100	0.91
041M640601	**9/3/1997**	**µg/kg**	**2,100**		**Benzo(a)anthracene**	**261**	**1,600**	**1.31**
041M640601	**9/3/1997**	**µg/kg**	**1,700**		**Benzo(a)pyrene**	**430**	**1,600**	**1.06**
041M640601	9/3/1997	µg/kg	2,100		Chrysene	384	2,800	0.75
041M640601	9/3/1997	µg/kg	550	U	Dibenz(a,h)anthracene	63.4	260	2.12
041M640601	9/3/1997	µg/kg	5,000		Fluoranthene	600	5,100	0.98
041M640601	**9/3/1997**	**µg/kg**	**750**	**J**	**Fluorene**	**19**	**540**	**1.39**
041M640601	9/3/1997	µg/kg	310	J	Naphthalene	160	2,100	0.15
041M640601	**9/3/1997**	**µg/kg**	**4,300**		**Phenanthrene**	**240**	**1,500**	**2.87**
041M640601	**9/3/1997**	**µg/kg**	**4,800**	**J**	**Pyrene**	**665**	**2,600**	**1.85**
041M640601	9/3/1997				ERM Quotient Sum			30.26
041M640601	9/3/1997				Mean ERM Quotient			1.21
041M640601	9/3/1997				Mean ERM Quotient without ND			1.06
041M640601	9/3/1997				Mean ERM Quotient Category			4

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-3-17
Wetland 64 Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement	Rationale
Metals (µg/L)																
Aluminum	1	2	72	72	72	185	298	298	041W640501	298			NA		Yes	No SV
Antimony	1	2	1.3	1.3	1.3	2.55	3.8	3.8	041W640101	3.8	J		NA		Yes	No SV
Arsenic	0	2	1.1	1.1	1.1	1.1			ND	1.1	U	36	EPA	0.03	No	Max SQL< SV
Barium	2	2				35	33.6	36.4	041W640101	36.4			NA		Yes	No SV
Beryllium	0	2	0.095	0.095	0.095	0.095			ND	0.095	U		NA		Yes	No SV
Cadmium	1	2	0.29	0.29	0.29	0.565	0.84	0.84	041W640101	0.84	J	9.3	EPA	0.09	No	Max Detect < SV
Calcium	2	2				118,000	99,000	137,000	041W640501	137,000			NA		Yes	No SV
Chromium	2	2				10.5	8.5	12.5	041W640501	12.5		50	EPA	0.25	No	Max Detect < SV
Cobalt	0	2	0.265	0.265	0.265	0.265			ND	0.265	U		NA		Yes	No SV
Copper	**2**	**2**				**5**	**4.2**	**5.8**	**041W640101**	**5.8**		**2.9**	**EPA**	**2**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	2	0.7	0.7	0.7	0.7			ND	0.7	U	1	EPA	0.7	No	Max SQL< SV
Iron	2	2				766	702	829	041W640101	829			NA		Yes	No SV
Lead	**2**	**2**				**7.2**	**5.8**	**8.6**	**041W640501**	**8.6**		**8.5**	**EPA**	**1.01**	**Yes**	**Max Detect > SV**
Magnesium	2	2				348,000	274,000	421,000	041W640501	421,000			NA		Yes	No SV
Manganese	2	2				32.7	28.3	37.1	041W640101	37.1			NA		Yes	No SV
Mercury	**1**	**2**	**0.025**	**0.025**	**0.025**	**0.0425**	**0.06**	**0.06**	**041W640501**	**0.06**	**J**	**0.025**	**EPA**	**2.4**	**Yes**	**Max Detect > SV**
Nickel	1	2	0.6	0.6	0.6	1.6	2.6	2.6	041W640101	2.6	J	8.3	EPA	0.31	No	Max Detect < SV
Potassium	2	2				159,000	113,000	205,000	041W640501	205,000	J		NA		Yes	No SV
Selenium	0	2	1.3	1.3	1.3	1.3			ND	1.3	U	71	EPA	0.02	No	Max SQL< SV
Silver	2	2				0.045	0.04	0.05	041W640101	0.05	J	0.23	EPA	0.22	No	Max Detect < SV
Sodium	2	2				2,950,000	2,290,000	3,600,000	041W640501	3,600,000			NA		Yes	No SV
Thallium	0	2	0.6	0.6	0.6	0.6			ND	0.6	UJ	6.3	FDEP	0.10	No	Max SQL< SV
Vanadium	0	2	1.35	0.95	1.75	1.35			ND	1.75	U		NA		Yes	No SV
Zinc	2	2				17.1	10.1	24.1	041W640101	24.1	J	86	EPA	0.28	No	Max Detect < SV
Pesticides (µg/L)																
Aldrin	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Dieldrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan I	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.0087	EPA	2.87	Yes	Max SQL > SV
Endosulfan II	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endosulfan sulfate	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Heptachlor	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.0036	EPA	6.94	Yes	Max SQL > SV
Heptachlor epoxide	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	2	0.25	0.25	0.25	0.25			ND	0.25	U		NA		Yes	No SV
Toxaphene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
alpha-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
Total Chlordane	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.004	EPA	12.5	Yes	Max SQL > SV
Endrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin aldehyde	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA		Yes	No SV
Endrin ketone	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	21.7	Yes	Max SQL > SV
Total Endrin	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
alpha-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.005	FDEP	5	Yes	Max SQL > SV
beta-BHC	1	2	0.0031	0.0031	0.0031	0.00515	0.0072	0.0072	041W640101	0.0072	J		NA		Yes	No SV
delta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA		Yes	No SV
gamma-BHC (Lindane)	0	2	0.0016	0.00125	0.00195	0.0016			ND	0.00195	U	0.016	EPA	0.12	No	Max SQL< SV
Total BHC	1	2	0.0551	0.05505	0.05505	0.0568	0.05845	0.05845	041W640101	0.05845			NA		Yes	No SV
4,4'-DDD	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	84.7	Yes	Max SQL > SV
Total DDT	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA		Yes	No SV
PCBs (µg/L)																
Aroclor-1016	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1221	0	2	1	1	1	1			ND	1	U		NA		Yes	No SV
Aroclor-1232	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1242	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1248	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1254	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Aroclor-1260	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	FDEP	35.7	Yes	Max SQL > SV
Total PCB	0	2	4	4	4	4			ND	4	U		NA		Yes	No SV
SVOCs (µg/L)																
1,2,4-Trichlorobenzene	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	2	5	5	5	5			ND	5	U	19.7	EPA	0.25	No	Max SQL< SV
1,3-Dichlorobenzene	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	2	5	5	5	5			ND	5	U	3	FDEP	1.67	Yes	Max SQL > SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV

Table 11-3-17
Wetland 64 Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement	Rationale
SVOCs (µg/L) - cont.																
2,4-Dimethylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
2,4-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chloronaphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Chlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
2-Nitrophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
3-Methylphenol/4-Methylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
3-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chloroaniline	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
4-Nitrophenol	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Butylbenzylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Carbazole	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV
Dibenzofuran	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Diethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dimethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Di-n-butylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	3.4	EPA	0.74	No	Max SQL< SV
Di-n-octylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorobutadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Hexachloroethane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Isophorone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Nitrobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
N-Nitrosodiphenylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pentachlorophenol	0	2	10	10	10	10			ND	10	U		NA		Yes	No SV
Phenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
PAHs (µg/L)																
2-Methylnaphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acenaphthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Acenaphthylene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Chrysene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Fluorene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Naphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	23.5	EPA	0.11	No	Max SQL< SV
Phenanthrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Total PAH	0	2	32.5	32.5	32.5	32.5			ND	32.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	1	2	0.5	0.5	0.5	0.355	0.21	0.21	041W640101	0.21	J	270	FDEP	0.00	No	Max Detect < SV
1,1,2,2-Tetrachloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,1-Dichloroethane	1	2	0.5	0.5	0.5	0.7	0.9	0.9	041W640101	0.9	J		NA		Yes	No SV
1,1-Dichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	3.2	FDEP	0.16	No	Max SQL< SV
1,2-Dichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichloroethene (total)	2	2				0.4	0.21	0.59	041W640101	0.59	J		NA		Yes	No SV
1,2-Dichloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
2-Butanone (MEK)	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV

Table 11-3-17
Wetland 64 Phase III
Surface Water Screening

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maximum SQL	Average Result	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Screening HQ	Retained for Refinement	Rationale
VOCs (µg/L) - cont.																
2-Hexanone	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	2	5	5	5	5			ND	5	U		NA		Yes	No SV
Acetone	1	2	12.5	12.5	12.5	18.3	24	24	041W640101	24	J		NA		Yes	No SV
Benzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	71.28	FDEP	0.01	No	Max SQL< SV
Bromodichloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromoform	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromomethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon disulfide	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Carbon tetrachloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	17	FDEP	0.03	No	Max SQL< SV
Chloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chloroform	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	470.8	FDEP	0.00	No	Max SQL< SV
Chloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
cis-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Ethylbenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	4.3	EPA	0.12	No	Max SQL< SV
Methylene chloride	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	1,580	FDEP	0.00	No	Max SQL< SV
Styrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Tetrachloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Toluene	1	2	0.5	0.5	0.5	0.43	0.36	0.36	041W640501	0.36	J	37	EPA	0.01	No	Max Detect < SV
trans-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	1	2	0.5	0.5	0.5	0.42	0.34	0.34	041W640101	0.34	J		NA		Yes	No SV
Vinyl chloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Xylene (Total)	0	2	1	1	1	1			ND	1	U		NA		Yes	No SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8).
RV = Refinement value (detailed explanation of RVs provided in Section 8).
HQ = Hazard Quotient.
N/R = No refinement value available.
N/A = Not Applicable.

Average result calculations include summing detections and one half the detection limits for not detected parameters. As a result, some average detections may exceed the maximum detections.
Parameters in bold were detected and exceeded the screening value.

Table 11-3-18
Wetland 64 Phase III
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	beta-BHC	None	1,1-Dichloroethane
Antimony	Total BHC		1,2-Dichloroethene (total)
Barium			Acetone
Calcium			Trichloroethene
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Mercury			
Potassium			
Sodium			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Cobalt	Dieldrin	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Vanadium	Endosulfan I	1,4-Dichlorobenzene	1,2-Dichloroethane
	Endosulfan II	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,2-Dichloropropane
	Endosulfan sulfate	2,4,5-Trichlorophenol	2-Butanone (MEK)
	Heptachlor	2,4,6-Trichlorophenol	2-Hexanone
	Heptachlor epoxide	2,4-Dichlorophenol	4-Methyl-2-Pentanone (MIBK)
	Methoxychlor	2,4-Dimethylphenol	Bromodichloromethane
	Toxaphene	2,4-Dinitrophenol	Bromoform
	alpha-Chlordane	2,4-Dinitrotoluene	Bromomethane
	gamma-Chlordane	2,6-Dinitrotoluene	Carbon disulfide
	Total Chlordane	2-Chloronaphthalene	Carbon tetrachloride
	Endrin	2-Chlorophenol	Chloroethane
	Endrin aldehyde	2-Methyl-4,6-Dinitrophenol	Chloromethane
	Endrin ketone	2-Methylphenol (o-Cresol)	cis-1,3-Dichloropropene
	Total Endrin	2-Nitroaniline	Dibromochloromethane
	alpha-BHC	2-Nitrophenol	Styrene
	delta-BHC	3,3'-Dichlorobenzidine	Tetrachloroethene
	4,4'-DDD	3-Methylphenol/4-Methylphenol	trans-1,3-Dichloropropene
	4,4'-DDE	3-Nitroaniline	Vinyl chloride
	4,4'-DDT	4-Bromophenyl-phenylether	Xylene (Total)
	Total DDT	4-Chloro-3-methylphenol	
	Aroclor-1016	4-Chloroaniline	
	Aroclor-1221	4-Chlorophenylphenyl ether	
	Aroclor-1232	4-Nitroaniline	
	Aroclor-1242	4-Nitrophenol	
	Aroclor-1248	Benzo(b)fluoranthene	
	Aroclor-1254	Benzo(g,h,i)perylene	
	Aroclor-1260	Benzo(k)fluoranthene	
	Total PCBs	bis(2-Chloroethoxy)methane	
		bis(2-Chloroethyl)ether	
		bis(2-Ethylhexyl)phthalate (BEHP)	
		Butylbenzylphthalate	
		Carbazole	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	
		2-Methylnaphthalene	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	
		Pyrene	
		Total PAHs	

Table 11-3-19
Wetland 64 Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
Metals (µg/L)																			
Aluminum	1	2	72	72	72	185	298	298	041W640501	298			NA			2,927.50	0	No	Max Result < Ref. Conc.
Antimony	1	2	1.3	1.3	1.3	2.55	3.8	3.8	041W640101	3.8	J		NA			4.15	0	No	Max Result < Ref. Conc.
Barium	**2**	**2**				**35**	**33.6**	**36.4**	**041W640101**	**36.4**			**NA**			**9.43**	**2**	**Yes**	**Max Result > Ref. Conc.**
Beryllium	0	2	0.095	0.095	0.095	0.095			ND	0.095	U		NA			0.82	0	No	Max SQL < Ref. Conc.
Calcium	**2**	**2**				**118,000**	**99,000**	**137,000**	**041W640501**	**137,000**			**NA**			**76,800**	**2**	**No**	**Essential Nutrient**
Cobalt	0	2	0.265	0.265	0.265	0.265			ND	0.265	U		NA			2.38	0	No	Max SQL < Ref. Conc.
Copper	2	2				5	4.2	5.8	041W640101	5.8		2.9	EPA	2	1.72	7.03	0	No	Max Result < Ref. Conc.
Iron	2	2				766	702	829	041W640101	829			NA			1352	0	No	Max Result < Ref. Conc.
Lead	2	2				7.2	5.8	8.6	041W640501	8.6		8.5	EPA	1.01	0.85	13.75	0	No	Max Result < Ref. Conc.
Magnesium	**2**	**2**				**348,000**	**274,000**	**421,000**	**041W640501**	**421,000**			**NA**			**243,650**	**2**	**No**	**Essential Nutrient**
Manganese	**2**	**2**				**32.7**	**28.3**	**37.1**	**041W640101**	**37.1**			**NA**			**12.15**	**2**	**Yes**	**Max Result > Ref. Conc.**
Mercury	1	2	0.025	0.025	0.025	0.0425	0.06	0.06	041W640501	0.06	J	0.025	EPA	2.4	1.7	0.21	0	No	Max Result < Ref. Conc.
Potassium	**2**	**2**				**159,000**	**113,000**	**205,000**	**041W640501**	**205,000**	**J**		**NA**			**81,250**	**2**	**No**	**Essential Nutrient**
Sodium	**2**	**2**				**2,950,000**	**2,290,000**	**3,600,000**	**041W640501**	**3,600,000**			**NA**			**1,952,000**	**2**	**No**	**Essential Nutrient**
Vanadium	0	2	1.35	0.95	1.75	1.35			ND	1.75	U		NA			6.69	0	No	Max SQL < Ref. Conc.
Pesticides (µg/L)																			
Aldrin	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
Dieldrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endosulfan I	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.0087	EPA	3	2.87		0	No	Parameter Not Detected; Max SQL > SV
Endosulfan II	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endosulfan sulfate	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Heptachlor	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.0036	EPA	7	6.94		0	No	Parameter Not Detected; Max SQL > SV
Heptachlor epoxide	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	No	Parameter Not Detected; Max SQL > SV
Methoxychlor	0	2	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	No	Parameter Not Detected
Toxaphene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
alpha-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
gamma-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
Total Chlordane	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.004	EPA	12.5	12.5		0	No	Parameter Not Detected; Max SQL > SV
Endrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endrin aldehyde	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	No	Parameter Not Detected
Endrin ketone	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	22	21.7		0	No	Parameter Not Detected; Max SQL > SV
Total Endrin	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	No	Parameter Not Detected
alpha-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.005	FDEP	5	5		0	No	Parameter Not Detected; Max SQL > SV
beta-BHC	1	2	0.0031	0.0031	0.0031	0.00515	0.0072	0.0072	041W640101	0.0072	J		NA				0	Yes	No SV
delta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	No	Parameter Not Detected
gamma-BHC (Lindane)	0	2	0.0016	0.00125	0.00195	0.0016			ND	0.00195	U	0.016	EPA	0.12	0.1		0	No	Parameter Not Detected; Max SQL > SV
Total BHC	1	2	0.0551	0.05505	0.05505	0.0568	0.05845	0.05845	041W640101	0.05845			NA				0	Yes	No SV
4,4'-DDD	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	No	Parameter Not Detected; Max SQL > SV
4,4'-DDE	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	No	Parameter Not Detected; Max SQL > SV
4,4'-DDT	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	No	Parameter Not Detected; Max SQL > SV
Total DDT	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	No	Parameter Not Detected
PCBs (µg/L)																			
Aroclor-1016	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1221	0	2	1	1	1	1			ND	1	U		NA				0	No	Parameter Not Detected
Aroclor-1232	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1242	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1248	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1254	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Aroclor-1260	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	FDEP	36	35.7		0	No	Parameter Not Detected; Max SQL > SV
Total PCB	0	2	4	4	4	4			ND	4	U		NA				0	No	Parameter Not Detected
SVOCs (µg/L)																			
1,2,4-Trichlorobenzene	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	2	5	5	5	5			ND	5	U	3	FDEP	2	1.67		0	No	Parameter Not Detected; Max SQL > SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dimethylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,4-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Chloronaphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Chlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
2-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
2-Nitrophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected

Table 11-3-19
Wetland 64 Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
SVOCs (µg/L) - cont.																			
3,3'-Dichlorobenzidine	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
3-Methylphenol/4-Methylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
3-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chloroaniline	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
4-Nitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
Benzo(b)fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Benzo(g,h,i)perylene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Benzo(k)fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Butylbenzylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Carbazole	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
Dibenzofuran	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Diethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Dimethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Di-n-octylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachlorobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachlorobutadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Hexachloroethane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Isophorone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Nitrobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Pentachlorophenol	0	2	10	10	10	10			ND	10	U		NA				0	No	Parameter Not Detected
Phenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
PAHs (µg/L)																			
2-Methylnaphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Acenaphthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Acenaphthylene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Benzo(a)anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Benzo(a)pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Chrysene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Dibenz(a,h)anthracene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Fluoranthene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Fluorene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Naphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	23.5	EPA	0.11	0.11		0	No	Max SQL < SV
Phenanthrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Pyrene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Total PAH	0	2	32.5	32.5	32.5	32.5			ND	32.5	U		NA				0	No	Parameter Not Detected
VOCs (µg/L)																			
1,1,2,2-Tetrachloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,1-Dichloroethane	1	2	0.5	0.5	0.5	0.7	0.9	0.9	041W640101	0.9	J		NA				0	Yes	No SV
1,2-Dichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dichloroethene (total)	2	2				0.4	0.21	0.59	041W640101	0.59	J		NA				0	Yes	No SV
1,2-Dichloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
2-Butanone (MEK)	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
2-Hexanone	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	2	5	5	5	5			ND	5	U		NA				0	No	Parameter Not Detected
Acetone	1	2	12.5	12.5	12.5	18.3	24	24	041W640101	24	J		NA				0	Yes	No SV
Bromodichloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromoform	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromomethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Carbon disulfide	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Carbon tetrachloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Dibromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Styrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected

Table 11-3-19
Wetland 64 Phase III
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Max SQL	Average Result	Minimum Detected	Max Detected	Maximum Detection Location	EPC	Q	Screening Value	Source	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Retained for Refinement?	Rationale
VOCs (µg/L) - cont.																			
Tetrachloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Trichloroethene	1	2	0.5	0.5	0.5	0.42	0.34	0.34	041W640101	0.34	J		NA				0	Yes	No SV
Vinyl chloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Xylene (Total)	0	2	1	1	1	1			ND	1	U		NA				0	No	Parameter Not Detected

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
UJ = Not detected. SQL is estimated.
D = Diluted Result
J = Estimated Value

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8)
RV = Refinement value (detailed explanation of RVs provided in Section 8)
PEL = Probable effects level.
N/R = No refinement value available.

N/A = Not Applicable.
Average result calculations include summing detections and one half the detection limits for not detectec
parameters. As a result, some average detections may exceed the Max detections
Parameters in bold were detected and exceeded Ref. Conc.s

Table 11-3-20
Wetland 64 Phase III
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Manganese	beta-BHC	None	1,2-Dichloroethene (total)
Barium	Total BHC		Acetone
			1,1-Dichloroethane
			Trichloroethene

Table 11-3-21
Wetland 64 Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
Metals (mg/kg)														
Aluminum	7	7			59	18,000	041M641102	18,000			N/A		Yes	No SV
Antimony	0	7	0.215	1.25			ND	1.25	U	12	2	0.10	No	Max SQL< SV
Arsenic	**5**	**7**	**0.225**	**0.275**	**3.2**	**13**	**041M641102**	**13**		**7.24**	**1, 2**	**1.8**	**Yes**	**Max Detect > SV**
Barium	7	7			0.17	18	041M641102	18			N/A		Yes	No SV
Beryllium	5	7	0.005	0.0065	0.15	1.1	041M641102	1.1	J		N/A		Yes	No SV
Cadmium	**6**	**7**	**0.032**	**0.0315**	**0.07**	**23**	**041M640502**	**23**		**0.676**	**1**	**34**	**Yes**	**Max Detect > SV**
Calcium	7	7			58	4,300	041M641102	4,300			N/A		Yes	No SV
Chromium	**7**	**7**			**1**	**700**	**041M640502**	**700**		**52.3**	**1, 2**	**13.4**	**Yes**	**Max Detect > SV**
Cobalt	5	7	0.0405	0.05	1	4.8	041M640502	4.8			N/A		Yes	No SV
Copper	**6**	**7**	**0.5**	**0.5**	**12**	**200**	**041M640502**	**200**		**18.7**	**1, 2**	**10.7**	**Yes**	**Max Detect > SV**
Iron	7	7			48	33,000	041M641102	33,000			N/A		Yes	No SV
Lead	**7**	**7**			**0.38**	**430**	**041M640502**	**430**		**30.2**	**1, 2**	**14.2**	**Yes**	**Max Detect > SV**
Magnesium	7	7			110	10,000	041M641102	10,000			N/A		Yes	No SV
Manganese	7	7			0.31	230	041M641102	230			N/A		Yes	No SV
Mercury	**6**	**7**	**0.003**	**0.00285**	**0.0066**	**0.46**	**041M641102**	**0.46**		**0.13**	**1, 2**	**3.54**	**Yes**	**Max Detect > SV**
Nickel	6	7	0.09	0.09	0.26	15	041M640502	15		15.9	1, 2	0.94	No	Max Detect < SV
Potassium	7	7			44	4,200	041M641102	4,200			N/A		Yes	No SV
Selenium	0	7	0.185	1.1			ND	1.1	U		N/A		Yes	No SV
Silver	**5**	**7**	**0.036**	**0.044**	**1.3**	**4**	**041M640502**	**4**		**0.733**	**1**	**5.46**	**Yes**	**Max Detect > SV**
Sodium	7	7			560	48,000	041M641102	48,000			N/A		Yes	No SV
Thallium	0	7	0.23	1.35			ND	1.35	U		N/A		Yes	No SV
Vanadium	7	7			0.12	37	041M641102	37			N/A		Yes	No SV
Zinc	**6**	**7**	**0.065**	**0.065**	**3**	**380**	**041M640502**	**380**		**124**	**1, 2**	**3.06**	**Yes**	**Max Detect > SV**
PAHs (µg/kg)														
2-Methylnaphthalene	0	7	200	6,500			ND	6,500	U	20.2	1	322	Yes	Max SQL > SV
Acenaphthene	0	7	200	6,500			ND	6,500	U	6.71	1	969	Yes	Max SQL > SV
Acenaphthylene	0	7	200	6,500			ND	6,500	U	5.87	1	1,110	Yes	Max SQL > SV
Anthracene	0	7	200	6,500			ND	6,500	U	46.9	1	139	Yes	Max SQL > SV
Benzo(a)anthracene	**2**	**7**	**200**	**6,500**	**660**	**870**	**041M640502**	**870**	**J**	**74.8**	**1**	**11.6**	**Yes**	**Max Detect > SV**
Benzo(a)pyrene	**2**	**7**	**200**	**6,500**	**540**	**800**	**041M640502**	**800**	**J**	**88.8**	**1**	**9.01**	**Yes**	**Max Detect > SV**
Chrysene	**2**	**7**	**200**	**6,500**	**840**	**860**	**041M640502**	**860**	**J**	**108**	**1**	**7.96**	**Yes**	**Max Detect > SV**
Dibenz(a,h)anthracene	0	7	200	6,500			ND	6,500	U	6.22	1	1,050	Yes	Max SQL > SV
Fluoranthene	**2**	**7**	**200**	**6,500**	**1,600**	**1,800**	**041M640502**	**1,800**	**J**	**113**	**1**	**15.9**	**Yes**	**Max Detect > SV**
Fluorene	0	7	200	6,500			ND	6,500	U	21.2	1	307	Yes	Max SQL > SV
Naphthalene	0	7	200	6,500			ND	6,500	U	34.6	1	188	Yes	Max SQL > SV
Phenanthrene	**3**	**7**	**200**	**6,500**	**230**	**1,100**	**041M640502**	**1,100**	**J**	**86.7**	**1**	**12.7**	**Yes**	**Max Detect > SV**
Pyrene	**2**	**7**	**200**	**6,500**	**1,400**	**1,600**	**041M640502**	**1,600**	**J**	**153**	**1**	**10.5**	**Yes**	**Max Detect > SV**
Total PAHs	**3**	**7**	**2,600**	**84,500**	**22,800**	**28,000**	**041M640502**	**28,000**		**1,684**	**1, 2**	**16.63**	**Yes**	**Max Detect > SV**
TOC Normalized PAHs	**3**	**7**	**963**	**1,903.57**	**144.61**	**651.71**	**041M640602**	**651.7**		**290**	**3**	**2.25**	**Yes**	**Max Detect > SV**
PCBs (µg/kg)														
Aroclor-1016	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Aroclor-1221	0	7	41	1,350			ND	1,350	UJ	67	2	20.1	No	Max SQL< SV
Aroclor-1232	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Aroclor-1242	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Aroclor-1248	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Aroclor-1254	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Aroclor-1260	0	7	20	650			ND	650	UJ	21.6	N/A	30.1	No	Max SQL< SV
Total PCBs	0	7	161	5,250			ND	5,250	U	21.6	1	243	Yes	Max SQL > SV
Pesticides (µg/kg)														
Aldrin	0	7	1.05	34			ND	34	UJ		N/A		Yes	No SV
Dieldrin	0	7	2	65			ND	65	UJ	0.716	1	90.8	Yes	Max SQL > SV
Endosulfan I	0	7	1.05	34			ND	34	UJ		N/A		Yes	No SV
Endosulfan II	0	7	2	65			ND	65	UJ		N/A		Yes	No SV
Endosulfan sulfate	0	7	2	65			ND	65	UJ		N/A		Yes	No SV
Heptachlor	0	7	1.05	34			ND	34	UJ		N/A		Yes	No SV
Heptachlor epoxide	2	7	1.05	34	4.4	6.2	041M640602	6.2	J		N/A		Yes	No SV
Methoxychlor	0	7	10.5	340			ND	340	UJ		N/A		Yes	No SV
Toxaphene	0	7	105	3,400			ND	3,400	UJ		N/A		Yes	No SV
alpha-Chlordane	0	7	1.05	34			ND	34	UJ	1.7	1	20	No	Max SQL< SV
gamma-Chlordane	0	7	1.05	34			ND	34	UJ	1.7	1	20	No	Max SQL< SV
Total Chlordane	0	7	2.1	68			ND	68	U	1.7	1	40	Yes	Max SQL > SV
Endrin	0	7	2	65			ND	65	UJ	3.3	2	19.7	No	Max SQL< SV
Endrin aldehyde	0	7	2	65			ND	65	UJ	3.3	2	19.7	No	Max SQL< SV
Endrin ketone	0	7	2	65			ND	65	UJ	3.3	2	19.7	No	Max SQL< SV
Total Endrin	0	7	6	195			ND	195	U	3.3	2	59.1	Yes	Max SQL > SV
alpha-BHC	0	7	1.05	34			ND	34	UJ		N/A		Yes	No SV
beta-BHC	0	7	1.05	34			ND	34	UJ	0.32	N/A	106	Yes	Max SQL > SV
delta-BHC	**5**	**7**	**1.05**	**11**	**0.66**	**6.9**	**041M641102**	**6.9**	**J**	**0.32**	**N/A**	**21.6**	**Yes**	**Max Detect > SV**
gamma-BHC (Lindane)	0	7	1.05	34			ND	34	UJ	0.32	1	106	Yes	Max SQL > SV
Total BHC	**5**	**7**	**4.2**	**44**	**3.81**	**109**	**041M641102**	**109**		**0.32**	**2**	**340**	**Yes**	**Max Detect > SV**
4,4'-DDD	**1**	**7**	**2**	**65**	**100**	**100**	**041M640602**	**100**	**J**	**1.22**	**1**	**82**	**Yes**	**Max Detect > SV**
4,4'-DDE	**4**	**7**	**2**	**65**	**8.4**	**43**	**041M640202**	**43**	**J**	**2.07**	**1**	**20.8**	**Yes**	**Max Detect > SV**
4,4'-DDT	0	7	2	65			ND	65	UJ	1.19	1	54.6	Yes	Max SQL > SV
Total DDT	**4**	**7**	**6**	**195**	**36.9**	**154**	**041M640602**	**154**		**3.3**	**2**	**46.7**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2-Chloronaphthalene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2-Chlorophenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
2-Nitroaniline	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
2-Nitrophenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	7	400	13,000			ND	13,000	U		N/A		Yes	No SV
3-Methylphenol/4-Methylphenol	0	7	200	6,500			ND	6,500	U				Yes	No SV
3-Nitroaniline	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
4-Chloroaniline	0	7	400	13,000			ND	13,000	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
4-Nitroaniline	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
4-Nitrophenol	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
Benzidine	0	7	1,650	55,000			ND	55,000	UJ				Yes	No SV
Benzo(b)fluoranthene	2	7	200	6,500	630	780	041M640502	780	J		N/A		Yes	No SV
Benzo(g,h,i)perylene	2	7	200	6,500	420	490	041M640502	490	J		N/A		Yes	No SV
Benzo(k)fluoranthene	2	7	200	6,500	510	910	041M640502	910	J		N/A		Yes	No SV
Benzoic acid	0	7	1,050	34,000			ND	34,000	U				Yes	No SV
Benzyl alcohol	0	7	200	6,500			ND	6,500	U				Yes	No SV
bis(2-Chloroethoxy)methane	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**3**	**7**	**200**	**6,500**	**980**	**1,500**	**041M640502**	**1,500**	**J**	**182**	**1, 2**	**8.24**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	7	200	6,500			ND	6,500	U	182	1, 2	35.7	Yes	Max SQL > SV
Dibenzofuran	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV

Table 11-3-21
Wetland 64 Phase IV
Sediment Screening

Parameter	Number Detected	Number Analyzed	Min SQL	Max SQL	Minimum Detected	Maximum Detected	Maximum Detection Location	EPC	Q	SV	Source	SHQ	Retained for Refinement	Rationale
SVOCs (µg/kg) - cont.														
Diethylphthalate	0	7	200	6,500			ND	6,500	U	182	1, 2	35.7	Yes	Max SQL > SV
Dimethylphthalate	0	7	200	6,500			ND	6,500	U	182	1, 2	35.7	Yes	Max SQL > SV
Di-n-butylphthalate	0	7	200	6,500			ND	6,500	U	182	1, 2	35.7	Yes	Max SQL > SV
Di-n-octylphthalate	0	7	200	6,500			ND	6,500	U	182	1, 2	35.7	Yes	Max SQL > SV
DiphenylaMaxe	0	7	200	6,500			ND	6,500	U				Yes	No SV
Hexachlorobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Hexachlorobutadiene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Hexachloroethane	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Isophorone	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Nitrobenzene	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
N-Nitrosodimethylamine	0	7	200	6,500			ND	6,500	U				Yes	No SV
N-Nitroso-di-n-propylamine	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV
Pentachlorophenol	0	7	1,050	34,000			ND	34,000	U		N/A		Yes	No SV
Phenol	0	7	200	6,500			ND	6,500	U		N/A		Yes	No SV

Notes:
Sources for Screening Values:
SV = Screening Value
1 = USEPA Region 4 Screening Value. Detailed explanation for SVs provided in Section 8.0.
2 = FDEP Threshold effects level

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available.
U or ND = Not Detected at or above the SQL
J = Estimated value
SHQ = Screening Hazard Quotient
D = Diluted Result
mg/kg = milligrams per kilograms
µg/kg = micrograms per kilograms
mg/kg oc = milligrams per kilograms - organic carbon
UJ = Not detected. SQL is estimated.
Parameters in bold were detected and exceeded screening values.

Table 11-3-22
Wetland 64 Phase IV
Sediment Parameters Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	Benzo(a)anthracene	Not Analyzed
Arsenic	4,4'-DDE	Benzo(a)pyrene	
Barium	delta-BHC	Benzo(b)fluoranthene	
Beryllium	Heptachlor epoxide	Benzo(g,h,i)perylene	
Cadmium	Total BHC	Benzo(k)fluoranthene	
Calcium	Total DDT	bis(2-Ethylhexyl)phthalate (BEHP)	
Chromium		Chrysene	
Cobalt		Fluoranthene	
Copper		Phenanthrene	
Iron		Pyrene	
Lead		TOC Normalized PAHs	
Magnesium		Total PAHs	
Manganese			
Mercury			
Potassium			
Silver			
Sodium			
Vanadium			
Zinc			
		Not Detected Parameters	
Selenium	4,4'-DDT	1,2,4-Trichlorobenzene	Not Analyzed
Thallium	Aldrin	1,2-Dichlorobenzene	
	alpha-BHC	1,3-Dichlorobenzene	
	beta-BHC	1,4-Dichlorobenzene	
	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	
	Endosulfan I	2,4,5-Trichlorophenol	
	Endosulfan II	2,4,6-Trichlorophenol	
	Endosulfan sulfate	2,4-Dichlorophenol	
	gamma-BHC (Lindane)	2,4-Dimethylphenol	
	Heptachlor	2,4-Dinitrophenol	
	Methoxychlor	2,4-Dinitrotoluene	
	Total Chlordane	2,6-Dinitrotoluene	
	Total Endrin	2-Chloronaphthalene	
	Toxaphene	2-Chlorophenol	
	Total PCBs	2-Methyl-4,6-Dinitrophenol	
		2-Methylnaphthalene	
		2-Methylphenol (o-Cresol)	
		2-Nitroaniline	
		2-Nitrophenol	
		3,3'-Dichlorobenzidine	
		3-Methylphenol/4-Methylphenol	
		3-Nitroaniline	
		4-Bromophenyl-phenylether	
		4-Chloro-3-methylphenol	
		4-Chloroaniline	
		4-Chlorophenylphenyl ether	
		4-Nitroaniline	
		4-Nitrophenol	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzidine	
		Benzoic acid	
		Benzyl alcohol	
		bis(2-Chloroethoxy)methane	
		bis(2-Chloroethyl)ether	
		Butylbenzylphthalate	
		Dibenz(a,h)anthracene	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-butylphthalate	
		Di-n-octylphthalate	
		DiphenylaMaxe	
		Fluorene	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Naphthalene	
		Nitrobenzene	
		N-NitrosodimethylaMaxe	
		N-Nitroso-di-n-propylaMaxe	
		Pentachlorophenol	
		Phenol	

Table 11-3-23
Wetland 64 Phase IV
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQl	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																							
Aluminum	7	7				5,400	59	18,000	18,000		041M641102			NA					0	4,274	3	Yes	EPC > RC and no RV
Arsenic	5	7	0.25	0.225	0.275	5.43	3.2	13	13		041M641102	7.24	41.6	PEL	1.8	0.75	0.31	0.13	0	2.14	5	No	EPC > RC, but < RV
Barium	7	7				9.58	0.17	18	18		041M641102			NA					0	3.84	6	Yes	EPC > RC and no RV
Beryllium	5	7	0.00575	0.005	0.0065	0.314	0.15	1.1	1.1	J	041M641102			NA					0	0.13	5	Yes	EPC > RC and no RV
Cadmium	**6**	**7**	**0.0315**	**0.0315**	**0.0315**	**10.2**	**0.07**	**23**	**23**		**041M640502**	**0.68**	**4.21**	**PEL**	**34**	**15.2**	**5.46**	**2.43**	**5**	**0.39**	**5**	**Yes**	**EPC > RV and RC**
Calcium	7	7				1,860	58	4,300	4,300		041M641102			NA					0	1,978.80	4	No	Essential Nutrient
Chromium	**7**	**7**				**360**	**1**	**700**	**700**		**041M640502**	**52.3**	**160**	**PEL**	**13.4**	**6.88**	**4.38**	**2.25**	**5**	**13.1**	**5**	**Yes**	**EPC > RV and RC**
Cobalt	5	7	0.0452	0.0405	0.05	1.84	1	4.8	4.8		041M640502			NA					0	0.91	5	Yes	EPC > RC and no RV
Copper	**6**	**7**	**0.5**	**0.5**	**0.5**	**75.8**	**12**	**200**	**200**		**041M640502**	**18.7**	**108**	**PEL**	**10.7**	**4.05**	**1.85**	**0.70**	**2**	**8.44**	**6**	**Yes**	**EPC > RV and RC**
Iron	7	7				11,300	48	33,000	33,000		041M641102			NA					0	2,684.40	5	Yes	EPC > RC and no RV
Lead	**7**	**7**				**164**	**0.38**	**430**	**430**		**041M640502**	**30.2**	**112**	**PEL**	**14.2**	**5.44**	**3.84**	**1.47**	**5**	**21.04**	**5**	**Yes**	**EPC > RV and RC**
Magnesium	7	7				2,900	110	10,000	10,000		041M641102			NA					0	2,943.60	2	No	Essential Nutrient
Manganese	7	7				59.9	0.31	230	230		041M641102			NA					0	9.81	5	Yes	EPC > RC and no RV
Mercury	6	7	0.00285	0.00285	0.00285	0.188	0.0066	0.46	0.46		041M641102	0.13	0.696	PEL	3.54	1.45	0.66	0.27	0	0.11	5	No	EPC > RC, but < RV
Potassium	7	7				1,090	44	4,200	4,200		041M641102			NA					0	899.72	2	No	Essential Nutrient
Selenium	0	7	0.478	0.185	1.1	0.478			1.1	U	ND			NA					0	0.66	1	No	Parameter Not Detected
Silver	**5**	**7**	**0.0397**	**0.0355**	**0.044**	**1.44**	**1.3**	**4**	**4**		**041M640502**	**0.73**	**1.77**	**PEL**	**5.46**	**1.96**	**2.26**	**0.81**	**2**	**0.52**	**5**	**Yes**	**EPC > RV and RC**
Sodium	7	7				12,500	560	48,000	48,000		041M641102			NA					0	11,439.60	2	No	Essential Nutrient
Thallium	0	7	0.593	0.23	1.35	0.593			1.35	U	ND			NA					0	0.39	5	No	Parameter Not Detected
Vanadium	7	7				13.2	0.12	37	37		041M641102			NA					0	8.59	4	Yes	EPC > RC and no RV
Zinc	**6**	**7**	**0.065**	**0.065**	**0.065**	**180**	**3**	**380**	**380**		**041M640502**	**124**	**271**	**PEL**	**3.06**	**1.46**	**1.4**	**0.67**	**2**	**14.36**	**5**	**Yes**	**EPC > RV and RC**
PAHs (µg/kg)																							
2-Methylnaphthalene	0	7	2,550	200	6,500	2,550			6,500	U	ND	20.2	201	PEL	322	126	32.3	12.7	0		0	No	Parameter Not Detected; Max SQL > RV
Acenaphthene	0	7	2,550	200	6,500	2,550			6,500	U	ND	6.71	88.9	PEL	969	380	73.1	28.7	0		0	No	Parameter Not Detected; Max SQL > RV
Acenaphthylene	0	7	2,550	200	6,500	2,550			6,500	U	ND	5.87	128	PEL	1,110	435	50.8	19.9	0		0	No	Parameter Not Detected; Max SQL > RV
Anthracene	0	7	2,550	200	6,500	2,550			6,500	U	ND	46.9	245	PEL	139	54.4	26.5	10.4	0		0	No	Parameter Not Detected; Max SQL > RV
Benzo(a)anthracene	**2**	**7**	**2,490**	**200**	**6,500**	**2,000**	**660**	**870**	**870**	**J**	**041M640502**	**74.8**	**693**	**PEL**	**11.6**	**26.7**	**1.26**	**2.88**	**1**		**0**	**No**	**TOC normalized PAHs<MEC**
Benzo(a)pyrene	**2**	**7**	**2,490**	**200**	**6,500**	**1,970**	**540**	**800**	**800**	**J**	**041M640502**	**88.8**	**763**	**PEL**	**9.01**	**22.2**	**1.05**	**2.58**	**1**		**0**	**No**	**TOC normalized PAHs<MEC**
Chrysene	**2**	**7**	**2,490**	**200**	**6,500**	**2,020**	**840**	**860**	**860**	**J**	**041M640502**	**108**	**846**	**PEL**	**7.96**	**18.7**	**1.02**	**2.39**	**1**		**0**	**No**	**TOC normalized PAHs<MEC**
Dibenz(a,h)anthracene	0	7	2,550	200	6,500	2,550			6,500	U	ND	6.22	135	PEL	1,050	410	48.1	18.9	0		0	No	Parameter Not Detected; Max SQL > RV
Fluoranthene	**2**	**7**	**2,490**	**200**	**6,500**	**2,270**	**1,600**	**1,800**	**1,800**	**J**	**041M640502**	**113**	**1,494**	**PEL**	**15.9**	**20**	**1.2**	**1.52**	**2**		**0**	**No**	**TOC normalized PAHs<MEC**
Fluorene	0	7	2,550	200	6,500	2,550			6,500	U	ND	21.2	144	PEL	307	120	45.1	17.7	0		0	No	Parameter Not Detected; Max SQL > RV
Naphthalene	0	7	2,550	200	6,500	2,550			6,500	U	ND	34.6	391	PEL	188	73.7	16.6	6.52	0		0	No	Parameter Not Detected; Max SQL > RV
Phenanthrene	**3**	**7**	**2,580**	**200**	**6,500**	**1,800**	**230**	**1,100**	**1,100**	**J**	**041M640502**	**86.7**	**544**	**PEL**	**12.7**	**20.8**	**2.02**	**3.31**	**2**		**0**	**No**	**TOC normalized PAHs<MEC**
Pyrene	**2**	**7**	**2,490**	**200**	**6,500**	**2,210**	**1,400**	**1,600**	**1,600**	**J**	**041M640502**	**153**	**1,398**	**PEL**	**10.5**	**14.4**	**1.14**	**1.58**	**2**		**0**	**No**	**TOC normalized PAHs<MEC**
Total PAHs	**3**	**7**	**33,500**	**2,600**	**84,500**	**30,100**	**22,800**	**28,000**	**28,000**		**041M640502**	**1,684**	**16,770**	**PEL**	**16.6**	**17.9**	**1.67**	**1.8**	**3**		**0**	**No**	**TOC normalized PAHs<MEC**
TOC Normalized PAHs	3	7	1,216.30	962.96	1,903.57	881.59	144.61	651.71	651.71		041M640602	290	1,800	MEC	2.25	3.04	0.362	0.49	0		0	No	RV HQ <1 and no RC
PCBs (µg/kg)																							
Aroclor-1016	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1221	0	7	523	41	1,350	523			1,350	UJ	ND	67	189	PEL	20.1	7.8	7.14	2.76	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1232	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1242	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1248	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1254	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Aroclor-1260	0	7	255	20	650	255			650	UJ	ND	21.6	189	PEL	30.1	11.8	3.44	1.35	0		0	No	Parameter Not Detected; Max SQL > RV
Total PCBs	0	7	2,050	161	5,250	2,050			5,250	U	ND	21.6	189	PEL	243	95	27.8	10.9	0		0	No	Parameter Not Detected; Max SQL > RV
Pesticides (µg/kg)																							
Aldrin	0	7	13.2	1.05	34	13.2			34	UJ	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	0	7	25.5	2	65	25.5			65	UJ	ND	0.716	4.3	PEL	90.8	35.6	15.1	5.93	0		0	No	Parameter Not Detected; Max SQL > RV
Endosulfan I	0	7	13.2	1.05	34	13.2			34	UJ	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	0	7	25.5	2	65	25.5			65	UJ	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	0	7	25.5	2	65	25.5			65	UJ	ND			NA					0		0	No	Parameter Not Detected
Heptachlor	0	7	13.2	1.05	34	13.2			34	UJ	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	2	7	12.9	1.05	34	10.7	4.4	6.2	6.2	J	041M640602			NA					0		0	Yes	No SV, no RV, and no RC
Methoxychlor	0	7	132	10.5	340	132			340	UJ	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	7	1,320	105	3,400	1,320			3,400	UJ	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	0	7	13.2	1.05	34	13.2			34	UJ	ND	1.7	4.79	PEL	20	7.78	7.1	2.76	0		0	No	Parameter Not Detected; Max SQL > RV
gamma-Chlordane	0	7	13.2	1.05	34	13.2			34	UJ	ND	1.7	4.79	PEL	20	7.78	7.1	2.76	0		0	No	Parameter Not Detected; Max SQL > RV
Total Chlordane	0	7	26.5	2.1	68	26.5			68	U	ND	1.7	4.79	PEL	40	15.6	14.2	5.52	0		0	No	Parameter Not Detected; Max SQL > RV
Endrin	0	7	25.5	2	65	25.5			65	UJ	ND	3.3		NA	19.7	7.73			0		0	No	Parameter Not Detected
Endrin aldehyde	0	7	25.5	2	65	25.5			65	UJ	ND	3.3		NA	19.7	7.73			0		0	No	Parameter Not Detected
Endrin ketone	0	7	25.5	2	65	25.5			65	UJ	ND	3.3		NA	19.7	7.73			0		0	No	Parameter Not Detected
Total Endrin	0	7	76.5	6	195	76.5			195	U	ND	3.3		NA	59.1	23.2			0		0	No	Parameter Not Detected
alpha-BHC	0	7	13.2	1.05	34	13.2			34	UJ	ND		0.99	PEL			34.3	13.4	0		0	No	Parameter Not Detected; Max SQL > RV
beta-BHC	0	7	13.2	1.05	34	13.2			34	UJ	ND	0.32	0.99	PEL	106	41.3	34.3	13.4	0		0	No	Parameter Not Detected; Max SQL > RV
delta-BHC	**5**	**7**	**6.03**	**1.05**	**11**	**4.24**	**0.66**	**6.9**	**6.9**	**J**	**041M641102**	**0.32**	**0.99**	**PEL**	**21.6**	**13.3**	**6.97**	**4.29**	**4**		**0**	**Yes**	**RV HQ > 1 and no RC**
gamma-BHC (Lindane)	0	7	13.2	1.05	34	13.2			34	UJ	ND	0.32	0.99	PEL	106	41.3	34.3	13.4	0		0	No	Parameter Not Detected; Max SQL > RV
Total BHC	**5**	**7**	**24.1**	**4.2**	**44**	**43.9**	**3.81**	**109**	**109**		**041M641102**	**0.32**	**0.99**	**PEL**	**340**	**137**	**110**	**44.4**	**5**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	**1**	**7**	**17.1**	**2**	**65**	**28.9**	**100**	**100**	**100**	**J**	**041M640602**	**1.22**	**7.81**	**PEL**	**82**	**23.7**	**12.8**	**3.7**	**1**	**50**	**2**	**Yes**	**EPC > RV and RC**
4,4'-DDE	4	7	23	2	65	26.1	8.4	43	43	J	041M640202	2.07	374	PEL	20.8	12.6	0.12	0.07	0	40	2	No	EPC > RC, but < RV
4,4'-DDT	0	7	25.5	2	65	25.5			65	UJ	ND	1.19	4.77	PEL	54.6	21.4	13.6	5.35	0	20	5	No	Parameter Not Detected; Max SQL > RV
Total DDT	**4**	**7**	**69**	**6**	**195**	**80.5**	**36.9**	**154**	**154**		**041M640602**	**3.3**	**51.7**	**PEL**	**46.7**	**24.4**	**2.98**	**1.56**	**3**	**110**	**2**	**Yes**	**EPC > RV and RC**
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected

Table 11-3-23
Wetland 64 Phase IV
Sediment Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Min SQl	Max SQL	Average Result	Minimum Detected	Maximum Detected	EPC	Q	Maximum Detection Location	SV	Refinement Value	Refinement Value Source	Maximum Result SV HQ	Average Result SV HQ	Maximum Result RV HQ	Average Result RV HQ	Number Detected > RV	Reference Concentration	Number Detected > Reference Concentration	COPC Retained (Y/N)	Rationale
SVOCs (µg/kg) - cont.																							
2,4-Dinitrotoluene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	7	5,130	400	13,000	5,130			13,000	U	ND			NA					0		0	No	Parameter Not Detected
3-Methylphenol/4-Methylphenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	7	5,130	400	13,000	5,130			13,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
Benzidine	0	7	21,200	1,650	55,000	21,200			55,000	UJ	ND			NA					0		0	No	Parameter Not Detected
Benzo(b)fluoranthene	2	7	2,490	200	6,500	1,980	630	780	780	J	041M640502			NA					0		0	No	TOC normalized PAHs<MEC
Benzo(g,h,i)perylene	2	7	2,490	200	6,500	1,910	420	490	490	J	041M640502			NA					0		0	No	TOC normalized PAHs<MEC
Benzo(k)fluoranthene	2	7	2,490	200	6,500	1,980	510	910	910	J	041M640502			NA					0		0	No	TOC normalized PAHs<MEC
Benzoic acid	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
Benzyl alcohol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	3	7	2,260	200	6,500	1,830	980	1,500	1,500	J	041M640502	182	2,647	PEL	8.24	10.1	0.57	0.69	0		0	No	RV HQ <1 and no RC
Butylbenzylphthalate	0	7	2,550	200	6,500	2,550			6,500	U	ND	182	2,647	PEL	35.7	14	2.46	0.96	0		0	No	Parameter Not Detected; Max SQL > RV
Dibenzofuran	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Diethylphthalate	0	7	2,550	200	6,500	2,550			6,500	U	ND	182	2,647	PEL	35.7	14	2.46	0.96	0		0	No	Parameter Not Detected; Max SQL > RV
Dimethylphthalate	0	7	2,550	200	6,500	2,550			6,500	U	ND	182	2,647	PEL	35.7	14	2.46	0.96	0		0	No	Parameter Not Detected; Max SQL > RV
Di-n-butylphthalate	0	7	2,550	200	6,500	2,550			6,500	U	ND	182	2,647	PEL	35.7	14	2.46	0.96	0		0	No	Parameter Not Detected; Max SQL > RV
Di-n-octylphthalate	0	7	2,550	200	6,500	2,550			6,500	U	ND	182	2,647	PEL	35.7	14	2.46	0.96	0		0	No	Parameter Not Detected; Max SQL > RV
Diphenylamine	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodimethylamine	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	7	13,200	1,050	34,000	13,200			34,000	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	7	2,550	200	6,500	2,550			6,500	U	ND			NA					0		0	No	Parameter Not Detected

Notes:

Sources for Refinement Values (RVs):
PEL = FDEP Probable Effects Level
MEC = Swartz Midrange Effect Concentration

Supporting Information:
SQL = Sample Quantitation Limit
HQ = Hazard Quotient
N/A = No screening value available
U or ND = Not Detected at or above the SQL
J = Estimated Value
UJ = Not detected. SQL is estimated.
D = Diluted Result

Supporting Information:
SV = Screening value (detailed explanation for SVs provided in Section 8)
RV = Refinement value (detailed explanation of RVs provided in Section 8)
HQ = Hazard Quotient.
PEL = Probable effects level.
N/R = No refinement value available.
N/A = Not Applicable
Average result calculations include summing detections and one half the detection limits for not detected parameters.
As a result, some average detections may exceed the maximum detection

Table 11-3-24
Wetland 64 Phase IV
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
	Detected Parameters		
Aluminum	Heptachlor epoxide	None	Not Analyzed
Barium	delta-BHC		
Beryllium	Total BHC		
Cadmium	4,4'-DDD		
Chromium	Total DDT		
Cobalt			
Copper			
Iron			
Lead			
Manganese			
Silver			
Vanadium			

Table 11-3-25
Wetland 64 Phase IV
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640202	8/1/2001	MG/KG	7.1		Arsenic	8.2	70	0.10
041M640202	**8/1/2001**	**MG/KG**	**14**		**Cadmium**	**1.2**	**9.6**	**1.46**
041M640202	**8/1/2001**	**MG/KG**	**500**		**Chromium**	**81**	**370**	**1.35**
041M640202	8/1/2001	MG/KG	80		Copper	34	270	0.30
041M640202	8/1/2001	MG/KG	210		Lead	46.7	218	0.96
041M640202	8/1/2001	MG/KG	0.24		Mercury	0.15	0.71	0.34
041M640202	8/1/2001	MG/KG	7.2	J	Nickel	20.9	51.6	0.14
041M640202	8/1/2001	MG/KG	1.5	J	Silver	1	3.7	0.41
041M640202	8/1/2001	MG/KG	250		Zinc	150	410	0.61
041M640202	**8/1/2001**	**UG/KG**	**43**	**J**	**4,4'-DDE**	**2.2**	**27**	**1.59**
041M640202	8/1/2001	UG/KG	34	U	4,4'-DDT	1.58	46.1	0.74
041M640202	8/1/2001	UG/KG	3,400	U	2-Methylnaphthalene	70	670	5.07
041M640202	8/1/2001	UG/KG	3,400	U	Acenaphthene	16	500	6.80
041M640202	8/1/2001	UG/KG	3,400	U	Acenaphthylene	44	640	5.31
041M640202	8/1/2001	UG/KG	3,400	U	Anthracene	85.3	1,100	3.09
041M640202	8/1/2001	UG/KG	3,400	U	Benzo(a)anthracene	261	1,600	2.13
041M640202	8/1/2001	UG/KG	3,400	U	Benzo(a)pyrene	430	1,600	2.13
041M640202	8/1/2001	UG/KG	3,400	U	Chrysene	384	2,800	1.21
041M640202	8/1/2001	UG/KG	3,400	U	Dibenz(a,h)anthracene	63.4	260	13.08
041M640202	8/1/2001	UG/KG	3,400	U	Fluoranthene	600	5,100	0.67
041M640202	8/1/2001	UG/KG	3,400	U	Fluorene	19	540	6.30
041M640202	8/1/2001	UG/KG	3,400	U	Naphthalene	160	2,100	1.62
041M640202	8/1/2001	UG/KG	3,400	U	Phenanthrene	240	1,500	2.27
041M640202	8/1/2001	UG/KG	3,400	U	Pyrene	665	2,600	1.31
041M640202	8/1/2001				ERM Quotient Sum			74.19
041M640202	8/1/2001				Mean ERM Quotient			2.97
041M640202	8/1/2001				Mean ERM Quotient without ND			0.29
041M640202	8/1/2001				Mean ERM Quotient Category			4
041M640302	8/1/2001	MG/KG	3.2		Arsenic	8.2	70	0.05
041M640302	**8/1/2001**	**MG/KG**	**11**		**Cadmium**	**1.2**	**9.6**	**1.15**
041M640302	8/1/2001	MG/KG	310		Chromium	81	370	0.84
041M640302	8/1/2001	MG/KG	60		Copper	34	270	0.22
041M640302	8/1/2001	MG/KG	140		Lead	46.7	218	0.64
041M640302	8/1/2001	MG/KG	0.18		Mercury	0.15	0.71	0.25
041M640302	8/1/2001	MG/KG	6	J	Nickel	20.9	51.6	0.12
041M640302	8/1/2001	MG/KG	1.4	J	Silver	1	3.7	0.38
041M640302	8/1/2001	MG/KG	200		Zinc	150	410	0.49
041M640302	8/1/2001	UG/KG	8.4	J	4,4'-DDE	2.2	27	0.31
041M640302	8/1/2001	UG/KG	21.5	UJ	4,4'-DDT	1.58	46.1	0.47
041M640302	8/1/2001	UG/KG	2,150	U	2-Methylnaphthalene	70	670	3.21
041M640302	8/1/2001	UG/KG	2,150	U	Acenaphthene	16	500	4.30
041M640302	8/1/2001	UG/KG	2,150	U	Acenaphthylene	44	640	3.36
041M640302	8/1/2001	UG/KG	2,150	U	Anthracene	85.3	1,100	1.95
041M640302	8/1/2001	UG/KG	2,150	U	Benzo(a)anthracene	261	1,600	1.34
041M640302	8/1/2001	UG/KG	2,150	U	Benzo(a)pyrene	430	1,600	1.34
041M640302	8/1/2001	UG/KG	2,150	U	Chrysene	384	2,800	0.77
041M640302	8/1/2001	UG/KG	2,150	U	Dibenz(a,h)anthracene	63.4	260	8.27
041M640302	8/1/2001	UG/KG	2,150	U	Fluoranthene	600	5,100	0.42
041M640302	8/1/2001	UG/KG	2,150	U	Fluorene	19	540	3.98
041M640302	8/1/2001	UG/KG	2,150	U	Naphthalene	160	2,100	1.02
041M640302	8/1/2001	UG/KG	230	J	Phenanthrene	240	1,500	0.15
041M640302	8/1/2001	UG/KG	2,150	U	Pyrene	665	2,600	0.83
041M640302	8/1/2001				ERM Quotient Sum			45.45
041M640302	8/1/2001				Mean ERM Quotient			1.82
041M640302	8/1/2001				Mean ERM Quotient without ND			0.18
041M640302	8/1/2001				Mean ERM Quotient Category			3
041M640502	8/2/2001	MG/KG	9.4		Arsenic	8.2	70	0.13
041M640502	**8/2/2001**	**MG/KG**	**23**		**Cadmium**	**1.2**	**9.6**	**2.40**
041M640502	**8/2/2001**	**MG/KG**	**700**		**Chromium**	**81**	**370**	**1.89**
041M640502	8/2/2001	MG/KG	200		Copper	34	270	0.74
041M640502	**8/2/2001**	**MG/KG**	**430**		**Lead**	**46.7**	**218**	**1.97**
041M640502	8/2/2001	MG/KG	0.31		Mercury	0.15	0.71	0.44
041M640502	8/2/2001	MG/KG	15		Nickel	20.9	51.6	0.29
041M640502	**8/2/2001**	**MG/KG**	**4**		**Silver**	**1**	**3.7**	**1.08**
041M640502	8/2/2001	MG/KG	380		Zinc	150	410	0.93
041M640502	**8/2/2001**	**UG/KG**	**32**	**J**	**4,4'-DDE**	**2.2**	**27**	**1.19**
041M640502	8/2/2001	UG/KG	30	U	4,4'-DDT	1.58	46.1	0.65
041M640502	8/2/2001	UG/KG	3,000	U	2-Methylnaphthalene	70	670	4.48
041M640502	8/2/2001	UG/KG	3,000	U	Acenaphthene	16	500	6
041M640502	8/2/2001	UG/KG	3,000	U	Acenaphthylene	44	640	4.69
041M640502	8/2/2001	UG/KG	3,000	U	Anthracene	85.3	1,100	2.73
041M640502	8/2/2001	UG/KG	870	J	Benzo(a)anthracene	261	1,600	0.54
041M640502	8/2/2001	UG/KG	800	J	Benzo(a)pyrene	430	1,600	0.50
041M640502	8/2/2001	UG/KG	860	J	Chrysene	384	2,800	0.31
041M640502	8/2/2001	UG/KG	3,000	U	Dibenz(a,h)anthracene	63.4	260	11.54
041M640502	8/2/2001	UG/KG	1,800	J	Fluoranthene	600	5,100	0.35
041M640502	8/2/2001	UG/KG	3,000	U	Fluorene	19	540	5.56
041M640502	8/2/2001	UG/KG	3,000	U	Naphthalene	160	2,100	1.43
041M640502	8/2/2001	UG/KG	1,100	J	Phenanthrene	240	1,500	0.73
041M640502	8/2/2001	UG/KG	1,600	J	Pyrene	665	2,600	0.62
041M640502	8/2/2001				ERM Quotient Sum			64.51
041M640502	8/2/2001				Mean ERM Quotient			2.58
041M640502	8/2/2001				Mean ERM Quotient without ND			0.56
041M640502	8/2/2001				Mean ERM Quotient Category			4

Table 11-3-25
Wetland 64 Phase IV
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M640602	8/1/2001	MG/KG	4.8		Arsenic	8.2	70	0.07
041M640602	8/1/2001	MG/KG	8.6		Cadmium	1.2	9.6	0.90
041M640602	8/1/2001	MG/KG	370		Chromium	81	370	1
041M640602	8/1/2001	MG/KG	58		Copper	34	270	0.21
041M640602	8/1/2001	MG/KG	150		Lead	46.7	218	0.69
041M640602	8/1/2001	MG/KG	0.12		Mercury	0.15	0.71	0.17
041M640602	8/1/2001	MG/KG	6.9	J	Nickel	20.9	51.6	0.13
041M640602	8/1/2001	MG/KG	1.3	J	Silver	1	3.7	0.35
041M640602	8/1/2001	MG/KG	140		Zinc	150	410	0.34
041M640602	**8/1/2001**	**UG/KG**	**30**	**J**	**4,4'-DDE**	**2.2**	**27**	**1.11**
041M640602	8/1/2001	UG/KG	24	U	4,4'-DDT	1.58	46.1	0.52
041M640602	8/1/2001	UG/KG	2,400	U	2-Methylnaphthalene	70	670	3.58
041M640602	8/1/2001	UG/KG	2,400	U	Acenaphthene	16	500	4.80
041M640602	8/1/2001	UG/KG	2,400	U	Acenaphthylene	44	640	3.75
041M640602	8/1/2001	UG/KG	2,400	U	Anthracene	85.3	1,100	2.18
041M640602	8/1/2001	UG/KG	660	J	Benzo(a)anthracene	261	1,600	0.41
041M640602	8/1/2001	UG/KG	540	J	Benzo(a)pyrene	430	1,600	0.34
041M640602	8/1/2001	UG/KG	840	J	Chrysene	384	2,800	0.30
041M640602	8/1/2001	UG/KG	2,400	U	Dibenz(a,h)anthracene	63.4	260	9.23
041M640602	8/1/2001	UG/KG	1,600	J	Fluoranthene	600	5,100	0.31
041M640602	8/1/2001	UG/KG	2,400	U	Fluorene	19	540	4.44
041M640602	8/1/2001	UG/KG	2,400	U	Naphthalene	160	2,100	1.14
041M640602	8/1/2001	UG/KG	970	J	Phenanthrene	240	1,500	0.65
041M640602	8/1/2001	UG/KG	1,400	J	Pyrene	665	2,600	0.54
041M640602	8/1/2001				ERM Quotient Sum			47.90
041M640602	8/1/2001				Mean ERM Quotient			1.92
041M640602	8/1/2001				Mean ERM Quotient without ND			0.30
041M640602	8/1/2001				Mean ERM Quotient Category			4
041M640702	8/1/2001	MG/KG	0.225	U	Arsenic	8.2	70	0.00
041M640702	8/1/2001	MG/KG	0.07	J	Cadmium	1.2	9.6	0.01
041M640702	8/1/2001	MG/KG	7.8		Chromium	81	370	0.02
041M640702	8/1/2001	MG/KG	12		Copper	34	270	0.04
041M640702	8/1/2001	MG/KG	9.7		Lead	46.7	218	0.04
041M640702	8/1/2001	MG/KG	0.0066	J	Mercury	0.15	0.71	0.01
041M640702	8/1/2001	MG/KG	0.26	J	Nickel	20.9	51.6	0.01
041M640702	8/1/2001	MG/KG	0.0355	U	Silver	1	3.7	0.01
041M640702	8/1/2001	MG/KG	3	J	Zinc	150	410	0.01
041M640702	8/1/2001	UG/KG	2	U	4,4'-DDE	2.2	27	0.07
041M640702	8/1/2001	UG/KG	2	U	4,4'-DDT	1.58	46.1	0.04
041M640702	8/1/2001	UG/KG	200	U	2-Methylnaphthalene	70	670	0.30
041M640702	8/1/2001	UG/KG	200	U	Acenaphthene	16	500	0.40
041M640702	8/1/2001	UG/KG	200	U	Acenaphthylene	44	640	0.31
041M640702	8/1/2001	UG/KG	200	U	Anthracene	85.3	1,100	0.18
041M640702	8/1/2001	UG/KG	200	U	Benzo(a)anthracene	261	1,600	0.13
041M640702	8/1/2001	UG/KG	200	U	Benzo(a)pyrene	430	1,600	0.13
041M640702	8/1/2001	UG/KG	200	U	Chrysene	384	2,800	0.07
041M640702	8/1/2001	UG/KG	200	U	Dibenz(a,h)anthracene	63.4	260	0.77
041M640702	8/1/2001	UG/KG	200	U	Fluoranthene	600	5,100	0.04
041M640702	8/1/2001	UG/KG	200	U	Fluorene	19	540	0.37
041M640702	8/1/2001	UG/KG	200	U	Naphthalene	160	2,100	0.10
041M640702	8/1/2001	UG/KG	200	U	Phenanthrene	240	1,500	0.13
041M640702	8/1/2001	UG/KG	200	U	Pyrene	665	2,600	0.08
041M640702	8/1/2001				ERM Quotient Sum			4.16
041M640702	8/1/2001				Mean ERM Quotient			0.17
041M640702	8/1/2001				Mean ERM Quotient without ND			0.01
041M640702	8/1/2001				Mean ERM Quotient Category			1
041M641102	8/2/2001	MG/KG	13		Arsenic	8.2	70	0.19
041M641102	**8/2/2001**	**MG/KG**	**15**		**Cadmium**	**1.2**	**9.6**	**1.56**
041M641102	**8/2/2001**	**MG/KG**	**630**		**Chromium**	**81**	**370**	**1.70**
041M641102	8/2/2001	MG/KG	120		Copper	34	270	0.44
041M641102	8/2/2001	MG/KG	210		Lead	46.7	218	0.96
041M641102	8/2/2001	MG/KG	0.46		Mercury	0.15	0.71	0.65
041M641102	8/2/2001	MG/KG	14	J	Nickel	20.9	51.6	0.27
041M641102	8/2/2001	MG/KG	1.8	J	Silver	1	3.7	0.49
041M641102	8/2/2001	MG/KG	290		Zinc	150	410	0.71
041M641102	8/2/2001	UG/KG	65	UJ	4,4'-DDE	2.2	27	2.41
041M641102	8/2/2001	UG/KG	65	UJ	4,4'-DDT	1.58	46.1	1.41
041M641102	8/2/2001	UG/KG	6,500	U	2-Methylnaphthalene	70	670	9.70
041M641102	8/2/2001	UG/KG	6,500	U	Acenaphthene	16	500	13
041M641102	8/2/2001	UG/KG	6,500	U	Acenaphthylene	44	640	10.16
041M641102	8/2/2001	UG/KG	6,500	U	Anthracene	85.3	1,100	5.91
041M641102	8/2/2001	UG/KG	6,500	U	Benzo(a)anthracene	261	1,600	4.06
041M641102	8/2/2001	UG/KG	6,500	U	Benzo(a)pyrene	430	1,600	4.06
041M641102	8/2/2001	UG/KG	6,500	U	Chrysene	384	2,800	2.32
041M641102	8/2/2001	UG/KG	6,500	U	Dibenz(a,h)anthracene	63.4	260	25
041M641102	8/2/2001	UG/KG	6,500	U	Fluoranthene	600	5,100	1.27
041M641102	8/2/2001	UG/KG	6,500	U	Fluorene	19	540	12.04
041M641102	8/2/2001	UG/KG	6,500	U	Naphthalene	160	2,100	3.10
041M641102	8/2/2001	UG/KG	6,500	U	Phenanthrene	240	1,500	4.33
041M641102	8/2/2001	UG/KG	6,500	U	Pyrene	665	2,600	2.50
041M641102	8/2/2001				ERM Quotient Sum			137.41
041M641102	8/2/2001				Mean ERM Quotient			5.50
041M641102	8/2/2001				Mean ERM Quotient without ND			0.28
041M641102	8/2/2001				Mean ERM Quotient Category			2

Table 11-3-25
Wetland 64 Phase IV
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M642402	8/1/2001	MG/KG	0.275	U	Arsenic	8.2	70	0.00
041M642402	8/1/2001	MG/KG	0.0315	UJ	Cadmium	1.2	9.6	0.00
041M642402	8/1/2001	MG/KG	1	J	Chromium	81	370	0.00
041M642402	8/1/2001	MG/KG	0.5	U	Copper	34	270	0.00
041M642402	8/1/2001	MG/KG	0.38	J	Lead	46.7	218	0.00
041M642402	8/1/2001	MG/KG	0.00285	U	Mercury	0.15	0.71	0.00
041M642402	8/1/2001	MG/KG	0.09	U	Nickel	20.9	51.6	0.00
041M642402	8/1/2001	MG/KG	0.044	U	Silver	1	3.7	0.01
041M642402	8/1/2001	MG/KG	0.065	UJ	Zinc	150	410	0.00
041M642402	8/1/2001	UG/KG	2.05	UJ	4,4'-DDE	2.2	27	0.08
041M642402	8/1/2001	UG/KG	2.05	UJ	4,4'-DDT	1.58	46.1	0.04
041M642402	8/1/2001	UG/KG	205	U	2-Methylnaphthalene	70	670	0.31
041M642402	8/1/2001	UG/KG	205	U	Acenaphthene	16	500	0.41
041M642402	8/1/2001	UG/KG	205	U	Acenaphthylene	44	640	0.32
041M642402	8/1/2001	UG/KG	205	U	Anthracene	85.3	1,100	0.19
041M642402	8/1/2001	UG/KG	205	U	Benzo(a)anthracene	261	1,600	0.13
041M642402	8/1/2001	UG/KG	205	U	Benzo(a)pyrene	430	1,600	0.13
041M642402	8/1/2001	UG/KG	205	U	Chrysene	384	2,800	0.07
041M642402	8/1/2001	UG/KG	205	U	Dibenz(a,h)anthracene	63.4	260	0.79
041M642402	8/1/2001	UG/KG	205	U	Fluoranthene	600	5,100	0.04
041M642402	8/1/2001	UG/KG	205	U	Fluorene	19	540	0.38
041M642402	8/1/2001	UG/KG	205	U	Naphthalene	160	2,100	0.10
041M642402	8/1/2001	UG/KG	205	U	Phenanthrene	240	1,500	0.14
041M642402	8/1/2001	UG/KG	205	U	Pyrene	665	2,600	0.08
041M642402	8/1/2001				ERM Quotient Sum			4.14
041M642402	8/1/2001				Mean ERM Quotient			0.17
041M642402	8/1/2001				Mean ERM Quotient without ND			0.00
041M642402	8/1/2001				Mean ERM Quotient Category			2

Notes:
ERL = Effects Range Low
ERM = Effects Range Median
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
U = not detected at or above the SQL (value in table is 1/2 reported value)
J = estimated value
Shaded cells indicate constituent exceeds ERL.
Shaded and bold cells indicate constituent exceeds ERM.

Table 11-3-26
Wetland 64 Phase II
Fish Tissue Ingestion Exposure Recreational and Subsistence Fishermen

Exposure Route	COPC		Sediment Concentration (mg/kg)	BSAF	Estimated Tissue Concentration [a] (mg/kg)	Trophic transfer factor	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Recreational Ingestion Hazard Quotient	Recreational Ingestion Cancer Risk	Subsistence Ingestion Hazard Quotient	Subsistence Ingestion Cancer Risk
Fish Tissue Ingestion	Aluminum	N	26,800	N/A	N/A	N/A	1.00E+00	N/A	N/A	N/A	N/A	N/A
	Arsenic	C	18.7	N/A	N/A	N/A	3.00E-04	1.50E+00	N/A	N/A	N/A	N/A
	Barium	N	1,280	N/A	N/A	N/A	7.00E-02	N/A	N/A	N/A	N/A	N/A
	Beryllium	N	1.3	N/A	N/A	N/A	2.00E-03	N/A	N/A	N/A	N/A	N/A
	Cadmium	N	38.6	N/A	N/A	N/A	5.00E-04	N/A	N/A	N/A	N/A	N/A
	Chromium	N	1,800	0.030354	5.46E+01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	6.1	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Copper	N	255	0.405286	1.03E+02	1.00E+00	4.00E-02	N/A	2.13E-01	N/A	8.94E-01	N/A
	Iron	N	38,200	0.000458	1.75E+01	1.00E+00	3.00E-01	N/A	4.80E-03	N/A	2.02E-02	N/A
	Lead	N	634	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	203	N/A	N/A	N/A	2.40E-02	N/A	N/A	N/A	N/A	N/A
	Mercury	N	0.88	N/A	N/A	N/A	3.00E-04	N/A	N/A	N/A	N/A	N/A
	Nickel	N	27.1	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Selenium	N	3.1	N/A	N/A	N/A	5.00E-03	N/A	N/A	N/A	N/A	N/A
	Silver	N	5.1	N/A	N/A	N/A	5.00E-03	N/A	N/A	N/A	N/A	N/A
	Thallium	N	1.2	N/A	N/A	N/A	6.60E-05	N/A	N/A	N/A	N/A	N/A
	Vanadium	N	43.4	N/A	N/A	N/A	7.00E-03	N/A	N/A	N/A	N/A	N/A
	Zinc	N	481	0.383051	1.84E+02	1.00E+00	3.00E-01	N/A	5.06E-02	N/A	2.12E-01	N/A
	4,4'-DDD	C	0.14	1.93	2.70E-01	3.08E+00	N/A	2.40E-01	N/A	**2.35E-06**	N/A	**2.47E-05**
	4,4'-DDE	C	0.078	1.93	1.51E-01	3.64E+00	N/A	3.40E-01	N/A	**2.19E-06**	N/A	**2.30E-05**
	4,4'-DDT	C	0.014	1.93	2.70E-02	3.69E+00	5.00E-04	3.40E-01	2.34E-03	3.99E-07	2.46E-02	**4.19E-06**
	Aldrin	C	0.004	3.383085	1.35E-02	3.64E+00	3.00E-05	1.70E+01	1.93E-02	**9.84E-06**	2.03E-01	**1.03E-04**
	alpha-BHC	C	0.00094	3.550914	3.34E-03	1.08E+00	5.00E-04	6.30E+00	8.48E-05	2.67E-07	8.91E-04	**2.81E-06**
	alpha-Chlordane	C	0.01	3.897638	3.90E-02	3.25E+00	5.00E-04	3.50E-01	2.98E-03	5.21E-07	3.13E-02	**5.48E-06**
	Aroclor-1254	C	0.37	3.213918	1.19E+00	3.73E+00	2.00E-05	2.00E+00	**2.61E+00**	**1.04E-04**	**2.74E+01**	**1.10E-03**
	Aroclor-1260	C	0.05	3.213918	1.61E-01	3.73E+00	N/A	2.00E+00	N/A	**1.41E-05**	N/A	**1.48E-04**
	Dieldrin	C	0.0033	N/A	N/A	N/A	5.00E-05	1.60E+01	N/A	N/A	N/A	N/A
	Endosulfan I	N	0.00076	N/A	N/A	N/A	6.00E-03	N/A	N/A	N/A	N/A	N/A
	Endosulfan II	N	0.0017	N/A	N/A	N/A	6.00E-03	N/A	N/A	N/A	N/A	N/A
	Endrin	N	0.008	4.01	3.21E-02	1.60E+00	3.00E-04	N/A	1.41E-02	N/A	5.93E-02	N/A
	Endrin aldehyde	N	0.00029	4.01	1.16E-03	1.60E+00	3.00E-04	N/A	5.11E-04	N/A	2.15E-03	N/A
	gamma-BHC (Lindane)	C	0.0016	3.550914	5.68E-03	1.08E+00	3.00E-04	1.30E+00	2.41E-04	9.38E-08	2.53E-03	9.86E-07
	gamma-Chlordane	C	0.0085	3.897638	3.31E-02	3.25E+00	5.00E-04	3.50E-01	2.53E-03	4.43E-07	2.66E-02	**4.66E-06**
	Heptachlor	C	0.00012	N/A	N/A	N/A	5.00E-04	4.50E+00	N/A	N/A	N/A	N/A
	1,2-Dichlorobenzene	C	0.19	N/A	N/A	N/A	9.00E-02	N/A	N/A	N/A	N/A	N/A
	1,4-Dichlorobenzene	C	0.26	N/A	N/A	N/A	3.00E-02	2.40E-02	N/A	N/A	N/A	N/A
	2-Methylnaphthalene	N	0.03	N/A	N/A	N/A	8.00E-02	N/A	N/A	N/A	N/A	N/A
	Acenaphthene	N	0.23	N/A	N/A	N/A	6.00E-02	N/A	N/A	N/A	N/A	N/A
	Anthracene	N	0.33	N/A	N/A	N/A	3.00E-01	N/A	N/A	N/A	N/A	N/A
	Benzo(a)anthracene	C	1.4	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(a)pyrene	C	0.91	N/A	N/A	N/A	N/A	7.30E+00	N/A	N/A	N/A	N/A
	Benzo(b)fluoranthene	C	2.6	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(g,h,i)perylene	C	0.59	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(k)fluoranthene	C	0.25	N/A	N/A	N/A	N/A	7.30E-02	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	0.53	0.184	9.75E-02	2.27E+00	2.00E-02	1.40E-02	1.30E-04	3.64E-08	1.37E-03	3.83E-07
	Butylbenzylphthalate	N	0.28	N/A	N/A	N/A	2.00E-01	N/A	N/A	N/A	N/A	N/A
	Carbazole	C	0.4	N/A	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A
	Chrysene	C	1.5	N/A	N/A	N/A	7.30E-03	N/A	N/A	N/A	N/A	N/A
	Dibenz(a,h)anthracene	C	0.025	N/A	N/A	N/A	N/A	7.30E+00	N/A	N/A	N/A	N/A
	Dibenzofuran	N	0.085	N/A	N/A	N/A	4.00E-03	N/A	N/A	N/A	N/A	N/A
	Diethylphthalate	N	2	N/A	N/A	N/A	8.00E-01	N/A	N/A	N/A	N/A	N/A
	Dimethylphthalate	N	0.51	N/A	N/A	N/A	1.00E+01	N/A	N/A	N/A	N/A	N/A
	Di-n-butylphthalate	N	0.43	N/A	N/A	N/A	1.00E-01	N/A	N/A	N/A	N/A	N/A
	Fluoranthene	N	5.7	N/A	N/A	N/A	N/A	4.00E-02	N/A	N/A	N/A	N/A
	Fluorene	N	0.21	N/A	N/A	N/A	4.00E-02	N/A	N/A	N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	C	0.6	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A	N/A
	Naphthalene	N	0.071	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Phenanthrene	N	2.8	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A
	Phenol	N	0.22	N/A	N/A	N/A	6.00E-01	N/A	N/A	N/A	N/A	N/A
	Pyrene	N	4.6	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A
	Acetone	N	0.42	N/A	N/A	N/A	1.00E-01	N/A	N/A	N/A	N/A	N/A
	Carbon disulfide	N	0.011	N/A	N/A	N/A	1.00E-01	N/A	N/A	N/A	N/A	N/A
	Chlorobenzene	N	0.048	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Methylene chloride	C	0.4	N/A	N/A	N/A	6.00E-02	7.50E-03	N/A	N/A	N/A	N/A

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
a = Tissue concentration determined as described in Section 8 of the text; see Table 10-1-1-X.

$$CDI = \frac{EPC_t \times IR_t \times EF \times ED \times CF}{BW \times AT}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_t = Exposure point concentration in sediment (mg/kg).
IR_t = Incidental ingestion rate for sediment (mg/day).
EF = Exposure Frequency (days/year).
ED = Exposure duration (years).
CF = Conversion Factor (0.001 kg/g)
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:
IR_t = Fish tissue ingestion rate for sediment (recreational: 26 g/day; subsistence: 170 g/day).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Risk calculation equation, cancer:

$$Risk = CDI \times SF_{oral}$$

Risk calculation equation, non cancer:

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Table 11-3-27
Wetland 64 Phase III
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration (µg/L)	Min. Qual.	Maximum Concentration (µg/L)	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration (mg/cm^3)	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	N/A	N/A	3.0E+02	=	UG/L	041W640501	1 / 2	N/A / 1.4E+02	1.9E+02	3.0E-04	1.0E-03	7.75E-07	1.23E-05	1.64E-05
7440393	Barium	N	3.4E+01	=	3.6E+01	=	UG/L	041W640101	2 / 2	NAV	3.5E+01	3.6E-05	1.0E-03	9.46E-08	1.50E-06	2.00E-06
7440439	Cadmium	N	N/A	N/A	8.4E-01	J	UG/L	041W640101	1 / 2	N/A / 5.8E-01	5.7E-01	8.4E-07	1.0E-03	2.18E-09	3.46E-08	4.62E-08
7440473	Chromium	N	8.5E+00	J	1.3E+01	=	UG/L	041W640501	2 / 2	NAV	1.1E+01	1.3E-05	1.0E-03	3.25E-08	5.14E-07	6.88E-07
7439921	Lead	N	5.8E+00	=	8.6E+00	=	UG/L	041W640501	2 / 2	NAV	7.2E+00	8.6E-06	3.4E-04	7.60E-09	1.20E-07	1.61E-07
7439965	Manganese	N	2.8E+01	=	3.7E+01	=	UG/L	041W640101	2 / 2	NAV	3.3E+01	3.7E-05	1.0E-03	9.65E-08	1.53E-06	2.04E-06
7487947	Mercury	N	N/A	N/A	6.0E-02	J	UG/L	041W640501	1 / 2	N/A / 5.0E-02	4.3E-02	6.0E-08	1.0E-03	1.56E-10	2.47E-09	3.30E-09
7440224	Silver	N	4.0E-02	J	5.0E-02	J	UG/L	041W640101	2 / 2	NAV	4.5E-02	5.0E-08	6.0E-04	7.80E-11	1.23E-09	1.65E-09
319857	beta-BHC	C	N/A	N/A	7.2E-03	J	UG/L	041W640101	1 / 2	N/A / 6.2E-03	5.2E-03	7.2E-09	2.8E-02	1.00E-09	2.27E-09	7.60E-09
71556	1,1,1-Trichloroethane	N	N/A	N/A	2.1E-01	J	UG/L	041W640101	1 / 2	N/A / 1.0E+00	3.6E-01	2.1E-07	6.7E-03	4.73E-09	7.48E-08	1.00E-07
75343	1,1-Dichloroethane	N	N/A	N/A	9.0E-01	J	UG/L	041W640101	1 / 2	N/A / 1.0E+00	7.0E-01	9.0E-07	6.7E-03	2.00E-08	3.16E-07	4.23E-07
156605	1,2-Dichloroethene (total)	N	2.1E-01	J	5.9E-01	J	UG/L	041W640101	2 / 2	NAV	4.0E-01	5.9E-07	7.7E-03	1.52E-08	2.40E-07	3.21E-07
67641	Acetone	N	N/A	N/A	2.4E+01	J	UG/L	041W640101	1 / 2	N/A / 2.5E+01	1.8E+01	2.4E-05	5.7E-04	4.48E-08	7.10E-07	9.49E-07
108883	Toluene	N	N/A	N/A	3.6E-01	J	UG/L	041W640501	1 / 2	N/A / 1.0E+00	4.3E-01	3.6E-07	3.1E-02	3.50E-08	5.53E-07	7.40E-07
79016	Trichloroethene	C	N/A	N/A	3.4E-01	J	UG/L	041W640101	1 / 2	N/A / 1.0E+00	4.2E-01	3.4E-07	1.2E-02	1.48E-08	3.36E-08	1.12E-07

Notes:

Equation for Dermal Absorbed Dose, surface water risk:

$$DAD_{sw} = \frac{DA_{event} \times EV \times ED \times EF \times SA}{BW \times AT}$$

Where:

DAD_{sw} = Dermal absorbed dose-water contact (mg/kg-day).
DA_{event} = Dermal absorbed dose per event (mg/cm2-event).
SA = Skin surface area available for contact (cm2).
EV = Event frequency (events/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr
carcinogenic effects AT = 70 yr x 365 dy/yr.

Equation for DAevent for inorganics:

$$DA_{event} = K_p \times C_w \times t_{event}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: RAGS Part E, Exhibit B-3 or Exhibit B-4
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).

Equation for DAevent for organics:

$$DA_{event} = FA \times K_p \times C_w \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$$

Where:

FA = Fraction absorbed water (dimensionless). From RAGS Part E, Exhibit B-4.
Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E, Exhibit B-4.
Cw = Chemical concentration in water (mg/cm3).
t_{event} = Event duration (hr/event).
t_{event} = Lag time per event (hr/event). From RAGS Part E, Exhibit B-4.
B = Dimensionless ratio of the permeability coefficient of a compound, calculated using the equation below:

$$B = \frac{K_p \sqrt{MW}}{2.6}$$

Where:

Kp = Dermal permeability coefficient of compound in water (cm/hr).
Source: (1) RAGS Part E.
MW = Molecular weight

Exposure Parameters:

EV = 1 event per day (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
SA = 5,000 cm2(child trespasser); 10,400 cm2 (adult maintenance worker).
Source: Tables 6-6 and 6-8 Exposure Factors Handbook.
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).
t_{event} = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 11-3-28
Wetland 64 Phase III
Surface Water Dermal Exposure Risk-Child Trespasser and Adult Maintenance Worker

Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	ABS_{GI}	ABS_{GI} Source	Dermal RfD (mg/kg-day)	Dermal SF (mg/kg-day)-1	Child Trespasser: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
SW Dermal Risk	Aluminum	N	3.0E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	1.2E-04	N/A	1.6E-04	N/A
	Barium	N	3.6E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	3.1E-04	N/A	4.1E-04	N/A
	Cadmium	N	8.4E-07	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	2.8E-03	N/A	3.7E-03	N/A
	Chromium	N	1.3E-05	3.0E-03	N/A	2.5E-02	1	7.5E-05	N/A	6.9E-03	N/A	9.2E-03	N/A
	Lead	N	8.6E-06	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	3.7E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	2.7E-04	N/A	3.6E-04	N/A
	Mercury	N	6.0E-08	3.0E-04	N/A	7.0E-02	1	2.1E-05	N/A	1.2E-04	N/A	1.6E-04	N/A
	Silver	N	5.0E-08	5.0E-03	N/A	1.8E-01	3	9.0E-04	N/A	1.4E-06	N/A	1.8E-06	N/A
	beta-BHC	C	7.2E-09	2.0E-04	1.8E+00	1.4E-02	3	2.8E-06	1.3E+02	8.0E-04	2.9E-07	2.7E-03	9.6E-07
	1,1,1-Trichloroethane	N	2.1E-07	2.8E-01	N/A	9.0E-01	3	2.5E-01	N/A	3.0E-07	N/A	4.0E-07	N/A
	1,1-Dichloroethane	N	9.0E-07	1.0E-01	N/A	1.0E+00	3	1.0E-01	N/A	3.2E-06	N/A	4.2E-06	N/A
	1,2-Dichloroethene (total)	N	5.9E-07	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.5E-05	N/A	2.0E-05	N/A
	Acetone	N	2.4E-05	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	7.1E-05	N/A	9.5E-05	N/A
	Toluene	N	3.6E-07	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	8.9E-06	N/A	1.2E-05	N/A
	Trichloroethene	C	3.4E-07	3.0E-04	4.0E-01	8.0E-01	3	2.4E-04	5.0E-01	1.4E-04	1.7E-08	4.7E-04	5.6E-08

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.
Dermal RfD = Dermal reference dose adjusted for ABS_{GI}.
Dermal SF = Dermal slope factoradjusted for ABS_{GI}.

Equations for Dermal Reference Dose and Dermal Slope Factor, surface water risk:

$$RfD_{dermal} = RfD_{oral} \times ABS_{GI}$$

$$SF_{dermal} = \frac{RfD_{oral}}{ABS_{GI}}$$

Where:
RfD_{dermal} = Dermal reference dose.
RFD_{oral} = Oral reference dose.
SFdermal = Dermal slope factor.
ABS_{GI} = GI absorption fraction from following sources, in order of choice: (1) RAGS Part E, Exhibit 4-1; (2) 2002 USEPA Region 9 RBC Table; (3) RAIS; (4) USEPA Region 4 OTS supplemental values.

Risk calculation equation, cancer:

$$Risk = DAD_{sw} \times SF_{dermal}$$

Risk calculation equation, noncancer:

$$Hazard\ Quotient = \frac{DAD_{sw}}{RfD_{dermal}}$$

Table 11-3-29
Wetland 64 Phase III
Surface Water Incidental Ingestion Exposure Risk-Child Trespasser and Adult Maintenance Worker

						Child Trespasser		Maintenance Worker	
Exposure Route	COPC		Maximum concentration (mg/cm^3)	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	3.0E-04	1.0E+00	N/A	9.4E-09	N/A	6.1E-09	N/A
	Barium	N	3.6E-05	7.0E-02	N/A	1.6E-08	N/A	1.1E-08	N/A
	Cadmium	N	8.4E-07	5.0E-04	N/A	5.3E-08	N/A	3.4E-08	N/A
	Chromium	N	1.3E-05	3.0E-03	N/A	1.3E-07	N/A	8.5E-08	N/A
	Lead	N	8.6E-06	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	3.7E-05	1.4E-01	N/A	8.4E-09	N/A	5.4E-09	N/A
	Mercury	N	6.0E-08	3.0E-04	N/A	6.3E-09	N/A	4.1E-09	N/A
	Silver	N	5.0E-08	5.0E-03	N/A	3.2E-10	N/A	2.0E-10	N/A
	beta-BHC	C	7.2E-09	2.0E-04	1.8E+00	1.6E-10	5.9E-14	2.6E-10	9.4E-14
	1,1,1-Trichloroethane	N	2.1E-07	2.8E-01	N/A	2.4E-11	N/A	1.5E-11	N/A
	1,1-Dichloroethane	N	9.0E-07	1.0E-01	N/A	2.8E-10	N/A	1.8E-10	N/A
	1,2-Dichloroethene (total)	N	5.9E-07	2.0E-02	N/A	9.3E-10	N/A	6.0E-10	N/A
	Acetone	N	2.4E-05	1.0E-01	N/A	7.6E-09	N/A	4.9E-09	N/A
	Toluene	N	3.6E-07	2.0E-01	N/A	5.7E-11	N/A	3.7E-11	N/A
	Trichloroethene	C	3.4E-07	3.0E-04	4.0E-01	5.1E-09	6.2E-13	8.2E-09	9.9E-13

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
CDI

$$Risk = CDI \times SF_{oral}$$

Equation for Chronic Daily Intake, surface water risk:

$$CDI = \frac{EPC_{sw} \times IR_{sw} \times EF \times ED}{BW \times AT}$$

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Where:

CDI = Chronic daily intake (mg/kg-day).
EPC_{sw} = Exposure point concentration in surface water (mg/L).
IR_{sw} = Incidental ingestion rate for sediment (L/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

= Oral reference dose.
= Oral slope factor.

Exposure Parameters:

Irsw = 0.01 L/day exposure to surface water during wading for adolescents and adults.
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Table 11-3-30
Wetland 64 Phase III
Fish Tissue Ingestion Exposure Recreational and Subsistence Fishermen

Exposure Route	COPC		Sediment Concentration (mg/kg)	BSAF	Estimated Tissue Concentration [a] (mg/kg)	Atrophic transfer factor	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Recreational Ingestion Hazard Quotient	Recreational Ingestion Cancer Risk	Subsistence Ingestion Hazard Quotient	Subsistence Ingestion Cancer Risk
Fish Tissue Ingestion	Aluminum	N	8,900	N/A	N/A	N/A	1.00E+00	N/A	N/A	N/A	N/A	N/A
	Arsenic	C	7.8	N/A	N/A	N/A	3.00E-04	1.50E+00	N/A	N/A	N/A	N/A
	Barium	N	17.1	N/A	N/A	N/A	7.00E-02	N/A	N/A	N/A	N/A	N/A
	Beryllium	N	0.34	N/A	N/A	N/A	2.00E-03	N/A	N/A	N/A	N/A	N/A
	Cadmium	N	21	N/A	N/A	N/A	5.00E-04	N/A	N/A	N/A	N/A	N/A
	Chromium	N	868	0.030354	2.63E+01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	3.4	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Copper	N	146	0.405286	5.92E+01	1.00E+00	4.00E-02	N/A	1.22E-01	N/A	5.12E-01	N/A
	Iron	N	13,600	0.000458	6.23E+00	1.00E+00	3.00E-01	N/A	1.71E-03	N/A	7.18E-03	N/A
	Lead	N	346	N/A	N/A	N/A	1.00E-07	N/A	N/A	N/A	N/A	N/A
	Manganese	N	65.8	N/A	N/A	N/A	2.40E-02	N/A	N/A	N/A	N/A	N/A
	Mercury	N	0.26	N/A	N/A	N/A	3.00E-04	N/A	N/A	N/A	N/A	N/A
	Selenium	N	1.6	N/A	N/A	N/A	5.00E-03	N/A	N/A	N/A	N/A	N/A
	Silver	N	3	N/A	N/A	N/A	5.00E-03	N/A	N/A	N/A	N/A	N/A
	Vanadium	N	18.4	N/A	N/A	N/A	7.00E-03	N/A	N/A	N/A	N/A	N/A
	Zinc	N	468	0.383051	1.79E+02	1.00E+00	3.00E-01	N/A	4.92E-02	N/A	2.07E-01	N/A
	4,4'-DDD	C	0.089	1.93	1.72E-01	3.08E+00	N/A	2.40E-01	N/A	1.49E-06	N/A	1.57E-05
	4,4'-DDE	C	0.089	1.93	1.72E-01	3.64E+00	N/A	3.40E-01	N/A	2.50E-06	N/A	2.63E-05
	4,4'-DDT	C	0.019	1.93	3.67E-02	3.69E+00	5.00E-04	3.40E-01	3.18E-03	5.41E-07	3.34E-02	5.68E-06
	alpha-Chlordane	C	0.0037	3.897638	1.44E-02	3.25E+00	5.00E-04	3.50E-01	1.10E-03	1.93E-07	1.16E-02	2.03E-06
	Aroclor-1260	C	0.3	3.213918	9.64E-01	3.73E+00	N/A	2.00E+00	N/A	8.46E-05	N/A	8.89E-04
	delta-BHC	C	0.00094	3.550914	3.34E-03	1.08E+00	5.00E-04	6.30E+00	8.48E-05	2.67E-07	8.91E-04	2.81E-06
	Dieldrin	C	0.02	N/A	N/A	N/A	5.00E-05	1.60E+01	N/A	N/A	N/A	N/A
	Endosulfan I	N	0.0024	N/A	N/A	N/A	6.00E-03	N/A	N/A	N/A	N/A	N/A
	Acenaphthene	N	0.75	N/A	N/A	N/A	6.00E-02	N/A	N/A	N/A	N/A	N/A
	Anthracene	N	1	N/A	N/A	N/A	3.00E-01	N/A	N/A	N/A	N/A	N/A
	Benzo(a)anthracene	C	2.1	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(a)pyrene	C	1.7	N/A	N/A	N/A	N/A	7.30E+00	N/A	N/A	N/A	N/A
	Benzo(b)fluoranthene	C	1.8	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(g,h,i)perylene	C	0.98	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(k)fluoranthene	C	1.9	N/A	N/A	N/A	N/A	7.30E-02	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.9	0.184	7.18E-01	2.27E+00	2.00E-02	1.40E-02	9.58E-04	2.68E-07	1.01E-02	2.82E-06
	Butylbenzylphthalate	N	0.71	N/A	N/A	N/A	2.00E-01	N/A	N/A	N/A	N/A	N/A
	Carbazole	C	0.8	N/A	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A
	Chrysene	C	2.1	N/A	N/A	N/A	7.30E-03	N/A	N/A	N/A	N/A	N/A
	Dibenzofuran	N	0.35	N/A	N/A	N/A	4.00E-03	N/A	N/A	N/A	N/A	N/A
	Fluoranthene	N	5	N/A	N/A	N/A	N/A	4.00E-02	N/A	N/A	N/A	N/A
	Fluorene	N	0.75	N/A	N/A	N/A	4.00E-02	N/A	N/A	N/A	N/A	N/A
	Indeno(1,2,3-cd)pyrene	C	1	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A	N/A
	Naphthalene	N	0.31	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Phenanthrene	N	4.3	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A
	Pyrene	N	4.8	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A
	Acetone	N	0.032	N/A	N/A	N/A	1.00E-01	N/A	N/A	N/A	N/A	N/A

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
a = Tissue concentration determined as described in Section 8 of the text; see Table 10-1-1-X.

$$CDI = \frac{EPC_t \times IR_t \times EF \times ED \times CF}{BW \times AT}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_t = Exposure point concentration in sediment (mg/kg).
IR_t = Incidental ingestion rate for sediment (mg/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
CF = conversion factor (0.001 kg/g)
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:
IR_t = Fish tissue ingestion rate for sediment (recreational: 26 g/day; subsistence: 170 g/day).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Risk calculation equation, cancer:

$$Risk = CDI \times SF_{oral}$$

Risk calculation equation, non cancer:

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

Table 11-3-31
Wetland 64 Phase IV
Fish Tissue Ingestion Exposure Recreational and Subsistence Fishermen

Exposure Route	COPC		Sediment Concentration (mg/kg)	BSAF	Estimated Tissue Concentration a (mg/kg)	Trophic Transfer Factor	Oral RfD (mg/kg-day)	Oral SF (mg/kg-day)-1	Recreational Ingestion Hazard Quotient	Recreational Ingestion Cancer Risk	Subsistence Ingestion Hazard Quotient	Subsistence Ingestion Cancer Risk
Fish Tissue Ingestion	Aluminum	N	18,000	N/A	N/A	N/A	1.00E+00	N/A	N/A	N/A	N/A	N/A
	Arsenic	C	13	N/A	N/A	N/A	3.00E-04	1.50E+00	N/A	N/A	N/A	N/A
	Barium	N	18	N/A	N/A	N/A	7.00E-02	N/A	N/A	N/A	N/A	N/A
	Beryllium	N	1.1	N/A	N/A	N/A	2.00E-03	N/A	N/A	N/A	N/A	N/A
	Cadmium	N	23	N/A	N/A	N/A	5.00E-04	N/A	N/A	N/A	N/A	N/A
	Chromium	N	700	3.04E-02	2.12E+01	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	4.8	N/A	N/A	N/A	2.00E-02	N/A	N/A	N/A	N/A	N/A
	Copper	N	200	4.00E-01	8.00E+01	1.00E+00	4.00E-02	N/A	1.65E-01	N/A	6.92E-01	N/A
	Iron	N	33,000	4.58E-04	1.51E+01	1.00E+00	3.00E-01	N/A	4.15E-03	N/A	1.74E-02	N/A
	Lead	N	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	230	N/A	N/A	N/A	2.40E-02	N/A	N/A	N/A	N/A	N/A
	Mercury	N	0.46	N/A	N/A	N/A	3.00E-04	N/A	N/A	N/A	N/A	N/A
	Silver	N	4	N/A	N/A	N/A	5.00E-03	N/A	N/A	N/A	N/A	N/A
	Vanadium	N	37	N/A	N/A	N/A	7.00E-03	N/A	N/A	N/A	N/A	N/A
	Zinc	N	380	3.83E-01	1.46E+02	1.00E+00	3.00E-01	N/A	3.99E-02	N/A	1.68E-01	N/A
	4,4'-DDD	C	0.1	1.93E+00	1.93E-01	3.08E+00	N/A	2.40E-01	N/A	**1.68E-06**	N/A	**1.76E-05**
	4,4'-DDE	C	0.043	1.93E+00	8.30E-02	3.64E+00	N/A	3.40E-01	N/A	**1.21E-06**	N/A	**1.27E-05**
	delta-BHC	C	0.0069	3.55	2.45E-02	1.08E+00	5.00E-04	6.30E+00	6.21E-04	**1.96E-06**	6.53E-03	**2.06E-05**
	Heptachlor epoxide	C	0.0062	N/A	N/A	N/A	5.00E-04	4.50E+00	N/A	N/A	N/A	N/A
	Benzo(a)anthracene	C	0.87	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(a)pyrene	C	0.8	N/A	N/A	N/A	N/A	7.30E+00	N/A	N/A	N/A	N/A
	Benzo(b)fluoranthene	C	0.78	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(g,h,i)perylene	C	0.49	N/A	N/A	N/A	N/A	7.30E-01	N/A	N/A	N/A	N/A
	Benzo(k)fluoranthene	C	0.91	N/A	N/A	N/A	N/A	7.30E-02	N/A	N/A	N/A	N/A
	bis(2-Ethylhexyl)phthalate (BEHP)	C	1.5	0.184	2.76E-01	2.27E+00	2.00E-02	1.40E-02	3.68E-04	1.03E-07	3.87E-03	**1.08E-06**
	Chrysene	C	0.86	N/A	N/A	N/A	7.30E-03	N/A	N/A	N/A	N/A	N/A
	Fluoranthene	N	1.8	N/A	N/A	N/A	N/A	4.00E-02	N/A	N/A	N/A	N/A
	Phenanthrene	N	1.1	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A
	Pyrene	N	1.6	N/A	N/A	N/A	N/A	3.00E-02	N/A	N/A	N/A	N/A

Notes:

Oral RfD = Oral reference dose from: (1) IRIS; or (2) RAIS.
Oral SF = Oral Slope Factor from (1) IRIS; or (2) RAIS.
a = Tissue concentration determined as described in Section 8 of the text; see Table 10-1-1-X.

$$CDI = \frac{EPC_t \times IR_t \times EF \times ED \times CF}{BW \times AT}$$

Where:
CDI = Chronic daily intake (mg/kg-day).
EPC_t = Exposure point concentration in sediment (mg/kg).
IR_t = Incidental ingestion rate for sediment (mg/day).
EF = Exposure frequency (days/year).
ED = Exposure duration (years).
CF = Conversion factor (0.001 kg/g)
BW = Body weight (kg) 70 kg (adult) 45 kg (child).
AT = Averaging time (days) noncarcinogenic effects AT = ED x 365 dy/yr.
carcinogenic effects AT = 70 yr x 365 dy/yr.

Exposure Parameters:
IR_t = Fish tissue ingestion rate for sediment (recreational: 26 g/day; subsistence: 170 g/day).
EF = 52 dys/yr (child trespasser/adult maintenance worker).
ED = 10 yrs (child trespasser); 25 yrs (adult maintenance worker).
BW = 45 kg (child trespasser); 70 kg (adult maintenance worker).
AT = Noncancer — 3,650 days (child trespasser); 9,125 days (adult maintenance worker).
Cancer — 25,550 days (child trespasser/adult maintenance worker).

Risk calculation equation, cancer:

$$Risk = CDI \times SF_{oral}$$

Risk calculation equation, non cancer:

$$Hazard\ Quotient = \frac{CDI}{RfD_{oral}}$$

11.4 OU 2 — Wide Evaluations and Discussion

All the OU 2 wetlands are evaluated collectively to help determine where the highest probabilities of unacceptable risk may occur and whether that risk is likely to be related to exposure from IR sites at NAS Pensacola. In the case of OU 2, the tools that best evaluate risk on an OU-wide basis include:

- **Food-Chain Models:** Many of the upper level predators likely to be present within Site 41 wetlands could be exposed to constituents from more than one wetland. To evaluate this scenario, food-chain models were conducted on an OU-wide basis.

- **Mean ERM Quotients:** This methodology is an effective way to pinpoint areas of potential excess risk from a mixture of constituents. It is also useful in identifying locations most likely to be impacted by direct toxicity.

- **Basewide DDT-Level Comparison:** A basewide level was established for DDT at NAS Pensacola. A comparison of site concentrations to the basewide levels is presented in a figure and will be discussed on a basewide level in this section.

- **TOC-Normalized PAH Concentrations:** PAHs are widespread across NAS Pensacola and have been evaluated based on their potential for adverse effects when the TOC at each sample location is taken into account. This method has been summarized in OU 2-wide figures to identify locations where PAHs may occur at levels most likely to cause adverse effects.

11.4.1 OU 2 — Wetlands Food-Chain Models

To evaluate the potential for risk to upper-trophic-level receptors that forage within the wetlands surrounding OU 2 — food-chain models were conducted as presented in Section 8. The wetlands in this evaluation include:

- 5A*
- Wetland 5B*
- Wetland 6
- Wetland 64*

Those wetlands with an asterisk were resampled and so are evaluated using both the original Phase II data as well as the Phase III data. During Phase III (September 1997) and later in 2001,

fish tissue was collected at Wetland 64 and was included in the food-chain models. The following constituents were evaluated in these food-chain models:

- Pesticides (total BHCs, total DDT, total chlordanes, and total endrin)
- Total PCBs
- Mercury

The exposure concentrations used in the food-chain models are presented in Appendix M.

Tables 11-4-3 through 11-4-8 show the results of the food-chain models for the following receptor groups:

- Piscivorous Birds (green heron) (Tables 11-4-1 and 11-4-4)
- Piscivorous Mammals (mink) (Tables 11-4-2 and 11-4-5)
- Predatory Fish (red drum) (Tables 11-4-3 and 11-4-6)

11.4.1.1 Food-Chain Modeling Results

Assessment Endpoint 1 — Health and Viability of Piscivorous Bird Communities that Forage in OU 2 Wetlands

Phase II Evaluation

The Phase II data indicates that concentrations of mercury generate HQs greater than 1 based on an estimated daily dose. No tissues were collected during Phase II, so this daily dose is estimated using literature-based BSAFs to estimate prey concentrations using OU 2 sediment concentrations. The only exposure concentration that generated an HQ greater than one was the maximum total DDT concentration (max concentration/NOAEL HQ = 1.58). This sample was located in Wetland 6 at location 041M60101. Based on these estimated mercury exposure concentrations there is a potential for unacceptable risk to the piscivorous bird communities foraging in OU 2 wetlands. This Phase II data was the basis for the Phase III and later sampling events.

Phase III Evaluation

Using the data collected during Phase III, 2001, and 2004, no constituents included in the FCM indicate unacceptable levels via bioaccumulation through the food web. In 1997, a total of six sediment samples were collected from OU 2 wetlands (three from Wetland 5A and three from Wetland 64). Of those samples, fish tissue was collected in Wetland 64 (at sample location 041M640101 and 041M6400601); however, the analysis of these samples did not include mercury. In 2001, fish tissue samples were collected from seven locations in Wetland 64

and analyzed for full analytical scans (including mercury). These tissue concentration results are used in the OU 2 food-chain models to replace the BSAF-derived prey concentrations used in Phase II.

Assessment Endpoint 2 — Health and Viability of Piscivorous Mammal Communities that Forage in OU 2 Wetlands

Phase II Evaluation

The Phase II data indicate that concentrations of mercury and PCBs generate HQs greater than 1 based on a maximum estimated daily dose. This daily dose is based on site-specific sediment and surface water concentrations and literature-based BSAFs for tissue concentrations. Using the maximum mercury exposure concentrations, the NOAEL HQs exceed 1 (HQs=3.47), all other evaluations generated HQs less than 1. The maximum mercury sediment concentration was detected in Wetland 5A. The maximum PCB exposure concentrations also generated a NOAEL HQ of 2.8 and a LOAEL HQ of 1.4. PCBs were detected in all three OU 2 wetlands, with the maximum concentration in Wetland 64 (041M640301). No other constituent generated any FCM HQ greater than 1.

Phase III Evaluation

When the site-specific exposure concentrations were updated using the Phase III data (as explained above), no constituent produced a HQ greater than 1 indicating no adverse effects to piscivorous mammals are expected through accumulation via the food web.

Assessment Endpoint 3 — Health and Viability of Predatory Fish Communities that Forage in OU 2 Wetlands

The Evans and Engels exposure model was used to evaluate risk to predatory fish communities. A summary of the results is presented below.

Phase II Evaluation

The Phase II data indicate that concentrations of mercury in the OU 2 wetlands generate HQs greater than 1 based on estimated concentrations of prey items. The HQs generated for OU 2 wetlands range from 17.13 (max concentrations/NOAEL) to 1.8 (average concentrations/LOAEL). Based on these estimated mercury exposure concentrations, there is a potential for unacceptable risk to predatory fish foraging in OU 2 wetlands.

Phase III

Using the data collected during Phase III, 2001, and 2004, exposure estimates and the resulting HQs decreased. The HQs generated using these data range from 3.54 (maximum concentrations/ NOAEL) to 0.64 (average concentrations/LOAEL) for the OU 2 wetlands. The highest mercury concentrations detected were located at the three sample IDs within Wetland 64. This evaluation replaces the estimated fish tissue concentrations with site-specific concentrations. However, the majority of the reduction in HQs results from generally lower mercury concentrations identified during later sampling events.

11.4.2 OU 2 — Wide Mean ERM Quotient Category Evaluation

Using Figure 11-7, it is apparent that Wetlands 5A and 5B, and Wetland 64 contain numerous sample locations that fall into mean ERM categories 3 and 4. Those locations consistently have levels of cadmium, chromium, and lead that exceed their respective ERM values. Since these exceedances represent conditions that would be expected to cause adverse effects on benthic macroinvertebrates, this area was selected for site-specific toxicity testing. Based on the mean ERM quotient category evaluation, the area adjacent to Site 11 seems to be an area where constituents have consistently exceeded ERM levels. Wetland 5 had very high levels of constituents when originally sampled during Phase II; however, those levels have not been repeated in two additional rounds of sampling in that wetland. As a result, it does not appear that Wetland 5A is acting as a constant source for Wetlands 5B and 64.

The results of those toxicity tests showed statistically significant reduction in survival for *Leptocheirus* (78% survival at 041M640401 and 74% at 041M640601) and growth in *Neanthes* (at 041M640501). The results of these site-specific toxicity tests verify adverse effects are occurring at the southern portion of Wetland 64.

11.4.3 Basewide DDT Levels

Figure 11-5 shows the distribution of total DDT levels throughout OU 2. Based on this figure, total DDT has exceeded its basewide levels at Wetlands 5A, 6, and the southern portion of 64. While DDT does exceed its basewide level, food-chain models using site-specific tissue concentrations did not indicate the levels present in OU 2 are of concern for upper-trophic-level predators.

11.4.4 TOC-Normalized Total PAH Concentrations

Figure 11-6 shows the distribution of TOC-normalized PAHs throughout OU 2. None of the sample locations within OU 2 exceeded the Swartz EEC indicating a virtual certainty of adverse effects.

However, a total of four locations in Wetland 5A (one during Phase II and three during Phase III), and three locations in Wetland 64 (all in the southern portion of the wetland) exceeded the Swartz TEC, indicating the potential for adverse effects. When these results are compared to the site-specific toxicity sampling conducted during Phase III, statistically significant differences were found at 5A05 and 5A06. While no statistically significant differences were identified at Wetland 64, two of the locations (6404 and 6406) did have a *Leptocheirus* survival of less than 80%. These results simply indicate that toxicity at these locations could be driven in part or in whole by PAHs identified in the sediments.

11.4.5 Conclusions

Using all the lines of evidence presented in this risk assessment, the areas of primary concern where an FS is recommended is the southern portion of Wetland 64 and Wetland 5A. Both of the FSs from these sites should evaluate direct toxicity to the benthic community and uptake of mercury in predatory fish in Wetland 64.

Table 11-4-1
OU 2 Wetlands FCM Phase II
Receptor: Green Heron (Butorides virescens)

Sediment Ingestion Rate[a] : 0.00023 kg/day
Surface Water Ingestion Rate[b]: 0.0227 L/day
Food Ingestion Rate[c]: 0.0115 kg/day

Body Weight[d]: 0.241 kg

Contaminant		Sediment Concentrations mg/kg	Surface Water Concentrations mg/L	Tissue Concentrations mg/kg	Sediment Exposure mg/day	Water Exposure mg/day	Prey Exposure mg/day	Total Exposure mg/day	Daily Dose mg/kgBW/day	NOAEL mg/kdBW/day	LOAEL mg/kdBW/day	NOAEL HQ	LOAEL HQ
Mercury													
	Max	1	0.00088	2	0.00023	0.0000	0.0230	0.023249976	0.0965	0.44	0.86	2.19E-01	1.12E-01
	Average	0.2169	0.0002	0.4338	0.000049887	0.0000	0.0050	0.005043127	0.0209	0.44	0.86	4.76E-02	2.43E-02
Total BHC													
	Max	0.0044	0	0.0044	0.000001012	0.0000	0.0001	0.000051612	0.0002	0.563	2.25	3.80E-04	9.52E-05
	Average	0.0013	0.0001	0.0013	0.000000299	0.0000	0.0000	0.000017519	0.0001	0.563	2.25	1.29E-04	3.23E-05
Total Chlordane													
	Max	0.0185	*0*	0.043475	0.000004255	0.0000	0.0005	0.000504218	0.0021	2.14	10.7	9.78E-04	1.96E-04
	Average	0.0013	0.0001	0.003055	0.000000299	0.0000	0.0000	3.77015E-05	0.0002	2.14	10.7	7.31E-05	1.46E-05
Dieldrin													
	Max	0.01	0	0.0483	0.0000023	0.0000	0.0006	0.00055775	0.0023	0.044	0.44	5.26E-02	5.26E-03
	Average	0.001	0	0.00483	0.00000023	0.0000	0.0001	0.000055775	0.0002	0.044	0.44	5.26E-03	5.26E-04
Total DDT													
	Max	0.3930	0	1.68597	0.00009039	0.0000	0.0194	0.019479045	0.0808	0.051	0.512	**1.58E+00**	1.58E-01
	Average	0.0320	0.0002	0.13728	0.00000736	0.0000	0.0016	0.00159062	0.0066	0.051	0.512	1.29E-01	1.29E-02
Total Endrin													
	Max	0.0082	0	0.0082	0.000001886	0.0000	0.0001	0.000096186	0.0004	0.1	0.01	3.99E-03	3.99E-02
	Average	0.0021	0.0002	0.0021	0.000000483	0.0000	0.0000	0.000029173	0.0001	0.1	0.01	1.21E-03	1.21E-02
Total PCB													
	Max	0.6400	*0*	1.050	0.0001472	0.0000	0.0121	0.0122176	0.0507	0.112	1.12	4.53E-01	4.53E-02
	Average	0.1014	0.0040	0.166	0.000023322	0.0001	0.0019	0.002026526	0.0084	0.112	1.12	7.51E-02	7.51E-03

Notes:
Sediment Exposure = Sediment Concentration * Sediment Ingestion Rate (mg/day)
Surface Water Exposure = Surface Water Concentration * Water Ingestion Rate (mg/day)
Prey Exposure = Tissue Concentration * Food Ingestion Rate (mg/day)
Total Exposure = Sediment Exposure + Surface Water Exposure + Prey Exposure (mg/day)

Daily Dose = Total Exposure / Body Weight (mg/kgBW/day)

NOAEL HQ = Daily Dose/NOAEL (mg/kgBW/day)
LOAEL HQ = Daily Dose/LOAEL (mg/kgBW/day)

a Estimated based on the results of Beyer et al 1994.
b Calder and Braun 1983.
c Kushlan 1978
d Niethammer and Kaiser 1983.

Tissue data collected from Wetland 64

Table 11-4-2
OU 2 Wetlands FCM (Phase II)
Receptor: Mink (*Mustella vison*)

Sediment Ingestion Rate[a] : 0.003 kg/day
Surface Water Ingestion Rate[b]: 0.0578 L/day
Food Ingestion Rate[c]: 0.029 kg/day

Body Weight[d]: 0.55 kg

Contaminant		Sediment Concentrations mg/kg	Surface Water Concentrations mg/L	Tissue Concentrations mg/kg	Sediment Exposure mg/day	Water Exposure mg/day	Prey Exposure mg/day	Total Exposure mg/day	Daily Dose mg/kgBW/day	NOAEL mg/kdBW/day	LOAEL mg/kdBW/day	NOAEL HQ	LOAEL HQ
Mercury													
	Max	1	0.00088	2	0.003	0.0001	0.0580	0.061050864	0.1110	0.032	0.16	**3.47E+00**	6.94E-01
	Average	0.2169	0.0002	0.4338	0.0006507	0.0000	0.0126	0.01324246	0.0241	0.032	0.16	7.52E-01	1.50E-01
Total BHC													
	Max	0.0044	0	0.0044	0.0000132	0.0000	0.0001	0.0001408	0.0003	0.014	0.14	1.83E-02	1.83E-03
	Average	0.0013	0.0001	0.0013	0.0000039	0.0000	0.0000	0.00004738	0.0001	0.014	0.14	6.15E-03	6.15E-04
Total Chlordane													
	Max	0.0185	*0*	0.043475	0.0000555	0.0000	0.0013	0.001316275	0.0024	3.9	7.8	6.14E-04	3.07E-04
	Average	0.0013	0.0001	0.003055	0.0000039	0.0000	0.0001	0.000098275	0.0002	3.9	7.8	4.58E-05	2.29E-05
Dieldrin													
	Max	0.01	0	0.0483	0.00003	0.0000	0.0014	0.0014307	0.0026	0.015	0.15	1.73E-01	1.73E-02
	Average	0.001	0	0.00483	0.000003	0.0000	0.0001	0.00014307	0.0003	0.015	0.15	1.73E-02	1.73E-03
Total DDT													
	Max	0.3930	0	1.68597	0.001179	0.0000	0.0489	0.05007213	0.0910	0.6	3	1.52E-01	3.03E-02
	Average	0.0320	0.0002	0.13728	0.000096	0.0000	0.0040	0.00408868	0.0074	0.6	3	1.24E-02	2.48E-03
Total Endrin													
	Max	0.0082	0	0.0082	0.0000246	0.0000	0.0002	0.0002624	0.0005	0.092	0.92	5.19E-03	5.19E-04
	Average	0.0021	0.0002	0.0021	0.0000063	0.0000	0.0001	0.00007876	0.0001	0.092	0.92	1.56E-03	1.56E-04
Total PCB													
	Max	0.6400	*0*	1.050	0.00192	0.0000	0.0304	0.0323584	0.0588	0.05	0.1	**1.18E+00**	5.88E-01
	Average	0.1014	0.0040	0.166	0.0003042	0.0002	0.0048	0.005357984	0.0097	0.05	0.1	1.95E-01	9.74E-02

Notes:
Sediment Exposure = Sediment Concentration * Sediment Ingestion Rate (mg/day)
Surface Water Exposure = Surface Water Concentration * Water Ingestion Rate (mg/day)
Prey Exposure = Tissue Concentration * Food Ingestion Rate (mg/day)
Total Exposure = Sediment Exposure + Surface Water Exposure + Prey Exposure (mg/day)

Daily Dose = Total Exposure / Body Weight (mg/kgBW/day)

NOAEL HQ = Daily Dose/NOAEL (mg/kgBW/day)
LOAEL HQ = Daily Dose/LOAEL (mg/kgBW/day)

a Guilday 1957.
b Based on Morrison 1957.
c Chew 1951.
d Estimated based on the results of Beyer et al. 1994.

Tissue data collected from Wetland 64

Table 11-4-3
Red Drum Exposure Model
OU 2 Phase II Data

	MeHg in Sediment (Cs) (ppm)	MeHg in Forage Fish (Cf) (ppm)A	MeHg in Crustaceans (Ccr) (ppm)	MeHg in Invertebrates (Cinv) (ppm)	MeHg in Red Drum Tissue (ppm)	NOAEL HQ	LOAEL HQ
OU 2 Maximum	1	1.2	0.28	0.1	2.57	**17.13**	**8.57**
OU2 Average	0.21	0.252	0.0588	0.021	0.54	**3.60**	**1.80**

Note:
A = Forage Fish tissue concentrations calculated BSAF of 1.2 from Evans and Engel 1994.

Table 11-4-4
OU 2 Wetlands FCM (Phase III)
Receptor: Green Heron (*Butorides virescens*)

Sediment Ingestion Rate[a] : 0.00023 kg/day
Surface Water Ingestion Rate[b]: 0.0227 L/day
Food Ingestion Rate[c]: 0.0115 kg/day

Body Weight[d]: 0.241 kg

Contaminant		Sediment Concentrations mg/kg	Surface Water Concentrations mg/L	Tissue Concentrations mg/kg	Sediment Exposure mg/day	Water Exposure mg/day	Prey Exposure mg/day	Total Exposure mg/day	Daily Dose mg/kgBW/day	NOAEL mg/kgBW/day	LOAEL mg/kgBW/day	NOAEL HQ	LOAEL HQ
Mercury													
	Max	0.2600	0.00006	0.096	0.00006	0.0000	0.0011	0.001165162	0.0048	0.44	0.86	1.10E-02	5.62E-03
	Average	0.1750	0.00004	0.0363	0.00004	0.0000	0.0004	0.000458608	0.0019	0.44	0.86	4.32E-03	2.21E-03
Total BHC													
	Max	0.0427	0	0.01365	0.00001	0.0000	0.0002	0.000166796	0.0007	0.563	2.25	1.23E-03	3.08E-04
	Average	0.0326	0.0001	0.009145	0.00001	0.0000	0.0001	0.000114936	0.0005	0.563	2.25	8.47E-04	2.12E-04
Total Chlordane													
	Max	0.0197	0	0.00755	0.00000	0.0000	0.0001	0.000091356	0.0004	2.14	10.7	1.77E-04	3.54E-05
	Average	0.0159	0.0001	0.00467	0.00000	0.0000	0.0001	0.000059632	0.0002	2.14	10.7	1.16E-04	2.31E-05
Dieldrin													
	Max	0.02	0	0.0007	0.00000	0.0000	0.0000	0.00001265	0.0001	0.044	0.44	1.19E-03	1.19E-04
	Average	0.16	0.00004	0.0085	0.00004	0.0000	0.0001	0.000135458	0.0006	0.044	0.44	1.28E-02	1.28E-03
Total DDT													
	Max	0.1960	0	0.072	0.00005	0.0000	0.0008	0.00087308	0.0036	0.051	0.512	7.10E-02	7.08E-03
	Average	0.1175	0.0002	0.03275	0.00003	0.0000	0.0004	0.00040819	0.0017	0.051	0.512	3.32E-02	3.31E-03
Total Endrin													
	Max	0.0119	0	0	0.00000	0.0000	0.0000	0.000002737	0.0000	0.1	0.01	1.14E-04	1.14E-03
	Average	0.0329	0.0002	0.1403	0.00001	0.0000	0.0016	0.001625557	0.0067	0.1	0.01	6.75E-02	6.75E-01
Total PCB													
	Max	2.1400	0	0.568	0.00049	0.0000	0.0065	0.00701845	0.0291	0.112	1.12	2.60E-01	2.60E-02
	Average	1.5062	0.004	0.457	0.00035	0.0001	0.0053	0.005692726	0.0236	0.112	1.12	2.11E-01	2.11E-02

Notes:
Sediment Exposure = Sediment Concentration * Sediment Ingestion Rate (mg/day)
Surface Water Exposure = Surface Water Concentration * Water Ingestion Rate (mg/day)
Prey Exposure = Tissue Concentration * Food Ingestion Rate (mg/day)
Total Exposure = Sediment Exposure + Surface Water Exposure + Prey Exposure (mg/day)

Daily Dose = Total Exposure / Body Weight (mg/kgBW/day)

NOAEL HQ = Daily Dose/NOAEL (mg/kgBW/day)
LOAEL HQ = Daily Dose/LOAEL (mg/kgBW/day)

a Estimated based on the results of Beyer et al 1994.
b Calder and Braun 1983.
c Kushlan 1978
d Niethammer and Kaiser 1983.

Tissue data collected from Wetland 64

Table 11-4-5
OU 2 Wetlands FCM (Phase III)
Receptor: Mink *(Mustella vison)*

Sediment Ingestion Rate[a] : 0.003 kg/day
Surface Water Ingestion Rate[b]: 0.0578 L/day
Food Ingestion Rate[c]: 0.029 kg/day

Body Weight[d]: 0.55 kg

Contaminant		Sediment Concentrations mg/kg	Surface Water Concentrations mg/L	Tissue Concentrations mg/kg	Sediment Exposure mg/day	Water Exposure mg/day	Prey Exposure mg/day	Total Exposure mg/day	Daily Dose mg/kgBW/day	NOAEL mg/kdBW/day	LOAEL mg/kdBW/day	NOAEL HQ	LOAEL HQ
Mercury													
	Max	0.2600	0.00006	0.096	0.00078	0.0000	0.0028	0.003567468	0.0065	0.032	0.16	2.03E-01	4.05E-02
	Average	0.1750	0.00004	0.0363	0.000525	0.0000	0.0011	0.001580012	0.0029	0.032	0.16	8.98E-02	1.80E-02
Total BHC													
	Max	0.0427	0	0.01365	0.0001281	0.0000	0.0004	0.00052395	0.0010	0.014	0.14	6.80E-02	6.80E-03
	Average	0.0326	0.0001	0.009145	0.0000978	0.0000	0.0003	0.000368785	0.0007	0.014	0.14	4.79E-02	4.79E-03
Total Chlordane													
	Max	0.0197	0	0.00755	0.0000591	0.0000	0.0002	0.00027805	0.0005	3.9	7.8	1.30E-04	6.48E-05
	Average	0.0159	0.0001	0.00467	0.0000477	0.0000	0.0001	0.00018891	0.0003	3.9	7.8	8.81E-05	4.40E-05
Dieldrin													
	Max	0.02	0	0.0007	0.00006	0.0000	0.0000	0.0000803	0.0001	0.015	0.15	9.73E-03	9.73E-04
	Average	0.0163	0.00004	0.0851	0.0000489	0.0000	0.0025	0.002519112	0.0046	0.015	0.15	3.05E-01	3.05E-02
Total DDT													
	Max	0.1960	0	0.072	0.000588	0.0000	0.0021	0.002676	0.0049	0.6	3	8.11E-03	1.62E-03
	Average	0.1175	0.0002	0.03275	0.0003525	0.0000	0.0009	0.00131381	0.0024	0.6	3	3.98E-03	7.96E-04
Total Endrin													
	Max	0.0119	0	0	0.0000357	0.0000	0.0000	0.0000357	0.0001	0.092	0.92	7.06E-04	7.06E-05
	Average	0.0329	0.0002	0.01403	0.0000987	0.0000	0.0004	0.00051713	0.0009	0.092	0.92	1.02E-02	1.02E-03
Total PCB													
	Max	2.1400	0	0.568	0.00642	0.0000	0.0165	0.0228775	0.0416	0.05	0.1	8.32E-01	4.16E-01
	Average	1.5062	0.004	0.457	0.0045186	0.0002	0.0133	0.0180028	0.0327	0.05	0.1	6.55E-01	3.27E-01

Notes:
Sediment Exposure = Sediment Concentration * Sediment Ingestion Rate (mg/day)
Surface Water Exposure = Surface Water Concentration * Water Ingestion Rate (mg/day)
Prey Exposure = Tissue Concentration * Food Ingestion Rate (mg/day)
Total Exposure = Sediment Exposure + Surface Water Exposure + Prey Exposure (mg/day)

Daily Dose = Total Exposure / Body Weight (mg/kgBW/day)

NOAEL HQ = Daily Dose/NOAEL (mg/kgBW/day)
LOAEL HQ = Daily Dose/LOAEL (mg/kgBW/day)

a Guilday 1957.
b Based on Morrison 1957.
c Chew 1951.
d Estimated based on the results of Beyer et al. 1994.

Table 11-4-6
Red Drum Exposure Model
OU 2 Phase IIB/III Data

	Me in Sediment (Cs) (ppm)	MeHg in Forage Fish (Cf) (ppm)A	MeHg in Crustaceans (Ccr) (ppm)	MeHg in Invertebrates (Cinv) (ppm)	MeHg in Red Drum Tissue (ppm)	NOAEL HQ	LOAEL HQ
OU 2 Maximum	0.46	0.096	0.1288	0.046	0.53	**3.54**	**1.77**
OU 2 Average	0.162	0.0363	0.04536	0.0162	0.19	**1.27**	0.64

Note:
A = Forage Fish tissue concentrations taken from site specific biota collected to support Site 41 RI.