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FINAL REMEDIAL INVESTIGATION REPORT VOLUME 6 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 VI OF XI
SECTIONS 13 — 14

Prepared for:

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Environmental Action Navy
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Pensacola, Florida

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13.0 CHEVALIER FIELD WETLANDS

The Chevalier Field wetlands include Wetlands 63A and 63B, which are located along the shoreline of Pensacola Bay, to the east of the NATTC complex on the former Chevalier Field area and immediately south and north of Site 14.

Site History

First named Station Field, Chevalier Field was built in 1922 to accommodate land-based aircraft operations at NAS Pensacola. Beginning in 1935, the airfield's runways were paved to facilitate increased training requirements, and the facility was renamed Chevalier Field. In 1947, NAS Pensacola was designated as an aircraft overhaul facility, with some of those operations being located at Chevalier Field. Chevalier Field remained the primary landing field for NAS Pensacola until the opening of Forest Sherman Field in 1955. Chevalier Field stayed open because it held aircraft maintenance facilities, such as the Overhaul and Repair Department.

Beginning in the early 1970s, aircraft repair and overhaul facilities were expanded at Chevalier Field, and these facilities were renamed the Naval Air Rework Facility, and later the Naval Aviation Depot. Intermediate level maintenance of fixed wing aircraft and later helicopters continued at Chevalier Field through 1995, when these facilities were closed and razed to pave the way for the construction of the NATTC, which commenced operations in 1997.

Previous Site Investigations

E/A&H RI Investigation Synopsis

IR sites generally associated with Chevalier Field included: OU 6 Sites 9 (Navy Yard Disposal), 29 (Soil South of Building 3460), and 34 (Solvent North of Building 3557); Site 14, Dredge Spoil Fill Site; and portions of Site 36, IWTP Sewer Line. These sites were investigated by E/A&H and are described in Section 3 in Table 3-1 (tables are located at the end of each section). Section 3.5 contains historical and updated information concerning the RIs conducted by E/A&H at these sites and the remedial alternatives selected for these areas.

1994 — Building 3380 Pre-Removal Investigation

From January 1992 to March 1994, Asea Brown Boveri (ABB), Environmental Services, Inc. assessed contamination at Building 2662 (Site 2662W), the former site of a 1,000-gallon UST. As agreed upon by the Tier I Partnering Team, the areas of Buildings 2662 and 3380 were transferred to the IR program and included under the E/A&H Site 36 investigation, due to the contaminants found by ABB and the buildings' proximity to the IWTP sewer line (E/A&H, 1997b).

E/A&H performed fieldwork in June and July 1994 in the area of Building 3380 including soil and groundwater sampling. During a 1994 meeting, the parties agreed to perform a removal at Site 3380 where there was SVOC and VOC contamination that was presented in a technical memorandum on Building 3380. In December of 1994, Bechtel Environmental, Inc. removed and disposed of the contaminated soil from the areas of Buildings 2662 and 3380. Confirmatory sampling was performed by E/A&H personnel (E/A&H, 1997b).

1996 Soil Removals

In 1996, several soil removals were conducted in the Chevalier Field area to remove contaminated soils associated with the OU 6 sites and Site 36 that were discovered during RIs associated with these sites. Removals were conducted at Sites 9, 29, 34, and 36 prior to construction of the NATTC facilities at Chevalier Field.

Chevalier Field Wetlands

The Site 41 wetlands associated with Chevalier Field included Wetlands 63A and 63B. As shown in Figure 13-1 (figures are located at the end of each section), both wetlands are located on the west side of Chevalier Field, along the shoreline of Pensacola Bay. Wetland 63A is located directly south of the former Site 14 area, while Wetland 63B is located due north of Site 14. As discussed in Section 3.5, after the berms of Site 14 were collapsed into the sediment basins, eliminating potential exposure pathways, the site was approved by USEPA and FDEP for NFA. These wetlands are located across Chevalier Field from the OU 6 area and likely were not impacted from these sites. Wetland 63A is adjacent to the area of Buildings 2662 and 3880 which were investigated during the Site 36 RI. Wetland 63A also receives stormwater from several outfalls that drain runoff from the southeast portion of Chevalier Field.

Figure 13-2 shows the area topography and Figure 13-3 presents the shallow potentiometric map. Figure 13-4 presents the soil and groundwater and Phase II sediment and surface water sampling locations.

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 13-5 presents the Chevalier Field Area Total DDT for sediment, Figure 13-6 presents the Swartz TOC normalized PAHs, and Figure 13-7 presents the Mean ERM quotient categories and parameters exceeding ERMs. Figure 13-8 presents the chemistry and/or 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 Chevalier Field is presented in Section 13.3.

Sitewide View

N
W E
S

Legend

- Operable Unit (OU)
- Site
- Wetland- Approximate
- Chevalier Field Wetland- Approximate
- Building
- Shoreline
- Road
- Storm water Inlet
- Storm water Headwall
- Storm water Pipe

Note: Only the wetlands associated with Chevalier Field have labels.

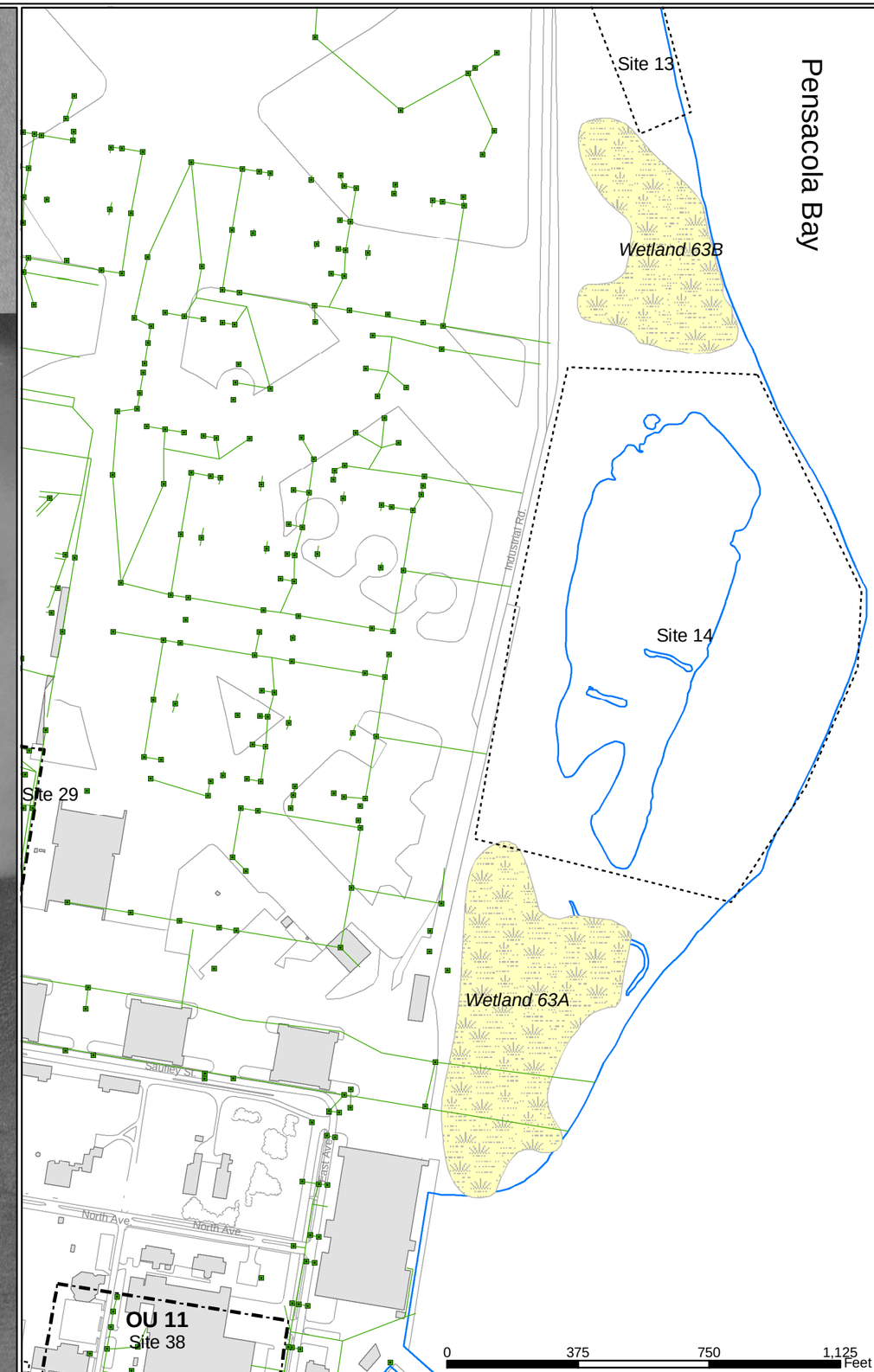

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FIGURE 13-1
Chevalier Field
Wetlands and Nearby Sites

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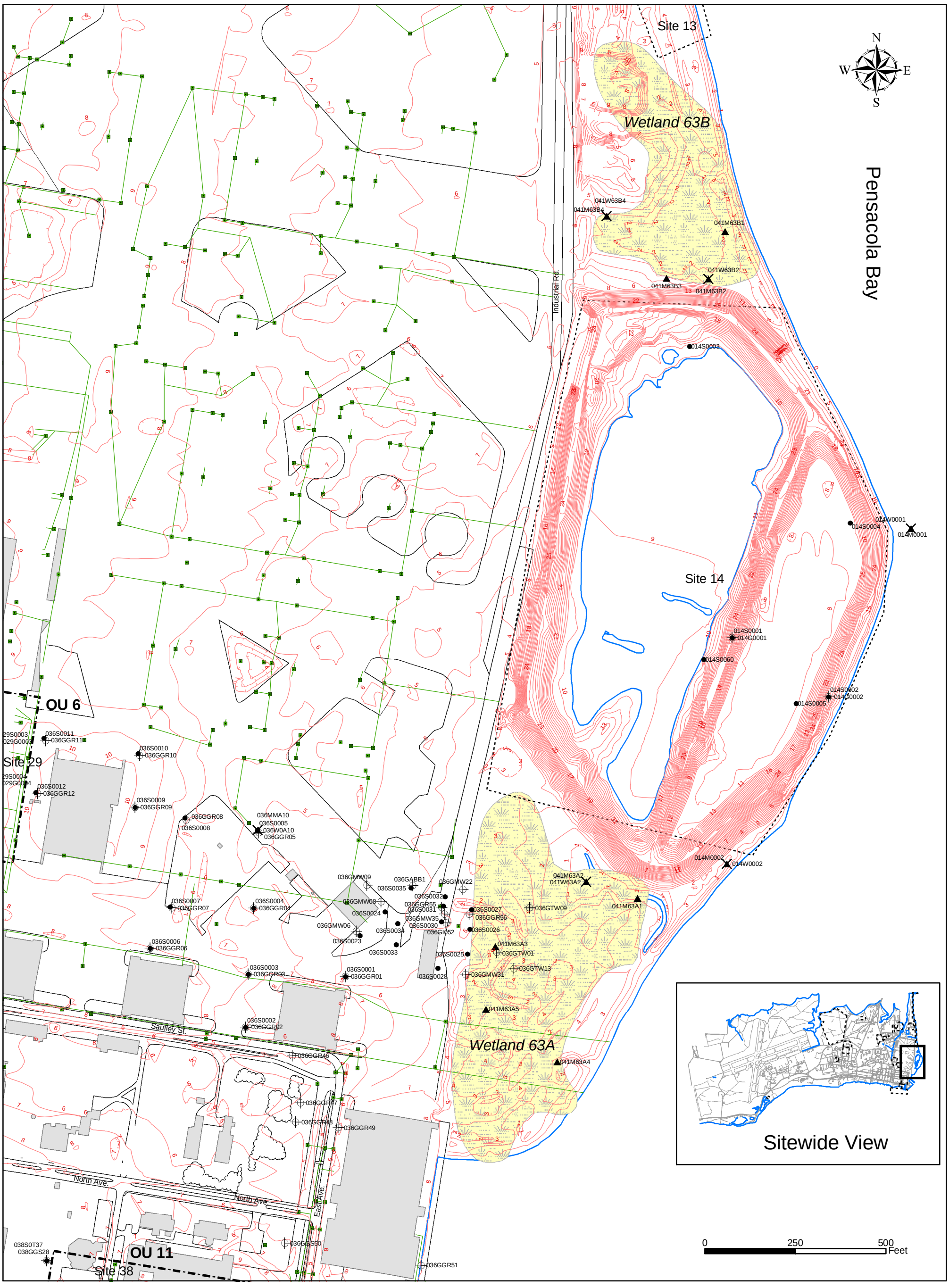

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FIGURE 13-2
Chevalier Field Wetlands
Study Area Topography

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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
- Chevalier Field Wetland- Approximate
- Building
- Topographic Contour(ft)
- Shoreline
- Road
- Storm water Pipe
- Storm water Inlet
- Storm water Headwall

Note: Only the wetlands associated with Chevalier Field have labels.

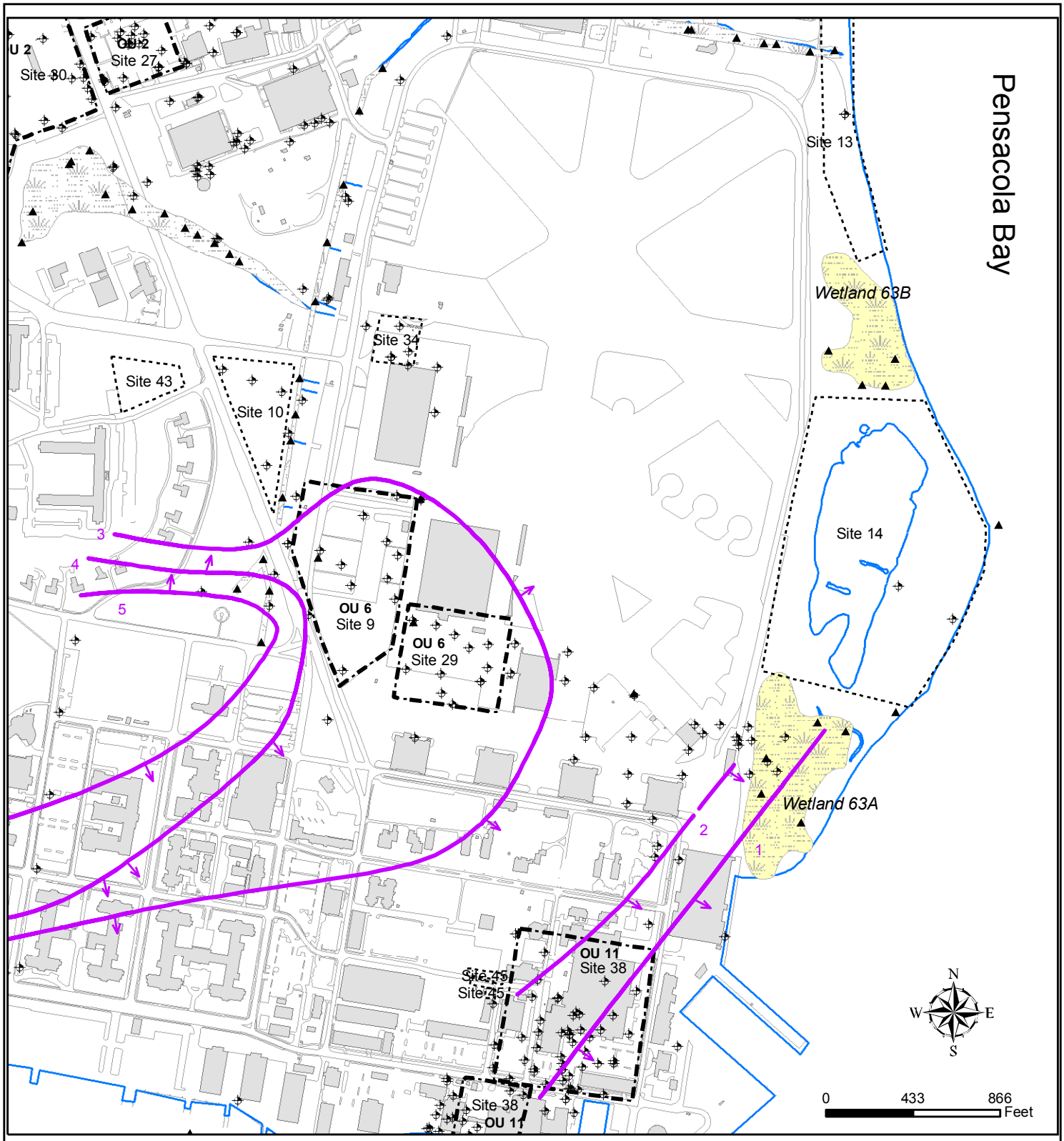

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FIGURE 13-3
Chevalier Field Wetlands
Shallow Potentiometric Surface

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Legend

Shallow Potentiometric Surface
- Contour (1 ft interval)
- Groundwater Flow direction

Sitewide Sample Location
- Sediment Sample
- Groundwater Well
- Chevalier Field Wetland-Approximate
- Wetland- Approximate
- Operable Unit (OU)
- Site

- Building
- Shoreline
- Road

Notes:
Groundwater potentiometric contours are from the Site 36 Site Characterization Report, 1997.

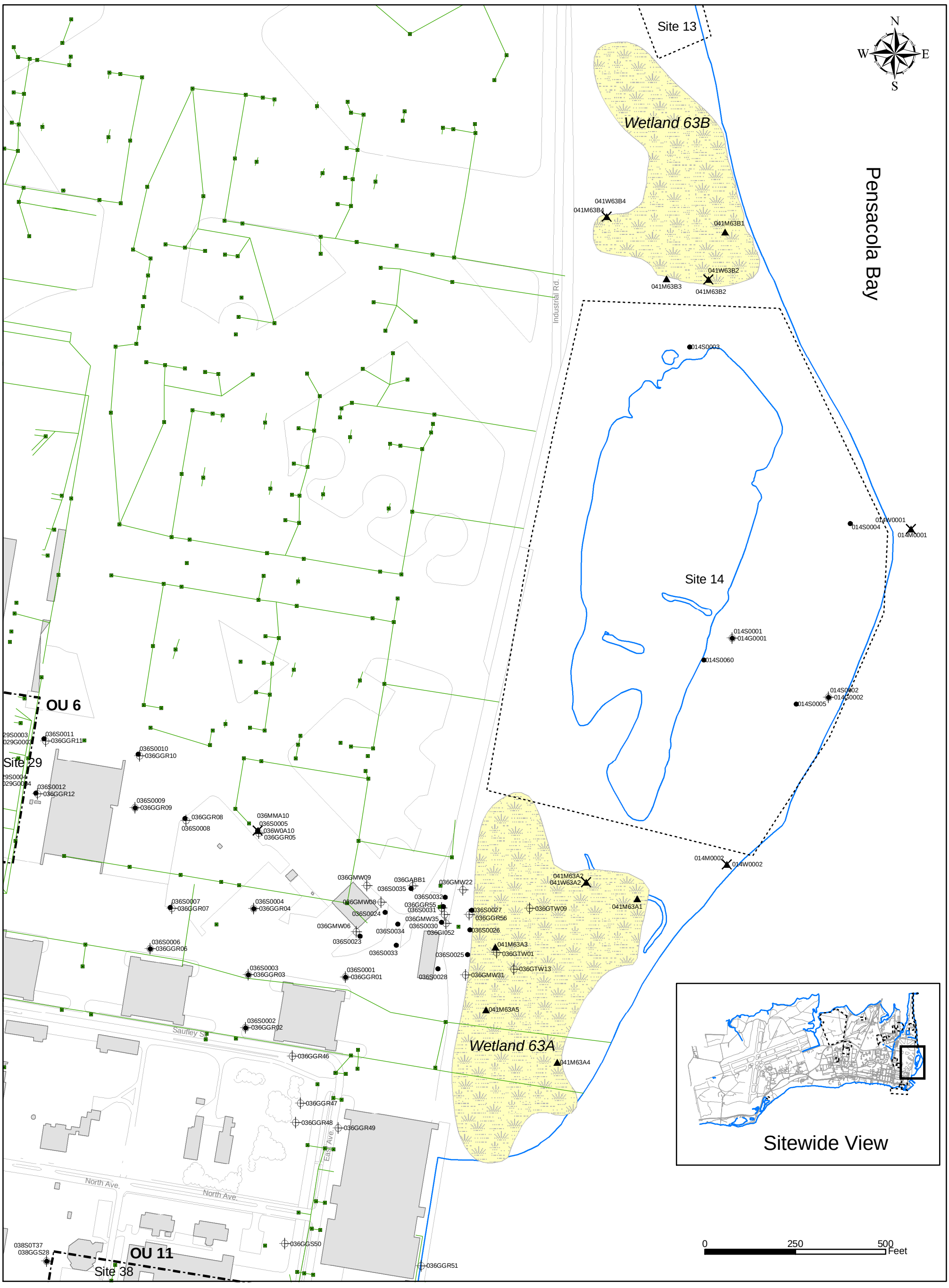

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FIGURE 13-4
Chevalier Field Wetlands, Nearby Sites, and Adjacent Soils Borings and Monitoring Wells

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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
- Chevalier Field Wetland- Approximate
- Building
- Shoreline
- Road
- Storm water Pipe
- Storm water Inlet
- Storm water Headwall

Note: Only the wetlands associated with Chevalier Field have labels.

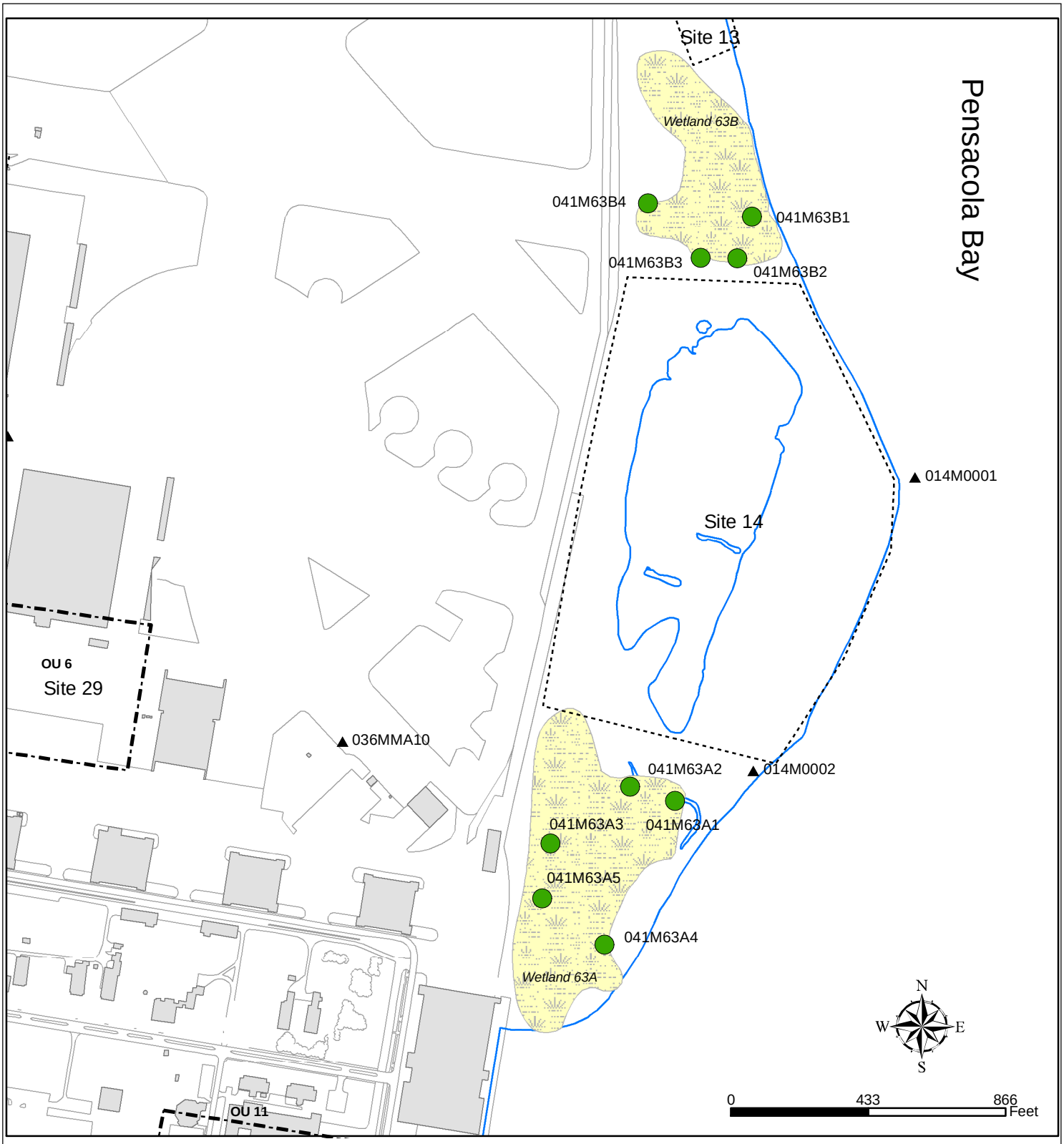

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FIGURE 13-5
Chevalier Field Wetlands
Sediment Total DDT

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Legend

Site 41 RI Sediment Sample

Phase II Total DDT

- 0.285 - 109.99
- 110.00(BL) - 3460.00
- Sediment Sample without Total DDT Calc
- Operable Unit (OU)
- Site
- Chevalier Field Wetland- Approximate
- Wetland- Approximate
- Building
- Shoreline
- Road

Note:
BL is the total DDT basewide level.
Result units are ug/kg.

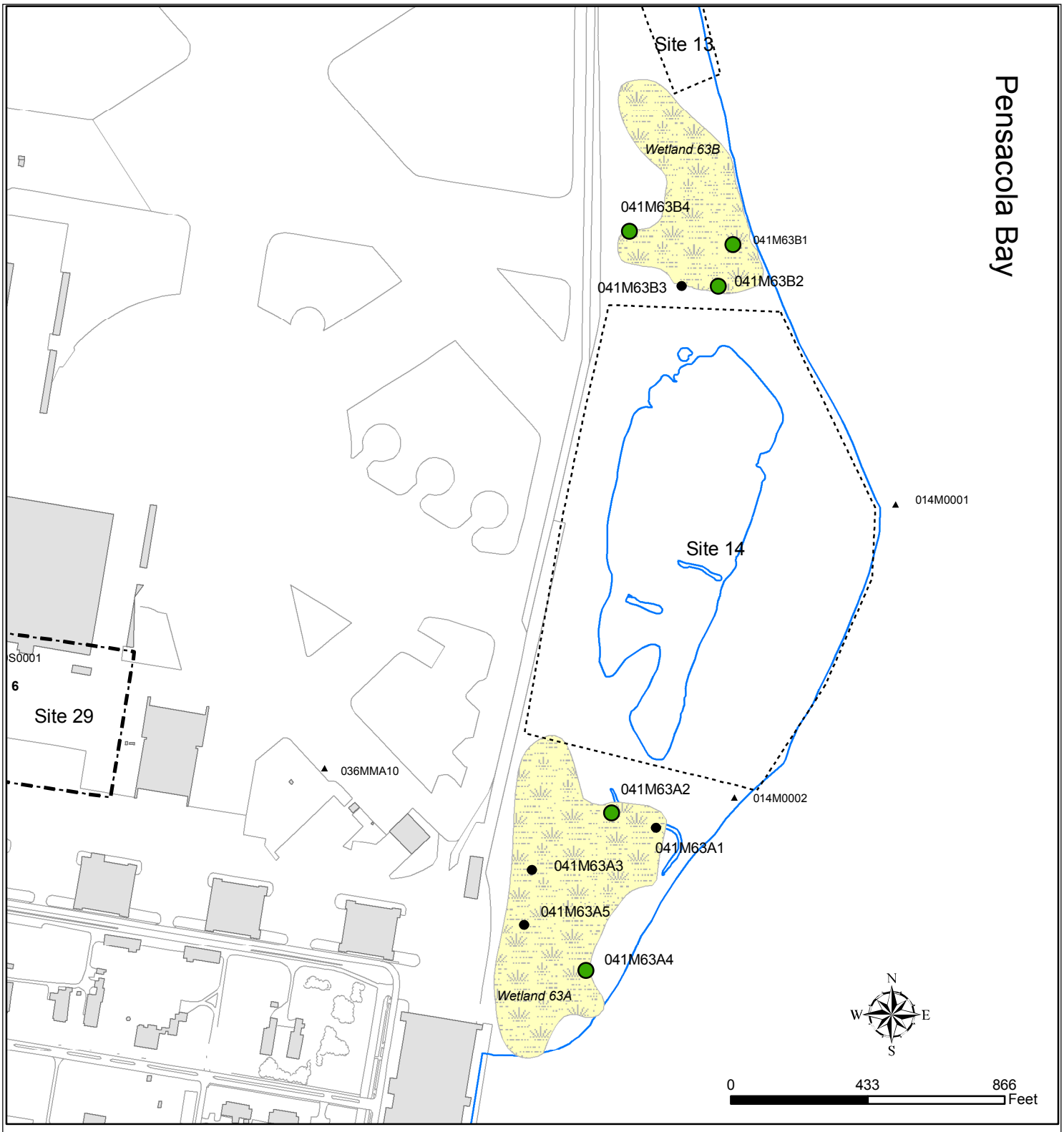

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FIGURE 13-6
Chevalier Field Wetlands
Sediment Swartz Normalized Total PAHs

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Site 41
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Legend

Site 41 RI Sediment Sample

Phase II TOC Normalized Total PAHs

- 1.94 - 289.99
- 290.00(TEC) - 1262.56
- Nondetect TOC Normalized Total PAH
- Sediment sample without TOC analysis
- Operable Unit (OU)
- Site
- Chevalier Field Wetland-Approximate
- Wetland- Approximate
- Building
- Shoreline
- Road

Note:
Result units are mg/kg-oc.

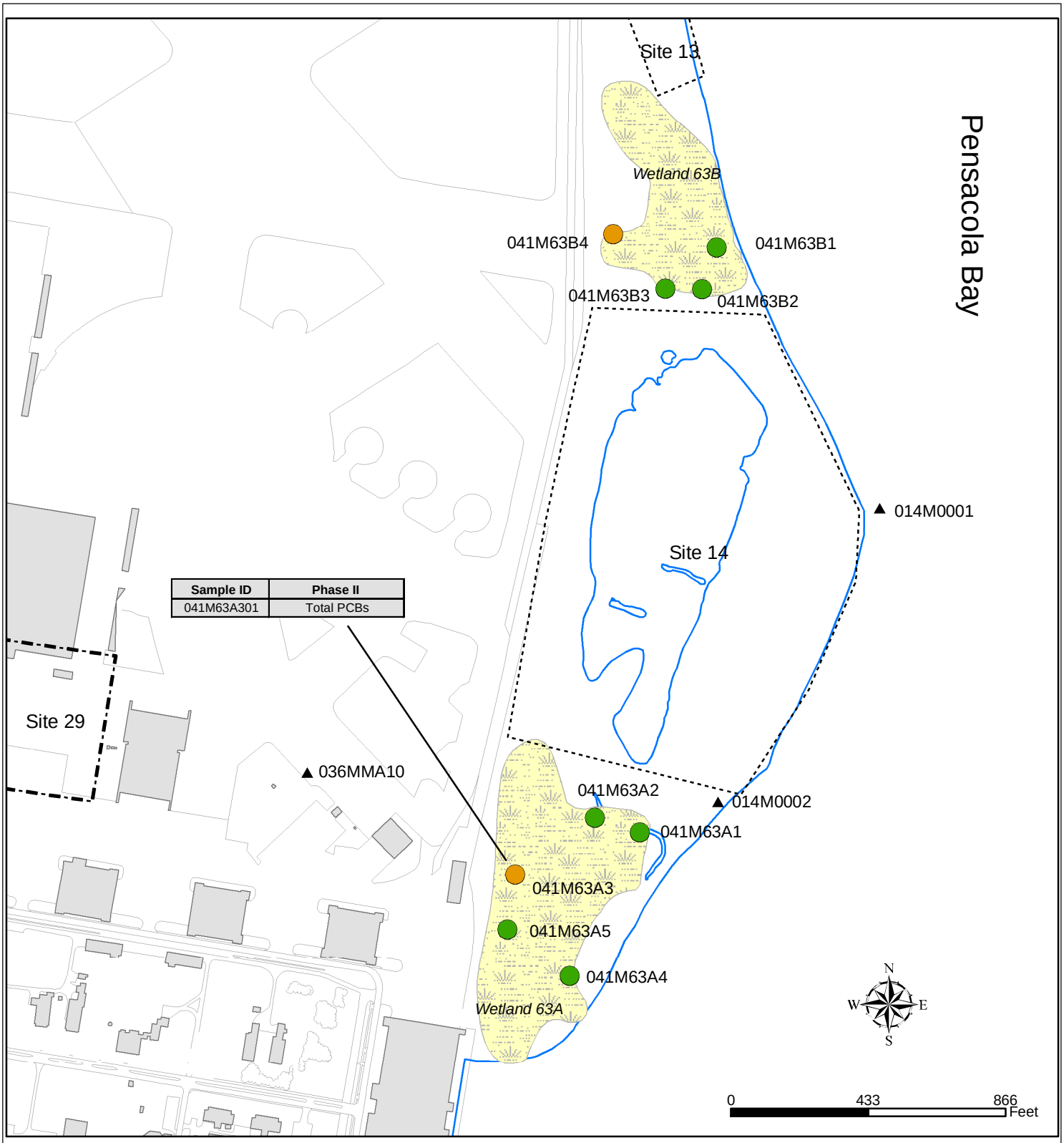

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FIGURE 13-7
Chevalier Field Wetlands
Sediment Sample ERM Quotient
Categories and Parameters that Exceeded the ERM

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Legend

Sediment Sample with ERM Category

Phase II Mean ERM Quotient Category

- 1
- 2
- Sediment Sample without ERM
- Chevalier Field Wetland- Approximate
- Wetland- Approximate

- Site
- Operable Unit (OU)
- Building
- Shoreline
- Road

Note:
Samples without a parameter table do not have parameters that exceeded the ERM value. Only the wetlands associated with Chavalier Field have labels.

Table indicates parameters that exceeded the ERM for each sample phase.

Sample ID	Phase II	Phase III	Phase 2001	Phase 2004

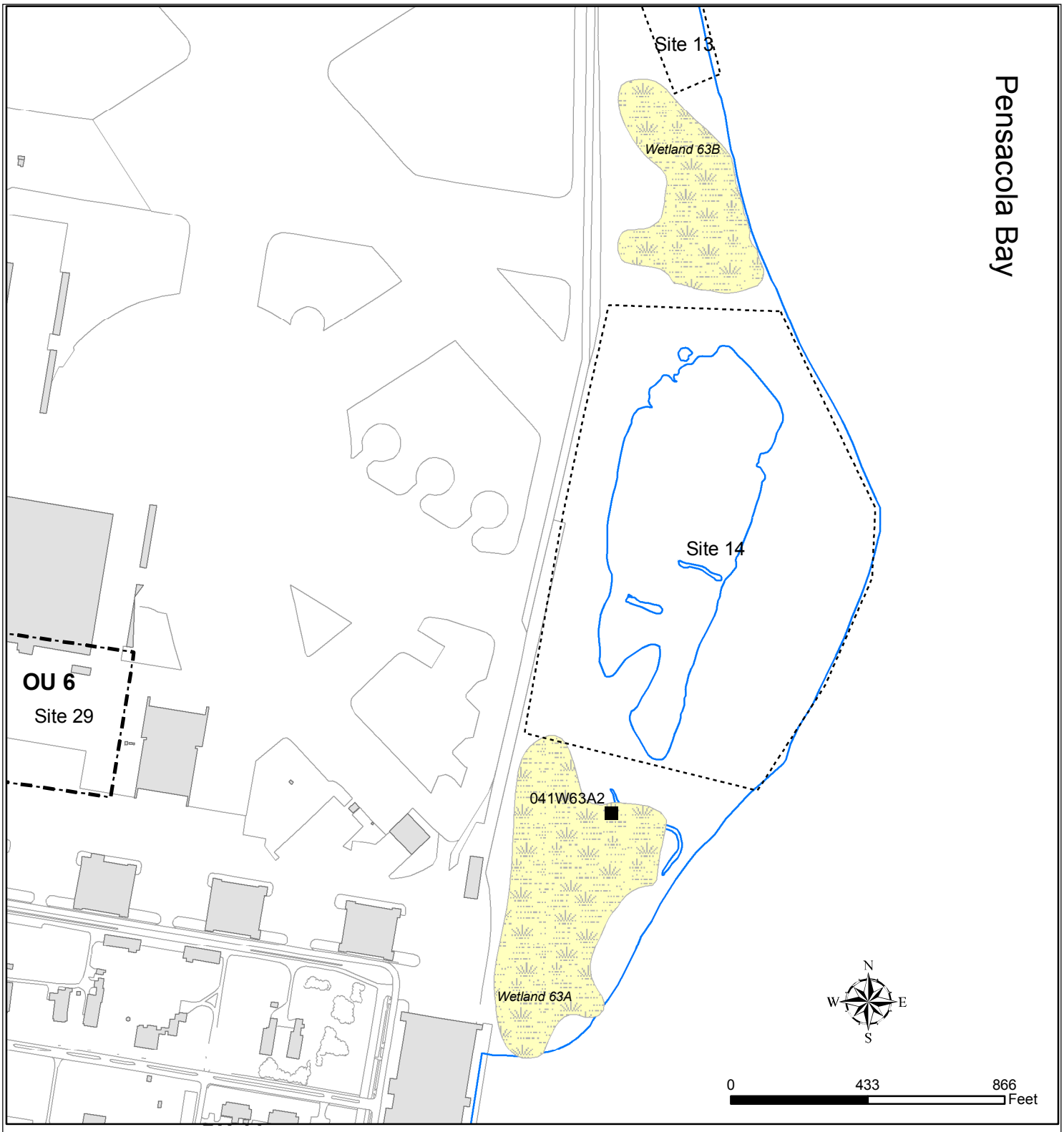

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FIGURE 13-8
Chevalier Field Wetlands
Chemistry and Toxicity Sample Locations

Final Remedial Investigation Report
Site 41
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Legend

Sediment Sample
- Chemistry only
- Chemistry and Toxicity

Surface Water Sample
- Total and Dissolved Metals only
- Total and Dissolved Metals and VOCs
- Chemistry only
- Chemistry and Toxicity
- Species Diversity Sample
- Fish Tissue Sample
- Operable Unit (OU)
- Site
- Chevalier Field Wetland-Approximate
- Wetland- Approximate
- Building
- Shoreline
- Road

13.1 Wetland 63A — Screening Level Problem Formulation

13.1.1 Site Description and Habitats Present at Wetland 63A

Wetland 63A is located on the shoreline of Pensacola Bay, southeast of Chevalier Field and south of Site 14. Parsons and Pruitt (USEPA, 1991a) described this wetland as an estuarine emergent system. Wetland 63A is fed by storm water runoff from the southeastern side of Chevalier Field and the surrounding area to the west.

Photograph 1 Wetland 63A — Facing Northeast

Wetland 63A generally flows east into Pensacola Bay through a 3 feet wide drainage channel that ranges from 1 to about 3 feet in depth. This drainage channel usually has standing water in it, containing aquatic weeds. The wetland has a maximum width of about 500 feet and is covered mostly with typical vegetation indicative of a disturbed area (as evidenced by the predominance of cattails and introduced weeds and shrubs). Estuarine plants found in the wetland include common reed *(Phragmites australis)* and saw grass *(Caladium jamaicense)*.

Wetland 63A is bordered by Site 36. 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.

Historically, Buildings 3383 and 2252 were located directly west of Wetland 63A. A pipeline connecting the carrier dock to the Bilge Water Plant, along with a portion of the IWTP sewer line, ran to the west of Wetland 63A beneath Chevalier Field. In 1994, an interim soil removal removed contaminated soils associated with Buildings 2662 and 3880.

13.1.2 Wetland 63A — Sample Location Description

Phase II Sediment Sample Location Description

Five Phase II sediment samples were collected in Wetland 63A for the ERA (Figure 13-4). Sample locations 041M63A101 and 041M63A201 were collected from the northern portion of the wetland, while locations 041M63A301 and 041M63A501 were collected from the western side, and 041M63A401 was collected along the southwestern portion of this wetland. Table 13-1-1 (tables are located at the end of each section) provides a physical description of the Phase II sediments collected at Wetland 63A. Phase II sediments at Wetland 63A were composed of dark grayish brown poorly graded sand, fine (041M63A101 and 041M63A201) to light olive brown silty sand with organics (041M63A401). TOC concentrations ranged from 0.08% (041M63A101) to 4.2% (041M63A301).

Phase II Surface Water Sample Location Description

One surface water sample was collected at Wetland 63A and was collocated with the sediment station 041M63A201 (Figure 13-4). Table 13-1-2 provides a physical description of the surface water collected at Wetland 63A. Surface water from Wetland 63A was found to be slightly hard, slightly acidic pH, and reported salinity at 14.5 ppt.

Phase IV Surface Water Sample Location Description

One surface water sample (collocated with sediment sample 041M63A201) was collected from Wetland 63A (Figure 13-4). Surface water parameters were not collected during the Phase IV investigation due to sampler error.

13.1.3 Wetland 63A — Nature and Extent of Contamination

Phase II Sediment

Figure 13-4 presents the Phase II sediment sampling locations for Wetland 63A. Table 13-1-3 presents a summary of the analytical results of the five Phase II sediment samples.

Metals — Twenty metals were detected during Phase II sediment sampling at Wetland 63A. The distribution of inorganic detections and reference value exceedances during Phase II at Wetland 63A were concentrated at two locations — location 041M63A301, near the middle of the wetland's west side, where 13 analytes exceeded the estuarine reference values, and location 041M63A401, near the southeast edge of the wetland, where nine analytes exceeded the estuarine reference values. The analytes exceeding the reference values were aluminum, antimony, barium, cadmium, calcium, chromium, cooper, iron, lead, manganese, mercury, nickel, vanadium, and zinc. Locations 041M63A101 and 041M63A201, near the northeast edge of the wetland, and location 041M63A501, near the west edge of the wetland, contained inorganic detections as well. Locations 041M63A101 and 041M63A201 did not have reference concentration exceedances; however, calcium exceeded the reference value at sample location 041M63A501.

Pesticides and PCBs — Ten pesticide compounds and the PCB aroclor-1260 were detected during Phase II sediment sampling at Wetland 63A. 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 63A sediments during Phase II sampling was situated near its north and west edges at locations 041M63A201 and 041M63A301. Location 041M63A201 had five pesticide detections. Location 041M63A301 had seven pesticide detections, with relatively higher concentrations compared to other locations. Three detections were identified at location 041M63A401. Aroclor-1260 was detected at four of the five sediment sample locations, with the highest detection located at 041M63A301, near the west central edge of the wetland.

SVOCs — Twelve SVOCs were detected in sediment samples collected during Phase II sampling at Wetland 63A. Four of the five Sample locations exhibited single detections of SVOCs. Location 041M63A401, near the southeast edge of the wetland, had the greatest number of SVOC detections with 12 compounds; however, the concentrations were relatively low. Butylbenzylphthalate was detected at location 041M63A301 which was the highest detected

concentration. This location corresponds with the greatest diversity of pesticides and metals detections.

VOCs — No VOCs were detected in sediments collected from Wetland 63A during Phase II sampling.

Phase II Surface Water

Figure 13-4 presents the surface water sampling locations for Wetland 63A. Table 13-1-4 summarizes the analytical results for the one Wetland 63A surface water samples.

Metals — Fourteen metals were detected in the single Phase II surface water sample taken from Wetland 63A. Location 041W63A201, located near the north edge of the wetland, contained six metals above the estuarine reference concentration.

All of the exceedances were generally within an order of magnitude, except lead, which was detected significantly above its reference concentration. Other metals detected above the reference concentrations were arsenic, barium, manganese, selenium, and zinc.

Organics — There were no organic constituents detected in surface water collected during the Phase II investigation of Wetland 63A.

Phase IV Surface Water

Figure 13-4 presents the Phase IV surface water sampling location for Wetland 63A collected in 2004. Table 13-1-5 summarizes the analytical results for the one Phase IV surface water samples. The surface water sample was analyzed for metals only.

Metals — Twelve metals were detected in the single Phase IV surface water sample collected from Wetland 63A. Location 041W63A202, located near the north edge of the wetland, contained two metals (barium and manganese) above the estuarine reference concentration.

13.1.4 Ecological Risk Assessment

13.1.4.1 Phase II Investigation Summary — Wetland 63A

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 13-1-6, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs

greater than one or with no screening values were carried forward to COPC refinement. COPCs retained after screening are listed in Table 13-1-7.

Baseline Problem Formulation — Wetland 63A 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 for 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 is presented in Table 13-1-8. COPCs retained after refinement are presented in Table 13-1-9. Additionally, the tables compare: (1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and (2) Wetland 63A concentrations to reference concentrations.

As shown on Figure 13-5, total DDT and its daughter products were below the basewide levels, indicating that pesticide application levels in this area were in accordance with other base activities. As a result, total DDT and its daughter products were carried forward as COPCs in the ERA process. One other pesticide was detected and retained as a COPC, endosulfan sulfate. Total PCB, specifically aroclor-1260, generated a reference value exceedance and was therefore retained as a COPC.

At Wetland 63A, the following inorganic constituents exceeded their Site 41 estuarine sediment reference concentrations and were carried forward in the ERA process as COPCs: aluminum,

barium, cadmium, iron, manganese, and vanadium. Calcium also exceeded its reference concentration but is an essential nutrient. The essential nutrient is not carried forward in the ERA process. Based on regression analysis, barium was identified as an outlier at sample location 041M63B301, when compared to both aluminum and iron concentrations.

No VOCs were detected in Wetland 63A sediments; however, when normalized to detected TOC concentrations, PAHs did not appear to be risk drivers for Wetland 63A as shown on Figure 13-6. Several other SVOCs were detected and retained as COPCs: benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene.

Table 13-1-10 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, four Sample locations (041M63A101, 041M63A201, 041M63A401, and 041M63A501) were determined to be Category 1, indicating that sediments from these areas of the wetland were considered nontoxic. Station 041M63A301 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. Figure 13-7 shows the Mean ERM category for each sediment Sample location at Wetland 63A.

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

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

Baseline Problem Formulation — Wetland 63A 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 13-1-13. COPCs retained after refinement are presented in Table 13-1-14. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 63A, barium, lead, and manganese exceeded their Site 41 estuarine reference surface water concentrations (Table 13-1-13) and were retained as COPCs.

At Wetland 63A during the Phase II investigation, barium and manganese were detected in both sediment and surface water samples. Wetland 63A sediments contained several PAHs, one pesticide, and one PCB. Several inorganic constituents were also detected in Wetland 63A sediments. The only detections in Wetland 63A surface water were inorganic constituents.

The conceptual model below symbolizes which environmental habitats may be impacted by Wetland 63A Phase II constituents retained during the ERA process.

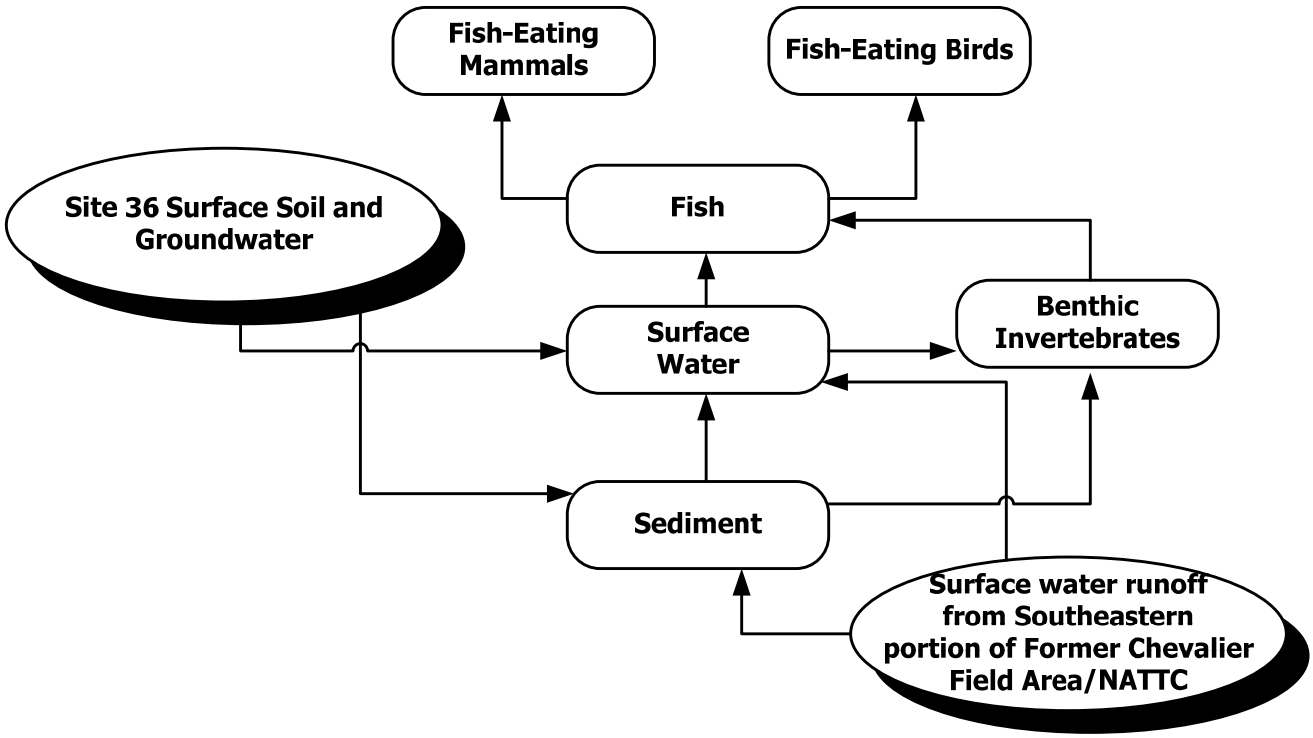
13.1.4.2 Phase IV Investigation Summary — Wetland 63A

An additional surface water sample was collected and analyzed for TAL metals in 2004 to confirm the lead detection in the Phase II surface water sample.

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

As presented in Table 13-1-15, the surface water sample was compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 13-1-16.

Wetland 63A
Conceptual Site Model



Baseline Problem Formulation — Wetland 63A Surface Water COPC Refinement

The same approach used to evaluate Phase II surface water sample (Section 13.1.4.1) was applied to surface water collected in 2004.

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 13-1-17. A list of COPCs retained after refinement are presented in Table 13-1-18. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 63A, barium and manganese exceeded its Site 41 reference concentration (Table 13-1-17) and were carried forward as COPCs.

Barium was the common constituent between the Phase II and the Phase IV investigation. During the Phase II investigation in 1996, barium was detected in sediment with a maximum concentration of 16.3 mg/kg and in surface water with maximum concentrations

of 53.3 µg/L. During the Phase IV investigation, barium was detected at 61 µg/L in surface water. Although above reference conditions, these levels did not warrant additional investigation.

As summarized in the approved *Final RI/FS SAP Addendum* (E/A&H, 1997d), Wetland 63A was identified as an Orange-Coded Wetland based on the Phase II results, indicating contamination that was possibly related to nearby IR sites, but with limited contaminants exceeding sediment criteria and reference concentrations. Contaminants detected in these wetlands were also considered to be possible sources of ecological risk. Wetland 63A was also classified as a Group C wetland. Based on similar contaminants and physical characteristics, the other Group C wetlands include 4D, 15, 16, 18 (A&B). Wetlands 16 and 18 were sampled in Phase III to represent the Group C wetlands based on their relatively higher concentrations and extent of contamination.

13.1.5 Wetland 63A — Human Health Risk Assessment

Wetland 63 is described in Section 13.1.1, and the HHRA is summarized below.

13.1.5.1 Site Data

Section 13.1.3 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland 63A during Phases II and IV of the RI. Surface water and sediment data for Wetland 63A are summarized in Tables 13-1-19 through 13-1-24 (Phase II data), and Tables 13-1-25 through 13-1-27 (Phase IV data).

13.1.5.2 Conceptual Site Model

As described in Section 13.1.1, Wetland 63A is located on the shoreline of Pensacola Bay, southeast of Chevalier Field, and south of Site 14. Wetland 63B is located on the northeast side of Chevalier Field, along the shoreline of Pensacola Bay and directly north of Site 14. Because Wetland 63 is located in an unrestricted area of the base, the wetland is accessible to Navy personnel and trespassers. Wetlands 63A and 63B are intermittently flooded, so surface water contact was assessed for maintenance and trespasser scenarios. Sediment locations are inundated all year at some locations, preventing significant sediment exposure. However, sediment dries at other locations within these wetlands, where exposure could be similar to soil exposure. Contact with sediment was assessed for all sediment locations within these wetlands. Although trespassers may be able to access the site, water depths are too shallow to support regular fishing for game fish species. Consequently, fish tissue ingestion pathways were excluded.

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

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

13.1.5.3 Risk Characterization

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

Phase II Data

Maintenance Worker

As shown in Tables 13-1-19 through 13-1-21, 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 13-1-22 through 13-1-24, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Trespasser

As shown in Tables 13-1-19 through 13-1-21, sediment ingestion and dermal contact risk estimates for trespasser were below the FDEP risk threshold. Hazard indices were below 1.0.

As shown in Tables 13-1-22 through 13-1-24, surface water ingestion and dermal contact risk estimates for trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 63A Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	1.08E-02	3.76E-07
	Surface water	3.42E-03	N/A
Trespasser	Sediment	1.66E-02	2.34E-07
	Surface water	2.56E-03	N/A

Based on Phase II data, no COCs for Wetland 63A were identified.

Phase IV Data

Maintenance Worker

As shown in Tables 13-1-25 through 13-1-27, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Trespasser

As shown in Tables 13-1-25 through 13-1-27, surface water ingestion and dermal contact risk estimates trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 63A Phase IV Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	3.09E-03	N/A
Trespasser	Surface water	2.31E-03	N/A

Based on Phase IV data, no COCs for Wetland 63A were identified.

Wetland 63A HHRA COC Summary

No COCs were identified in the HHRA for Wetland 63A.

13.1.6 Wetland 63A — Fate and Transport Analysis

This wetland is located on the southeastern side the former Chevalier Field area and borders Pensacola Bay on its eastern boundary. It is close to a former IR site located on the southeastern corner of Chevalier Field (Building 2661). Five sediments and one surface water sample were collected as part of Phase II activities. The wetland receives drainage from the southeastern portion of former Chevalier Field and is tidally influenced by flux from Pensacola Bay (see Figure 13-1).

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Tables 13-1-9 (sediment, Phase II), 13-1-14 (surface water, Phase II), and 13-1-18 (surface water, Phase IV). Provided below are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis.

Monitoring Wells Associated with 63A: 036GGTW09, 036GGTW13, 036GGTW01, 036GGMW31, 036GGR56, 036GMW22, 036GMW35, 036GGR55, 036ABB1, 036GMW08, 036GMW09, 036GMW06, 036GGR01, 0036GGR46, 036GGR47, 036GGR48, 036GGR49

Borings Associated with 63A: 036S0023, 036S0001, 036S0024, 036S0034, 036S0033, 036S0028, 00S0035, 036S0030, 036S0031, 036S0032, 036S0025, 036S0026, 036S0027

Surface Water/Sediment Transport into the Wetlands Media:

Surface Water — There was 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 water drainage to this wetland is runoff from the former Chevalier Field area. The wetland may also be affected by storm water runoff and groundwater discharge from the former Building 2661 site; borings and wells from this site were evaluated as to potential impacts to the wetland.

Sediment — Based on the data from surface soil in associated borings, the storm water to wetland sediment pathway was validated for the following parameters:

Phase II
Aluminum
Barium
Cadmium
Iron
Manganese
Vanadium
Aroclor-1260
Total PCBs

Groundwater Discharge Into The Wetland Media:

Surface Water — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway was validated and significant for the following parameters:

Phase II
Barium
Lead
Manganese

Phase IV
Barium
Manganese

Sediment — Based on the data from associated monitoring wells, the groundwater to sediment pathway was validated and significant for the following parameters:

Phase II
Aluminum
Barium
Iron
Manganese
Vanadium

Surface Water/Sediment Transport within The Wetlands:

Surface Water — Because only one surface water sample was collected, this pathway was not evaluated.

Sediment — To evaluate this pathway, the wetland was separated into a northern and southern portion. For the northern portion, upgradient location 041M63A2 was compared to downgradient 041M63A1; for the southern portion, upgradient location 041M63A5 was compared to downgradient location 041M63A4.

Northern Portion — Evaluation of the sediment locations indicated a decrease in detected organics (14 metals and seven organics at the upgradient location versus 14 metals and one organic at the downgradient location). For the detected metals at the downgradient location, one parameter increased in concentration, and 13 exhibited very slight decreases. The only organic present at the downgradient location was not detected in the upgradient sample. The majority of organics detected in the upgradient sample were pesticides, which were consistent with application residuals. The organic detected downgradient was a phthalate and may be a lab artifact.

Southern Portion — Evaluation of the sediment locations indicated a general increase in detected parameters (15 metals and two organics in the upgradient location versus 18 metals and 16 organics in the downgradient). For the metals, three parameters were present in the downgradient locations that were not detected in the upgradient, three exhibited a decrease in concentration, and 13 metals exhibited an increase. For the organics, 14 compounds were present

in the downgradient locations that were not detected in the upgradient location, one exhibited an increase, and one organic exhibited a decrease. The organics detected downgradient included pesticides and BAP equivalents. The pesticides represent application residuals, but the BAPs may represent incorporation of small asphalt fragments derived from longshore transport from Site 13 (located to the northeast of Chevalier Field, approximately one-half mile north of Wetland 63A, and being composed of large amounts of asphalt fill), or they may represent storm water runoff/incomplete combustion byproducts from Chevalier Field. The increases in metals downgradient represent enrichment likely due to the higher TOC, which can provide a ready substrate for adsorption.

Table 13-1-1
Wetland 63A Phase II
Sediment Physical Parameters

Parameter	041M63A101	041M63A201	041M63A301	041M63A401	041M63A501
TOC (%)	0.0873	0.169	4.23	0.963	0.165
Percent Solids (%)	82.2	78.9	57.6	72.6	81.8
Grain Size Analysis (percent of composition[1])					
Fine Gravel	0	0	0	0	1
Coarse Sand	1	1	8	0	1
Medium Sand	38	49	59	21	66
Fine Sand	58	49	30	40	31
Silt and Clay	3	1	3	39	1
Description	Dark Grayish Brown Poorly Graded Sand, Fine	Dark Grayish Brown Poorly Graded Sand, Fine	Dark Brown Poorly Graded Sand with Organics	Light Olive Brown Silty Sand with Organics	Dark Grayish Brown Poorly Graded Sand, Medium, Shells

Note:
[1] - Derived from sieve analyses.

Table 13-1-2
Wetland 63A Phase II
Surface Water Physical Parameters

Parameter	041W63A201
Hardness as CaCO3 (mg/L)	120
pH	6.79
Specific Conductivity (mS/cm)	24.2
Turbidity (NTU)	10
Salinity (%)	14.5

Notes:

mg/L = Milligrams per liter

MS/cm = Millisiemens per centimeter

NTU = Nephelometric turbidity units

% = Percent

Table 13-1-3
Wetland 63A 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	2	5	5	180.0	5,500.0	2,110.0	041M63A301
Antimony	0.260	2	1	5	0.290	0.290	0.166	041M63A401
Arsenic	2.140	0	5	5	0.150	1.40	0.652	041M63A301
Barium	3.840	2	5	5	0.390	16.30	5.080	041M63A301
Cadmium	0.390	2	3	5	0.150	7.70	1.760	041M63A301
Calcium	1,978.80	3	5	5	1,170.0	4,040.0	2,300.0	041M63A401
Chromium	13.10	1	5	5	0.510	92.50	20.70	041M63A301
Cobalt	0.910	0	2	5	0.260	0.370	0.165	041M63A301
Copper	8.440	1	5	5	0.380	15.10	4.780	041M63A301
Iron	2,684.40	2	5	5	293.0	5,000.0	1,810.0	041M63A301
Lead	21.040	2	5	5	0.930	106.0	28.80	041M63A301
Magnesium	2,943.60	0	5	5	100.0	278.0	172.0	041M63A301
Manganese	9.810	2	5	5	1.70	44.50	13.60	041M63A401
Mercury	0.110	1	1	5	0.140	0.140	0.050	041M63A301
Nickel	3.690	1	2	5	0.970	5.10	1.390	041M63A301
Potassium	899.720	0	5	5	22.0	76.40	49.70	041M63A301
Silver	0.520	0	1	5	0.460	0.460	0.224	041M63A301
Sodium	11,439.60	0	5	5	33.80	884.0	324.0	041M63A201
Vanadium	8.590	1	5	5	0.550	14.40	4.770	041M63A301
Zinc	14.360	2	5	5	1.50	88.90	26.0	041M63A301
PAHs (µg/kg)								
Benzo(a)anthracene	N/A	0	1	5	63.0	63.0	175.0	041M63A401
Benzo(a)pyrene	N/A	0	1	5	72.0	72.0	177.0	041M63A401
Chrysene	N/A	0	1	5	74.0	74.0	177.0	041M63A401
Fluoranthene	N/A	0	1	5	130.0	130.0	188.0	041M63A401
Phenanthrene	N/A	0	1	5	47.0	47.0	172.0	041M63A401
Pyrene	N/A	0	2	5	24.0	120.0	187.0	041M63A401
Total PAHs	N/A	0	2	5	254.0	658.50	2,070.0	041M63A401
Pesticides and PCBs (µg/kg)								
Aroclor-1260	N/A	0	4	5	1.10	260.0	56.0	041M63A301
Total PCBs	N/A	0	4	5	10.20	273.20	64.80	041M63A301
Dieldrin	N/A	0	1	5	4.10	4.10	0.909	041M63A301
Endosulfan sulfate	N/A	0	2	5	1.40	1.40	0.623	041M63A401
alpha-Chlordane	N/A	0	1	5	1.0	1.0	0.244	041M63A301
gamma-Chlordane	N/A	0	1	5	1.40	1.40	0.324	041M63A301
Total Chlordane	N/A	0	1	5	2.40	2.40	0.568	041M63A301

Table 13-1-3
Wetland 63A 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.								
Endrin	N/A	0	1	5	2.70	2.70	0.629	041M63A301
Total Endrin	N/A	0	1	5	3.080	3.080	0.883	041M63A301
delta-BHC	N/A	0	1	5	0.240	0.240	0.10	041M63A201
gamma-BHC (Lindane)	N/A	0	1	5	0.210	0.210	0.094	041M63A201
Total BHC	N/A	0	1	5	0.560	0.560	0.319	041M63A201
4,4'-DDD	50.0	0	3	5	0.320	5.60	1.490	041M63A301
4,4'-DDE	40.0	0	1	5	0.950	0.950	0.295	041M63A201
4,4'-DDT	20.0	0	3	5	0.290	1.10	0.475	041M63A301
Total DDT	110.0	0	3	5	1.230	6.890	2.260	041M63A301
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	1	5	120.0	120.0	186.0	041M63A401
Benzo(g,h,i)perylene	N/A	0	1	5	48.0	48.0	172.0	041M63A401
Benzo(k)fluoranthene	N/A	0	1	5	37.0	37.0	170.0	041M63A401
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	2	5	99.0	130.0	1,630.0	041M63A401
Butylbenzylphthalate	N/A	0	3	5	22.0	1,400.0	379.0	041M63A301
Indeno(1,2,3-cd)pyrene	N/A	0	1	5	47.0	47.0	172.0	041M63A401

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

Table 13-1-4
Wetland 63A 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	2,927.50	0	1	1	2,080.0	2,080.0	2,080.0	041W63A201
Arsenic	3.6	1	1	1	5.0	5.0	5.0	041W63A201
Barium	9.43	1	1	1	53.3	53.3	53.3	041W63A201
Calcium	76,800.0	0	1	1	38,700.0	38,700.0	38,700.0	041W63A201
Copper	7.03	0	1	1	5.0	5.0	5.0	041W63A201
Iron	1,352.0	0	1	1	483.0	483.0	483.0	041W63A201
Lead	13.75	1	1	1	299.0	299.0	299.0	041W63A201
Magnesium	243,650.0	0	1	1	5,740.0	5,740.0	5,740.0	041W63A201
Manganese	12.15	1	1	1	28.3	28.3	28.3	041W63A201
Potassium	81,250.0	0	1	1	14,700.0	14,700.0	14,700.0	041W63A201
Selenium	2.9	1	1	1	8.0	8.0	8.0	041W63A201
Sodium	1,952,000.0	0	1	1	28,300.0	28,300.0	28,300.0	041W63A201
Vanadium	6.69	0	1	1	4.1	4.1	4.1	041W63A201
Zinc	12.88	1	1	1	19.3	19.3	19.3	041W63A201

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

Table 13-1-5
Wetland 63A Phase IV
Surface Water Analytical Results

Parameter	Reference Concentration (if applicable)	Number Greater Than Reference Concentration	Frequency of Detections		Range of Detections			
			Number Detected	Number Analyzed	Minimum Detection	Maximum Detection	Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	2,927.5	0	1	1	25.0	25.0	25.0	041W63A202
Barium	9.43	1	1	1	61.0	61.0	61.0	041W63A202
Beryllium	0.82	0	1	1	0.44	0.44	0.44	041W63A202
Calcium	76,800.0	0	1	1	76,000.0	76,000.0	76,000.0	041W63A202
Copper	7.03	0	1	1	0.98	0.98	0.98	041W63A202
Iron	1,352.0	0	1	1	140.0	140.0	140.0	041W63A202
Magnesium	243,650.0	0	1	1	5,800.0	5,800.0	5,800.0	041W63A202
Manganese	12.15	1	1	1	15.0	15.0	15.0	041W63A202
Potassium	81,250.0	0	1	1	1,400.0	1,400.0	1,400.0	041W63A202
Sodium	1,952,000.0	0	1	1	14,000.0	14,000.0	14,000.0	041W63A202
Vanadium	6.69	0	1	1	1.7	1.7	1.7	041W63A202
Zinc	12.88	0	1	1	1.8	1.8	1.8	041W63A202

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

Table 13-1-6
Wetland 63A 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	5	5			180	5,500	041M63A301	5,500			N/A		Yes	No SV
Antimony	1	5	0.065	0.325	0.290	0.29	041M63A401	0.29	J	12	2	0.024	No	Max Detect < SV
Arsenic	5	5			0.150	1.40	041M63A301	1.40		7	1, 2	0.193	No	Max Detect < SV
Barium	5	5			0.390	16.30	041M63A301	16.30	J		N/A		Yes	No SV
Beryllium	0	5	0.030	0.045			ND	0.045	U		N/A		Yes	No SV
Cadmium	**3**	**5**	**0.085**	**0.185**	**0.150**	**7.70**	**041M63A301**	**7.70**		**1**	**1**	**11.400**	**Yes**	**Max Detect > SV**
Calcium	5	5			1,170	4,040	041M63A401	4,040	J		N/A		Yes	No SV
Chromium	**5**	**5**			**0.510**	**92.50**	**041M63A301**	**92.50**		**52**	**1, 2**	**1.770**	**Yes**	**Max Detect > SV**
Cobalt	2	5	0.065	0.065	0.260	0.37	041M63A301	0.370	J		N/A		Yes	No SV
Copper	5	5			0.380	15.10	041M63A301	15.100		19	1, 2	0.807	No	Max Detect < SV
Cyanide (CN)	0	5	0.305	0.425			ND	0.425	U		N/A		Yes	No SV
Iron	5	5			293	5,000	041M63A301	5,000			N/A		Yes	No SV
Lead	**5**	**5**			**0.930**	**106.00**	**041M63A301**	**106.00**		**30**	**1, 2**	**3.510**	**Yes**	**Max Detect > SV**
Magnesium	5	5			100	278.00	041M63A301	278.00	J		N/A		Yes	No SV
Manganese	5	5			1.700	44.50	041M63A401	44.50			N/A		Yes	No SV
Mercury	**1**	**5**	**0.025**	**0.035**	**0.140**	**0.14**	**041M63A301**	**0.14**	**J**	**0**	**1, 2**	**1.080**	**Yes**	**Max Detect > SV**
Nickel	2	5	0.285	0.295	0.970	5.10	041M63A301	5.10		16	1, 2	0.321	No	Max Detect < SV
Potassium	5	5			22	76.40	041M63A301	76.40	J		N/A		Yes	No SV
Selenium	0	5	0.125	0.175			ND	0.175	UJ		N/A		Yes	No SV
Silver	1	5	0.160	0.175	0.460	0.46	041M63A301	0.460	J	1	1	0.628	No	Max Detect < SV
Sodium	5	5			33.800	884	041M63A201	884			N/A		Yes	No SV
Thallium	0	5	0.125	0.175			ND	0.175	U		N/A		Yes	No SV
Vanadium	5	5			0.550	14.40	041M63A301	14.40			N/A		Yes	No SV
Zinc	5	5			1.500	88.90	041M63A301	88.90		124	1, 2	0.717	No	Max Detect < SV
PAHs (µg/kg)														
2-Methylnaphthalene	0	5	19.50	750			ND	750	U	20	1	37.10	No	TOC Normalized PAHs<TEC
Acenaphthene	0	5	9.50	360			ND	360	U	7	1	53.70	No	TOC Normalized PAHs<TEC
Acenaphthylene	0	5	19.50	750			ND	750	U	6	1	128.00	No	TOC Normalized PAHs<TEC
Anthracene	0	5	19.50	750			ND	750	U	47	1	16.00	No	TOC Normalized PAHs<TEC
Benzo(a)anthracene	1	5	19.50	750	63	63	041M63A401	63		75	1	0.842	No	TOC Normalized PAHs<TEC
Benzo(a)pyrene	1	5	19.50	750	72	72	041M63A401	72		89	1	0.811	No	TOC Normalized PAHs<TEC
Chrysene	1	5	19.50	750	74	74	041M63A401	74		108	1	0.685	No	TOC Normalized PAHs<TEC
Dibenz(a,h)anthracene	0	5	19.50	750			ND	750	U	6	1	121.00	No	TOC Normalized PAHs<TEC
Fluoranthene	**1**	**5**	**19.50**	**750**	**130**	**130**	**041M63A401**	**130**		**113**	**1**	**1.15**	No	TOC Normalized PAHs<TEC
Fluorene	0	5	9.50	360			ND	360	U	21	1	17.00	No	TOC Normalized PAHs<TEC
Naphthalene	0	5	19.50	750			ND	750	U	35	1	21.70	No	TOC Normalized PAHs<TEC
Phenanthrene	1	5	19.50	750	47	47	041M63A401	47	J	87	1	0.542	No	TOC Normalized PAHs<TEC
Pyrene	2	5	19.50	750	24	120	041M63A401	120		153	1	0.784	No	TOC Normalized PAHs<TEC
Total PAHs	2	5	234.00	8,970	254	659	041M63A401	659		1,684	1, 2	0.391	No	TOC Normalized PAHs<TEC
TOC Normalized PAHs	2	5	145.45	267.47	68.38	150.30	041M63A201	150.30		290	3	0.518	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	5	1.00	1.90			ND	1.9	U	21.6	1	0.09	No	Max SQL< SV
Aroclor-1221	0	5	1.95	3.70			ND	3.7	U	67.0	2	0.06	No	Max SQL< SV
Aroclor-1232	0	5	1.00	1.90			ND	1.9	U	21.6	1	0.09	No	Max SQL< SV
Aroclor-1242	0	5	1.00	1.90			ND	1.9	U	21.6	1	0.09	No	Max SQL< SV
Aroclor-1248	0	5	1.00	1.90			ND	1.9	U	21.6	1	0.09	No	Max SQL< SV
Aroclor-1254	0	5	1.00	1.90			ND	1.9	U	21.6	1	0.09	No	Max SQL< SV
Aroclor-1260	**4**	**5**	**1.00**	**1.00**	**1.10**	**260**	**041M63A501**	**260**		**21.6**	**1**	**12**	**Yes**	**Max Detect > SV**
Total PCBs	**4**	**5**	**7.95**	**7.95**	**10.20**	**273**	**041M63A501**	**273**		**21.6**	**1**	**13**	**Yes**	**Max Detect > SV**
Pesticides (µg/kg)														
Aldrin	0	5	0.049	0.095			ND	0.095	U		N/A		Yes	No SV
Dieldrin	**1**	**5**	**0.100**	**0.130**	**4.10**	**4.10**	**041M63A301**	**4.100**	**J**	**0.716**	**1**	**5.730**	**Yes**	**Max Detect > SV**
Endosulfan I	0	5	0.049	0.095			ND	0.095	U		N/A		Yes	No SV
Endosulfan II	0	5	0.100	0.190			ND	0.190	U		N/A		Yes	No SV
Endosulfan sulfate	2	5	0.100	0.110	1.40	1.40	041M63A401	1.400	J		N/A		Yes	No SV
Heptachlor	0	5	0.049	0.095			ND	0.095	U		N/A		Yes	No SV
Heptachlor epoxide	0	5	0.049	0.095			ND	0.095	U		N/A		Yes	No SV
Methoxychlor	0	5	0.490	0.950			ND	0.950	U		N/A		Yes	No SV
Toxaphene	0	5	10.000	19.000			ND	19.000	U		N/A		Yes	No SV

Table 13-1-6
Wetland 63A 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.														
alpha-Chlordane	1	5	0.049	0.065	1.00	1.00	041M63A301	1.000	J	1.700	1	0.588	No	Max Detect < SV
gamma-Chlordane	1	5	0.049	0.065	1.40	1.40	041M63A301	1.400		1.700	1	0.824	No	Max Detect < SV
Total Chlordane	**1**	**5**	**0.098**	**0.130**	**2.40**	**2.40**	**041M63A301**	**2.400**		**1.700**	**1**	**1.410**	**Yes**	**Max Detect > SV**
Endrin	1	5	0.100	0.130	2.70	2.70	041M63A301	2.700	J	3.300	2	0.818	No	Max Detect < SV
Endrin aldehyde	0	5	0.100	0.190			ND	0.190	U	3.300	2	0.058	No	Max SQL< SV
Endrin ketone	0	5	0.100	0.190			ND	0.190	U	3.300	2	0.058	No	Max SQL< SV
Total Endrin	1	5	0.300	0.390	3.08	3.08	041M63A301	3.080		3.300	2	0.933	No	Max Detect < SV
alpha-BHC	0	5	0.049	0.095			ND	0.095	U		N/A		Yes	No SV
beta-BHC	0	5	0.049	0.095			ND	0.095	U	0.320	N/A	0.297	No	Max SQL< SV
delta-BHC	1	5	0.049	0.095	0.24	0.24	041M63A201	0.240	J	0.320	N/A	0.750	No	Max Detect < SV
gamma-BHC (Lindane)	1	5	0.049	0.095	0.21	0.21	041M63A201	0.210	J	0.320	1.000	0.656	No	Max Detect < SV
Total BHC	**1**	**5**	**0.196**	**0.380**	**0.56**	**0.56**	**041M63A201**	**0.560**		**0.320**	**2.000**	**1.750**	**Yes**	**Max Detect > SV**
4,4'-DDD	**3**	**5**	**0.100**	**0.105**	**0.32**	**5.60**	**041M63A301**	**5.600**	**DJ**	**1.220**	**1**	**4.590**	**Yes**	**Max Detect > SV**
4,4'-DDE	1	5	0.100	0.190	0.95	0.95	041M63A201	0.950		2.070	1	0.459	No	Max Detect < SV
4,4'-DDT	3	5	0.100	0.105	0.29	1.10	041M63A301	1.100	J	1.190	1	0.924	No	Max Detect < SV
Total DDT	**3**	**5**	**0.300**	**0**	**1.23**	**6.89**	**041M63A301**	**6.890**		**3.300**	**2**	**2.090**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2-Chloronaphthalene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2-Chlorophenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2-Nitroaniline	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
2-Nitrophenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
3-Nitroaniline	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
4-Chloroaniline	0	5	195	7,500			ND	7,500	UJ		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
4-Nitroaniline	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
4-Nitrophenol	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
Benzo(b)fluoranthene	1	5	19.5	750	120	120	041M63A401	120			N/A		No	TOC Normalized PAHs<TEC
Benzo(g,h,i)perylene	1	5	19.5	750	48	48	041M63A401	48	J		N/A		No	TOC Normalized PAHs<TEC
Benzo(k)fluoranthene	1	5	19.5	750	37	37	041M63A401	37	J		N/A		No	TOC Normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	5	19.5	750			ND	750	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	2	5	190	7,500	99	130	041M63A401	130	J	182	1, 2	0.71	No	Max Detect < SV
Butylbenzylphthalate	**3**	**5**	**200**	**210**	**22**	**1,400**	**041M63A301**	**1,400**	**J**	**182**	**1, 2**	**7.69**	**Yes**	**Max Detect > SV**
Carbazole	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Dibenzofuran	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Diethylphthalate	0	5	195	7,500			ND	7,500	U	182	1, 2	41.20	Yes	Max SQL > SV
Dimethylphthalate	0	5	195	7,500			ND	7,500	U	182	1, 2	41.20	Yes	Max SQL > SV
Di-n-butylphthalate	0	5	195	7,500			ND	7,500	U	182	1, 2	41.20	Yes	Max SQL > SV
Di-n-octylphthalate	0	5	195	7,500			ND	7,500	U	182	1, 2	41.20	Yes	Max SQL > SV

Table 13-1-6
Wetland 63A 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.														
Hexachlorobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Hexachlorobutadiene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Hexachloroethane	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	1	5	20	750	47	47	041M63A401	47	J		N/A		No	TOC Normalized PAHs<TEC
Isophorone	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Nitrobenzene	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	5	19.5	750			ND	750	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
Pentachlorophenol	0	5	475	18,000			ND	18,000	U		N/A		Yes	No SV
Phenol	0	5	195	7,500			ND	7,500	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
1,1,2-Trichloroethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,1-Dichloroethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,1-Dichloroethene	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,2-Dichloroethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
1,2-Dichloropropane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
2-Butanone (MEK)	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
2-Hexanone	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Acetone	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Benzene	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Bromodichloromethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Bromoform	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Bromomethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Carbon disulfide	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Carbon tetrachloride	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Chlorobenzene	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
Chloroethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Chloroform	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Chloromethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Dibromochloromethane	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Ethylbenzene	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
Methylene chloride	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Styrene	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
Tetrachloroethene	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
Toluene	0	5	6	9.5			ND	9.50	UJ		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Trichloroethene	0	5	6	9.5			ND	9.50	U		N/A		Yes	No SV
Vinyl chloride	0	5	2	3.0			ND	3.00	U		N/A		Yes	No SV
Xylene (Total)	0	5	6	9.5			ND	9.50	UJ		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 13-1-7
Wetland 63A Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	Butylbenzylphthalate	None
Barium	Dieldrin		
Cadmium	Endosulfan sulfate		
Calcium	Total BHC		
Chromium	Total Chlordane		
Cobalt	Total DDT		
Iron	Aroclor-1260		
Lead	Total PCBs		
Magnesium			
Manganese			
Mercury			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Cyanide (CN)	alpha-BHC	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Selenium	Endosulfan I	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Thallium	Endosulfan II	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-Dichloroethene (total)
	Toxaphene	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	Acetone
		2-Chloronaphthalene	Benzene
		2-Chlorophenol	Bromodichloromethane
		2-Methyl-4,6-Dinitrophenol	Bromoform
		2-Methylphenol (o-Cresol)	Bromomethane
		2-Nitroaniline	Carbon disulfide
		2-Nitrophenol	Carbon tetrachloride
		3,3'-Dichlorobenzidine	Chlorobenzene
		3-Nitroaniline	Chloroethane
		4-Bromophenyl-phenylether	Chloroform
		4-Chloro-3-methylphenol	Chloromethane
		4-Chloroaniline	cis-1,3-Dichloropropene
		4-Chlorophenylphenyl ether	Dibromochloromethane
		4-Methylphenol (p-Cresol)	Ethylbenzene
		4-Nitroaniline	Methylene chloride
		4-Nitrophenol	Styrene
		bis(2-Chloroethoxy)methane	Tetrachloroethene
		bis(2-Chloroethyl)ether	Toluene
		Carbazole	trans-1,3-Dichloropropene
		Dibenzofuran	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 13-1-8
Wetland 63A 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	5	5				2,110	180	5,500	5,500		041M63A301			NA					0	4,274	2	Yes	EPC > RC and no RV
Barium	5	5				5.080	0.390	16.30	16.30	J	041M63A301			NA					0	3.84	2	Yes	EPC > RC and no RV
Beryllium	0	5	0.036	0.030	0.045	0.036			0.05	U	ND			NA					0	0.13	0	No	Parameter Not Detected
Cadmium	**3**	**5**	**0.135**	**0.085**	**0.185**	**1.760**	**0.150**	**7.70**	**7.70**		**041M63A301**	**1**	**4**	**PEL**	**11.400**	**2.610**	**1.830**	**0.419**	**1**	**0.39**	**2**	**Yes**	**EPC > RV and RC**
Calcium	5	5				2,300	1,170	4,040	4,040	J	041M63A401			NA					0	1,979	3	No	Essential Nutrient
Chromium	5	5				20.700	0.510	92.50	92.50		041M63A301	52	160	PEL	1.770	0.395	0.578	0.129	0	13.10	1	No	EPC > RC, but < RV
Cobalt	2	5	0.065	0.065	0.065	0.165	0.260	0.37	0.37	J	041M63A301			NA					0	0.91	0	No	EPC < RC
Cyanide (CN)	0	5	0.337	0.305	0.425	0.337			0.43	U	ND			NA					0	1.29	0	No	Parameter Not Detected
Iron	5	5				1,810	293	5,000	5,000		041M63A301			NA					0	2,684	2	Yes	EPC > RC and no RV
Lead	5	5				28.80	0.93	106	106		041M63A301	30	112	PEL	3.510	0.955	0.946	0.258	0	21.04	2	No	EPC > RC, but < RV
Magnesium	5	5				172	100	278	278	J	041M63A301			NA					0	2,944	0	No	EPC < RC
Manganese	5	5				13.60	1.70	44.50	44.50		041M63A401			NA					0	9.81	2	Yes	EPC > RC and no RV
Mercury	1	5	0.028	0.025	0.035	0.05	0.14	0.14	0.14	J	041M63A301	0	1	PEL	1.080	0.385	0.201	0.072	0	0.11	1	No	EPC > RC, but < RV
Potassium	5	5				49.70	22.00	76.40	76.40	J	041M63A301			NA					0	900	0	No	EPC < RC
Selenium	0	5	0.140	0.125	0.175	0.14			0.18	UJ	ND			NA					0	0.66	0	No	Parameter Not Detected
Sodium	5	5				324	33.80	884	884		041M63A201			NA					0	11,440	0	No	EPC < RC
Thallium	0	5	0.140	0.125	0.175	0.14			0.18	U	ND			NA					0	0.39	0	No	Parameter Not Detected
Vanadium	5	5				4.77	0.55	653.62	293.27		041M63A301			NA					0	8.59	1	Yes	EPC > RC and no RV
PCBs (µg/kg)																							
Aroclor-1016	0	5	1.27	1.00	1.90	1.27			1.90	U	ND	22	189	PEL	0.088	0.059	0.010	0.007	0		0	No	Parameter Not Detected
Aroclor-1221	0	5	2.48	1.95	3.70	2.48			3.70	U	ND	67	189	PEL	0.055	0.037	0.020	0.013	0		0	No	Parameter Not Detected
Aroclor-1232	0	5	1.27	1.00	1.90	1.27			1.90	U	ND	22	189	PEL	0.088	0.059	0.010	0.007	0		0	No	Parameter Not Detected
Aroclor-1242	0	5	1.27	1.00	1.90	1.27			1.90	U	ND	22	189	PEL	0.088	0.059	0.010	0.007	0		0	No	Parameter Not Detected
Aroclor-1248	0	5	1.27	1.00	1.90	1.27			1.90	U	ND	22	189	PEL	0.088	0.059	0.010	0.007	0		0	No	Parameter Not Detected
Aroclor-1254	0	5	1.27	1.00	1.90	1.27			1.90	U	ND	22	189	PEL	0.088	0.059	0.010	0.007	0		0	No	Parameter Not Detected
Aroclor-1260	**4**	**5**	**1.00**	**1.00**	**1.00**	**56.00**	**1.10**	**260**	**260**		**041M63A501**	**22**	**189**	**PEL**	**12.000**	**2.590**	**1.380**	**0.296**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Total PCBs	**4**	**5**	**7.95**	**7.95**	**7.95**	**64.80**	**10.20**	**273**	**273**		**041M63A501**	**22**	**189**	**PEL**	**12.600**	**3.000**	**1.450**	**0.343**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
Pesticides (µg/kg)																							
Aldrin	0	5	0.063	0.049	0.095	0.063			0.10	U	ND			NA					0		0	No	Parameter Not Detected
Dieldrin	1	5	0.111	0.100	0.130	0.909	4.10	4.10	4.10	J	041M63A301	1	4	PEL	5.730	1.270	0.953	0.211	0		0	No	RV HQ <1 and no RC
Endosulfan I	0	5	0.063	0.049	0.095	0.063			0.10	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan II	0	5	0.127	0.100	0.190	0.127			0.19	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	2	5	0.105	0.100	0.110	0.623	1.40	1.40	1.40	J	041M63A401			NA					0		0	Yes	No SV, no RV, and no RC
Heptachlor	0	5	0.063	0.049	0.095	0.063			0.10	U	ND			NA					0		0	No	Parameter Not Detected
Heptachlor epoxide	0	5	0.063	0.049	0.095	0.063			0.10	U	ND			NA					0		0	No	Parameter Not Detected
Methoxychlor	0	5	0.628	0.490	0.950	0.628			0.95	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	5	12.800	10.000	19.000	12.800			19.00	U	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	1	5	0.055	0.049	0.065	0.244	1.00	1.00	1.00	J	041M63A301	2	5	PEL	0.588	0.143	0.209	0.051	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	1	5	0.055	0.049	0.065	0.324	1.40	1.40	1.40		041M63A301	2	5	PEL	0.824	0.190	0.292	0.068	0		0	No	RV HQ <1 and no RC
Total Chlordane	1	5	0.110	0.098	0.130	0.568	2.40	2.40	2.40		041M63A301	2	5	PEL	1.410	0.334	0.501	0.118	0		0	No	RV HQ <1 and no RC
alpha-BHC	0	5	0.063	0.049	0.095	0.063			0.10	U	ND		1	PEL			0.096	0.063	0		0	No	Parameter Not Detected
beta-BHC	0	5	0.063	0.049	0.095	0.063			0.10	U	ND	0	1	PEL	0.297	0.196	0.096	0.063	0		0	No	Parameter Not Detected
delta-BHC	1	5	0.065	0.049	0.095	0.100	0.24	0.24	0.24	J	041M63A201	0	1	PEL	0.750	0.312	0.242	0.101	0		0	No	RV HQ <1 and no RC
gamma-BHC (Lindane)	1	5	0.065	0.049	0.095	0.094	0.21	0.21	0.21	J	041M63A201	0	1	PEL	0.656	0.293	0.212	0.095	0		0	No	RV HQ <1 and no RC
Total BHC	1	5	0.259	0.196	0.380	0.319	0.56	0.56	0.56		041M63A201	0	1	PEL	1.750	0.997	0.566	0.322	0		0	No	RV HQ <1 and no RC
4,4'-DDD	3	5	0.103	0.100	0.105	1.490	0.32	5.60	5.60	DJ	041M63A301	1	8	PEL	4.590	1.220	0.717	0.190	0	50	0	No	EPC < RC and RV
4,4'-DDE	1	5	0.131	0.100	0.190	0.295	0.95	0.95	0.95		041M63A201	2	374	PEL	0.459	0.143	0.003	0.001	0	40	0	No	EPC < RC and RV
4,4'-DDT	3	5	0.103	0.100	0.105	0.475	0.29	1.10	1.10	J	041M63A301	1	5	PEL	0.924	0.399	0.231	0.100	0	20	0	No	EPC < RC and RV
Total DDT	3	5	0.308	0.300	0.315	2.260	1.23	6.89	6.89		041M63A301	3	52	PEL	2.090	0.683	0.133	0.044	0	110	0	No	EPC < RC and RV
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitroaniline	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	5	1,670	195	7,500	1,670			7,500	UJ	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	5	167	20	750	167			750	U	ND			NA					0		0	No	Parameter Not Detected
Butylbenzylphthalate	3	5	205	200	210	379	22	1,400	1,400	J	041M63A301	182	2,647	PEL	7.69	2.08	0.53	0.143	0		0	No	RV HQ <1 and no RC
Carbazole	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected

Table 13-1-8
Wetland 63A 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																							
Diethylphthalate	0	5	1,670	195	7,500	1,670			7,500	U	ND	182	2,647	PEL	41.20	9.19	2.83	0.632	0		0	No	Parameter Not Detected Max SQL > RV
Dimethylphthalate	0	5	1,670	195	7,500	1,670			7,500	U	ND	182	2,647	PEL	41.20	9.19	2.83	0.632	0		0	No	Parameter Not Detected Max SQL > RV
Di-n-butylphthalate	0	5	1,670	195	7,500	1,670			7,500	U	ND	182	2,647	PEL	41.20	9.19	2.83	0.632	0		0	No	Parameter Not Detected Max SQL > RV
Di-n-octylphthalate	0	5	1,670	195	7,500	1,670			7,500	U	ND	182	2,647	PEL	41.20	9.19	2.83	0.632	0		0	No	Parameter Not Detected Max SQL > RV
Hexachlorobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	5	167	20	750	167			750	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	5	4,010	475	18,000	4,010			18,000	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	5	1,670	195	7,500	1,670			7,500	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloropropane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Benzene	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromodichloromethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
Chloroethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
Methylene chloride	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
Toluene	0	5	7.40	6	9.5	7.4			9.5	UJ	ND			NA					0		0	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	5	7.40	6	9.5	7.4			9.5	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	0	5	2.30	2	3.0	2.3			3.0	U	ND			NA					0		0	No	Parameter Not Detected
Xylene (Total)	0	5	7.40	6	9.5	7.4			9.5	UJ	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 13-1-9
Wetland 63A Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Endosulfan sulfate	None	None
Barium	Aroclor-1260		
Cadmium	Total PCBs		
Iron			
Manganese			
Vanadium			

Table 13-1-10
Wetland 63A Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M63A101	1/18/1996	mg/kg	0.22	J	Arsenic	8.2	70	0.00
041M63A101	1/18/1996	mg/kg	0.085	U	Cadmium	1.2	9.6	0.01
041M63A101	1/18/1996	mg/kg	0.51	J	Chromium	81	370	0.00
041M63A101	1/18/1996	mg/kg	0.38	J	Copper	34	270	0.00
041M63A101	1/18/1996	mg/kg	0.93		Lead	46.7	218	0.00
041M63A101	1/18/1996	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M63A101	1/18/1996	mg/kg	0.285	U	Nickel	20.9	51.6	0.01
041M63A101	1/18/1996	mg/kg	0.16	U	Silver	1	3.7	0.04
041M63A101	1/18/1996	mg/kg	1.5		Zinc	150	410	0.00
041M63A101	1/18/1996	µg/kg	0.1	U	4,4'-DDE	2.2	27	0.00
041M63A101	1/18/1996	µg/kg	0.1	U	4,4'-DDT	1.58	46.1	0.00
041M63A101	1/18/1996	µg/kg	7.95	U	Total PCBs	22.7	180	0.04
041M63A101	1/18/1996	µg/kg	19.5	U	2-Methylnaphthalene	70	670	0.03
041M63A101	1/18/1996	µg/kg	9.5	U	Acenaphthene	16	500	0.02
041M63A101	1/18/1996	µg/kg	19.5	U	Acenaphthylene	44	640	0.03
041M63A101	1/18/1996	µg/kg	19.5	U	Anthracene	85.3	1,100	0.02
041M63A101	1/18/1996	µg/kg	19.5	U	Benzo(a)anthracene	261	1,600	0.01
041M63A101	1/18/1996	µg/kg	19.5	U	Benzo(a)pyrene	430	1,600	0.01
041M63A101	1/18/1996	µg/kg	19.5	U	Chrysene	384	2,800	0.01
041M63A101	1/18/1996	µg/kg	19.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M63A101	1/18/1996	µg/kg	19.5	U	Fluoranthene	600	5,100	0.00
041M63A101	1/18/1996	µg/kg	9.5	U	Fluorene	19	540	0.02
041M63A101	1/18/1996	µg/kg	19.5	U	Naphthalene	160	2,100	0.01
041M63A101	1/18/1996	µg/kg	19.5	U	Phenanthrene	240	1,500	0.01
041M63A101	1/18/1996	µg/kg	19.5	U	Pyrene	665	2,600	0.01
041M63A101	1/18/1996				ERM Quotient Sum			0.41
041M63A101	1/18/1996				Mean ERM Quotient			0.02
041M63A101	1/18/1996				Mean ERM Quotient without ND			0.00
041M63A101	1/18/1996				Mean ERM Quotient Category			1
041M63A201	1/18/1996	mg/kg	0.15	J	Arsenic	8.2	70	0.00
041M63A201	1/18/1996	mg/kg	0.185	U	Cadmium	1.2	9.6	0.02
041M63A201	1/18/1996	mg/kg	2.2		Chromium	81	370	0.01
041M63A201	1/18/1996	mg/kg	1.2	J	Copper	34	270	0.00
041M63A201	1/18/1996	mg/kg	3.1		Lead	46.7	218	0.01
041M63A201	1/18/1996	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M63A201	1/18/1996	mg/kg	0.29	U	Nickel	20.9	51.6	0.01
041M63A201	1/18/1996	mg/kg	0.16	U	Silver	1	3.7	0.04
041M63A201	1/18/1996	mg/kg	4.9		Zinc	150	410	0.01
041M63A201	1/18/1996	µg/kg	0.95		4,4'-DDE	2.2	27	0.04
041M63A201	1/18/1996	µg/kg	0.29	J	4,4'-DDT	1.58	46.1	0.01
041M63A201	1/18/1996	µg/kg	21.6		Total PCBs	22.7	180	0.12
041M63A201	1/18/1996	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M63A201	1/18/1996	µg/kg	10	U	Acenaphthene	16	500	0.02
041M63A201	1/18/1996	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M63A201	1/18/1996	µg/kg	21	U	Anthracene	85.3	1,100	0.02
041M63A201	1/18/1996	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M63A201	1/18/1996	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M63A201	1/18/1996	µg/kg	21	U	Chrysene	384	2,800	0.01
041M63A201	1/18/1996	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M63A201	1/18/1996	µg/kg	21	U	Fluoranthene	600	5,100	0.00
041M63A201	1/18/1996	µg/kg	10	U	Fluorene	19	540	0.02
041M63A201	1/18/1996	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M63A201	1/18/1996	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M63A201	1/18/1996	µg/kg	24	J	Pyrene	665	2,600	0.01
041M63A201	1/18/1996				ERM Quotient Sum			0.58
041M63A201	1/18/1996				Mean ERM Quotient			0.02
041M63A201	1/18/1996				Mean ERM Quotient without ND			0.01
041M63A201	1/18/1996				Mean ERM Quotient Category			1
041M63A301	1/18/1996	mg/kg	1.4		Arsenic	8.2	70	0.02
041M63A301	1/18/1996	mg/kg	7.7		Cadmium	1.2	9.6	0.80
041M63A301	1/18/1996	mg/kg	92.5		Chromium	81	370	0.25
041M63A301	1/18/1996	mg/kg	15.1		Copper	34	270	0.06
041M63A301	1/18/1996	mg/kg	106		Lead	46.7	218	0.49
041M63A301	1/18/1996	mg/kg	0.14	J	Mercury	0.15	0.71	0.20
041M63A301	1/18/1996	mg/kg	5.1		Nickel	20.9	51.6	0.10
041M63A301	1/18/1996	mg/kg	0.46	J	Silver	1	3.7	0.12
041M63A301	1/18/1996	mg/kg	88.9		Zinc	150	410	0.22
041M63A301	1/18/1996	µg/kg	0.19	U	4,4'-DDE	2.2	27	0.01
041M63A301	1/18/1996	µg/kg	1.1	J	4,4'-DDT	1.58	46.1	0.02
041M63A301	**1/18/1996**	**µg/kg**	**273.2**		**Total PCBs**	**22.7**	**180**	**1.52**
041M63A301	1/18/1996	µg/kg	750	U	2-Methylnaphthalene	70	670	1.12
041M63A301	1/18/1996	µg/kg	360	U	Acenaphthene	16	500	0.72
041M63A301	1/18/1996	µg/kg	750	U	Acenaphthylene	44	640	1.17
041M63A301	1/18/1996	µg/kg	750	U	Anthracene	85.3	1,100	0.68
041M63A301	1/18/1996	µg/kg	750	U	Benzo(a)anthracene	261	1,600	0.47
041M63A301	1/18/1996	µg/kg	750	U	Benzo(a)pyrene	430	1,600	0.47
041M63A301	1/18/1996	µg/kg	750	U	Chrysene	384	2,800	0.27
041M63A301	1/18/1996	µg/kg	750	U	Dibenz(a,h)anthracene	63.4	260	2.88
041M63A301	1/18/1996	µg/kg	750	U	Fluoranthene	600	5,100	0.15
041M63A301	1/18/1996	µg/kg	360	U	Fluorene	19	540	0.67
041M63A301	1/18/1996	µg/kg	750	U	Naphthalene	160	2,100	0.36
041M63A301	1/18/1996	µg/kg	750	U	Phenanthrene	240	1,500	0.50
041M63A301	1/18/1996	µg/kg	750	U	Pyrene	665	2,600	0.29
041M63A301	1/18/1996				ERM Quotient Sum			13.54
041M63A301	1/18/1996				Mean ERM Quotient			0.54
041M63A301	1/18/1996				Mean ERM Quotient without ND			0.15
041M63A301	1/18/1996				Mean ERM Quotient Category			2

Table 13-1-10
Wetland 63A Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M63A401	1/18/1996	mg/kg	1.3		Arsenic	8.2	70	0.02
041M63A401	1/18/1996	mg/kg	0.7		Cadmium	1.2	9.6	0.07
041M63A401	1/18/1996	mg/kg	6.2		Chromium	81	370	0.02
041M63A401	1/18/1996	mg/kg	4		Copper	34	270	0.01
041M63A401	1/18/1996	mg/kg	32.1		Lead	46.7	218	0.15
041M63A401	1/18/1996	mg/kg	0.035	U	Mercury	0.15	0.71	0.05
041M63A401	1/18/1996	mg/kg	0.97	J	Nickel	20.9	51.6	0.02
041M63A401	1/18/1996	mg/kg	0.175	U	Silver	1	3.7	0.05
041M63A401	1/18/1996	mg/kg	25.4		Zinc	150	410	0.06
041M63A401	1/18/1996	µg/kg	0.13	UJ	4,4'-DDE	2.2	27	0.00
041M63A401	1/18/1996	µg/kg	0.78	J	4,4'-DDT	1.58	46.1	0.02
041M63A401	1/18/1996	µg/kg	10.2		Total PCBs	22.7	180	0.06
041M63A401	1/18/1996	µg/kg	25.5	U	2-Methylnaphthalene	70	670	0.04
041M63A401	1/18/1996	µg/kg	12.5	U	Acenaphthene	16	500	0.03
041M63A401	1/18/1996	µg/kg	25.5	U	Acenaphthylene	44	640	0.04
041M63A401	1/18/1996	µg/kg	25.5	U	Anthracene	85.3	1,100	0.02
041M63A401	1/18/1996	µg/kg	63		Benzo(a)anthracene	261	1,600	0.04
041M63A401	1/18/1996	µg/kg	72		Benzo(a)pyrene	430	1,600	0.05
041M63A401	1/18/1996	µg/kg	74		Chrysene	384	2,800	0.03
041M63A401	1/18/1996	µg/kg	25.5	U	Dibenz(a,h)anthracene	63.4	260	0.10
041M63A401	1/18/1996	µg/kg	130		Fluoranthene	600	5,100	0.03
041M63A401	1/18/1996	µg/kg	12.5	U	Fluorene	19	540	0.02
041M63A401	1/18/1996	µg/kg	25.5	U	Naphthalene	160	2,100	0.01
041M63A401	1/18/1996	µg/kg	47	J	Phenanthrene	240	1,500	0.03
041M63A401	1/18/1996	µg/kg	120		Pyrene	665	2,600	0.05
041M63A401	1/18/1996				ERM Quotient Sum			1
041M63A401	1/18/1996				Mean ERM Quotient			0.04
041M63A401	1/18/1996				Mean ERM Quotient without ND			0.03
041M63A401	1/18/1996				Mean ERM Quotient Category			1
041M63A501	1/18/1996	mg/kg	0.19	J	Arsenic	8.2	70	0.00
041M63A501	1/18/1996	mg/kg	0.15	J	Cadmium	1.2	9.6	0.02
041M63A501	1/18/1996	mg/kg	2		Chromium	81	370	0.01
041M63A501	1/18/1996	mg/kg	3.2		Copper	34	270	0.01
041M63A501	1/18/1996	mg/kg	2.1		Lead	46.7	218	0.01
041M63A501	1/18/1996	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M63A501	1/18/1996	mg/kg	0.295	U	Nickel	20.9	51.6	0.01
041M63A501	1/18/1996	mg/kg	0.165	U	Silver	1	3.7	0.04
041M63A501	1/18/1996	mg/kg	9.5		Zinc	150	410	0.02
041M63A501	1/18/1996	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M63A501	1/18/1996	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M63A501	1/18/1996	µg/kg	11.1		Total PCBs	22.7	180	0.06
041M63A501	1/18/1996	µg/kg	20	U	2-Methylnaphthalene	70	670	0.03
041M63A501	1/18/1996	µg/kg	10	U	Acenaphthene	16	500	0.02
041M63A501	1/18/1996	µg/kg	20	U	Acenaphthylene	44	640	0.03
041M63A501	1/18/1996	µg/kg	20	U	Anthracene	85.3	1,100	0.02
041M63A501	1/18/1996	µg/kg	20	U	Benzo(a)anthracene	261	1,600	0.01
041M63A501	1/18/1996	µg/kg	20	U	Benzo(a)pyrene	430	1,600	0.01
041M63A501	1/18/1996	µg/kg	20	U	Chrysene	384	2,800	0.01
041M63A501	1/18/1996	µg/kg	20	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M63A501	1/18/1996	µg/kg	20	U	Fluoranthene	600	5,100	0.00
041M63A501	1/18/1996	µg/kg	10	U	Fluorene	19	540	0.02
041M63A501	1/18/1996	µg/kg	20	U	Naphthalene	160	2,100	0.01
041M63A501	1/18/1996	µg/kg	20	U	Phenanthrene	240	1,500	0.01
041M63A501	1/18/1996	µg/kg	20	U	Pyrene	665	2,600	0.01
041M63A501	1/18/1996				ERM Quotient Sum			0.48
041M63A501	1/18/1996				Mean ERM Quotient			0.02
041M63A501	1/18/1996				Mean ERM Quotient without ND			0.01
041M63A501	1/18/1996				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 13-1-11
Wetland 63A 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				2,080	2,080	2,080	041W63A201	2,080			NA		Yes	No SV
Antimony	0	1	1	1	1	1			ND	1	UJ		NA		Yes	No SV
Arsenic	1	1				5	5	5	041W63A201	5	J	36	EPA	0.14	No	Max Detect < SV
Barium	1	1				53.3	53.3	53.3	041W63A201	53.3	J		NA		Yes	No SV
Beryllium	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Cadmium	0	1	1	1	1	1			ND	1	U	9.3	EPA	0.11	No	Max SQL< SV
Calcium	1	1				38,700	38,700	38,700	041W63A201	38,700			NA		Yes	No SV
Chromium	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	50	EPA	0.05	No	Max SQL< SV
Cobalt	0	1	1	1	1	1			ND	1	U		NA		Yes	No SV
Copper	**1**	**1**				**5**	**5**	**5**	**041W63A201**	**5**	**J**	**2.9**	**EPA**	**1.72**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	1	EPA	2.5	Yes	Max SQL > SV
Iron	1	1				483	483	483	041W63A201	483			NA		Yes	No SV
Lead	**1**	**1**				**299**	**299**	**299**	**041W63A201**	**299**		**8.5**	**EPA**	**35.2**	**Yes**	**Max Detect > SV**
Magnesium	1	1				5,740	5,740	5,740	041W63A201	5,740			NA		Yes	No SV
Manganese	1	1				28.3	28.3	28.3	041W63A201	28.3			NA		Yes	No SV
Mercury	0	1	0.065	0.065	0.065	0.065			ND	0.065	U	0.025	EPA	2.6	Yes	Max SQL > SV
Nickel	0	1	4.5	4.5	4.5	4.5			ND	4.5	U	8.3	EPA	0.54	No	Max SQL< SV
Potassium	1	1				14,700	14,700	14,700	041W63A201	14,700			NA		Yes	No SV
Selenium	1	1				8	8	8	041W63A201	8		71	EPA	0.11	No	Max Detect < SV
Silver	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	0.23	EPA	10.9	Yes	Max SQL > SV
Sodium	1	1				28,300	28,300	28,300	041W63A201	28,300			NA		Yes	No SV
Thallium	0	1	2	2	2	2			ND	2	U	6.3	FDEP	0.32	No	Max SQL< SV
Vanadium	1	1				4.1	4.1	4.1	041W63A201	4.1	J		NA		Yes	No SV
Zinc	1	1				19.3	19.3	19.3	041W63A201	19.3	J	86	EPA	0.22	No	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	0.0087	EPA	2.87	Yes	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	0.0036	EPA	6.94	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	0.004	EPA	12.5	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	0.005	FDEP	5	Yes	Max SQL > 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	0.016	EPA	1.56	Yes	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

Table 13-1-11
Wetland 63A 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)																
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	FDEP	35.7	Yes	Max SQL > SV
Total PCB	0	1	4	4	4	4			ND	4	U		NA		Yes	No SV
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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No 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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No 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	3.4	EPA	0.74	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

Table 13-1-11
Wetland 63A 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) - cont.																
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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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	23.5	EPA	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
Pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Total PAH	0	1	6.5	6.5	6.5	6.5			ND	6.5	U		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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		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	19.7	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	U		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
Benzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	71.28	FDEP	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	470.8	FDEP	0.00	No	Max SQL< SV
Chloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA		Yes	No SV
cis-1,2-Dichloroethene	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

Table 13-1-11
Wetland 63A 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
VOCs (µg/L) - cont.																
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	4.3	EPA	0.12	No	Max SQL< SV
Methylene chloride	0	1	2	2	2	2			ND	2	U	1580	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	37	EPA	0.01	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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Vinyl chloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		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 13-1-12
Wetland 63A Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	None	None
Barium			
Calcium			
Copper			
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Antimony	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Beryllium	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1,2-Trichloroethane
Cobalt	Endosulfan I	2,4,5-Trichlorophenol	1,1-Dichloroethane
Cyanide (CN)	Endosulfan II	2,4,6-Trichlorophenol	1,2-Dibromo-3-Chloropropane
Mercury	Endosulfan sulfate	2,4-Dichlorophenol	1,2-Dibromoethane
Silver	Heptachlor	2,4-Dimethylphenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4-Dinitrophenol	1,2-Dichloropropane
	Methoxychlor	2,4-Dinitrotoluene	1,3-Dichlorobenzene
	Toxaphene	2,6-Dinitrotoluene	2-Hexanone
	alpha-Chlordane	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	gamma-Chlordane	2-Chlorophenol	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-Chloro-3-methylphenol	cis-1,2-Dichloroethene
	gamma-BHC (Lindane)	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	Trichloroethene
	Aroclor-1221	Benzo(k)fluoranthene	Vinyl chloride
	Aroclor-1232	bis(2-Chloroethoxy)methane	Xylene (Total)
	Aroclor-1242	bis(2-Chloroethyl)ether	
	Aroclor-1248	bis(2-Ethylhexyl)phthalate (BEHP)	
	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 13-1-13
Wetland 63A 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				2,080	2,080	2,080	041W63A201	2,080			NA			2,930	0	1	No	Max Result < Ref. Conc.
Antimony	0	1	1	1	1	1			ND	1	UJ		NA			4.15	0	1	No	Max Result < Ref. Conc.
Barium	1	1				53.3	53.3	53.3	041W63A201	53.3	J		NA			9.43	1	1	Yes	Max Result > Ref. Conc.
Beryllium	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA			0.82	0	1	No	Max Result < Ref. Conc.
Calcium	1	1				38,700	38,700	38,700	041W63A201	38,700			NA			76,800	0	1	No	Max Result < Ref. Conc.
Cobalt	0	1	1	1	1	1			ND	1	U		NA			2.38	0	1	No	Max Result < Ref. Conc.
Copper	**1**	**1**				**5**	**5**	**5**	**041W63A201**	**5**	**J**	**2.9**	**EPA**	**1.72**	**1.72**	**7.02**	**0**	**1**	**No**	**Max Result < Ref. Conc.**
Cyanide (CN)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	1	EPA	2.5	2.5	4.1	0	1	No	Max Result < Ref. Conc.
Iron	1	1				483	483	483	041W63A201	483			NA			1,350	0	1	No	Max Result < Ref. Conc.
Lead	**1**	**1**				**299**	**299**	**299**	**041W63A201**	**299**		**8.5**	**EPA**	**35.18**	**35.2**	**13.8**	**1**	**1**	**Yes**	**Max Result > Ref. Conc.**
Magnesium	1	1				5,740	5,740	5,740	041W63A201	5,740			NA			244,000	0	1	No	Max Result < Ref. Conc.
Manganese	1	1				28.3	28.3	28.3	041W63A201	28.3			NA			12.2	1	1	Yes	Max Result > Ref. Conc.
Mercury	0	1	0.065	0.065	0.065	0.065			ND	0.065	U	0.025	EPA	2.6	2.6	0.21	0	1	No	Max Result < Ref. Conc.
Potassium	1	1				14,700	14,700	14,700	041W63A201	14,700			NA			81,300	0	1	No	Max Result < Ref. Conc.
Silver	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	0.23	EPA	11	10.9	3.01	0	1	No	Max Result < Ref. Conc.
Sodium	1	1				28,300	28,300	28,300	041W63A201	28,300			NA			1,950,000	0	1	No	Max Result < Ref. Conc.
Vanadium	1	1				4.1	4.1	4.1	041W63A201	4.1	J		NA			6.69	0	1	No	Max Result < Ref. Conc.
Pesticides (µg/L)																				
Aldrin	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	No Ref. Conc.
Dieldrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	No Ref. Conc.
Endosulfan I	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.0087	EPA	3	2.87		0	1	No	No Ref. Conc.
Endosulfan II	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	No Ref. Conc.
Endosulfan sulfate	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	No Ref. Conc.
Heptachlor	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.0036	EPA	7	6.94		0	1	No	No Ref. Conc.
Heptachlor epoxide	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	1	No	No Ref. Conc.
Methoxychlor	0	1	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	1	No	No Ref. Conc.
Toxaphene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
alpha-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	No Ref. Conc.
gamma-Chlordane	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	No Ref. Conc.
Total Chlordane	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.004	EPA	12.5	12.5		0	1	No	No Ref. Conc.
Endrin	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	No Ref. Conc.
Endrin aldehyde	0	1	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	1	No	No Ref. Conc.
Endrin ketone	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.0023	EPA	22	21.7		0	1	No	No Ref. Conc.
Total Endrin	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	1	No	No Ref. Conc.
alpha-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.005	FDEP	5	5		0	1	No	No Ref. Conc.
beta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	No Ref. Conc.
delta-BHC	0	1	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	1	No	No Ref. Conc.
gamma-BHC (Lindane)	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.016	EPA	1.56	1.56		0	1	No	No Ref. Conc.
Total BHC	0	1	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	1	No	No Ref. Conc.
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	No Ref. Conc.
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	No Ref. Conc.
4,4'-DDT	0	1	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	1	No	No Ref. Conc.
Total DDT	0	1	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	1	No	No Ref. Conc.
PCBs (µg/L)																				
Aroclor-1016	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Aroclor-1221	0	1	1	1	1	1			ND	1	U		NA				0	1	No	No Ref. Conc.
Aroclor-1232	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Aroclor-1242	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Aroclor-1248	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Aroclor-1254	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Aroclor-1260	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.014	FDEP	36	35.7		0	1	No	No Ref. Conc.
Total PCB	0	1	4	4	4	4			ND	4	U		NA				0	1	No	No Ref. Conc.
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	No Ref. Conc.
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	No Ref. Conc.
2,4,5-Trichlorophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
2,4,6-Trichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2,4-Dichlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2,4-Dimethylphenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2,4-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
2,4-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2,6-Dinitrotoluene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2-Chloronaphthalene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2-Chlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2-Methyl-4,6-Dinitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
2-Methylphenol (o-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2-Nitroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
2-Nitrophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
3,3'-Dichlorobenzidine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
3-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
4-Bromophenyl-phenylether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
4-Chloro-3-methylphenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
4-Chloroaniline	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.

Table 13-1-13
Wetland 63A 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.																				
4-Chlorophenylphenyl ether	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
4-Methylphenol (p-Cresol)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
4-Nitroaniline	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
4-Nitrophenol	0	1	10	10	10	10			ND	10	U		NA				0	1	No	No Ref. Conc.
Benzo(b)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Benzo(g,h,i)perylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Benzo(k)fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
bis(2-Chloroethoxy)methane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
bis(2-Chloroethyl)ether	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
bis(2-Ethylhexyl)phthalate (BEHP)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Butylbenzylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Dibenzofuran	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Diethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Dimethylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Di-n-octylphthalate	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Hexachlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Hexachlorobutadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Hexachlorocyclopentadiene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Hexachloroethane	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Indeno(1,2,3-cd)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Isophorone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Nitrobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
N-Nitroso-di-n-propylamine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
N-Nitrosodiphenylamine	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Pentachlorophenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Phenol	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
PAHs (µg/L)																				
2-Methylnaphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Acenaphthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Acenaphthylene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Benzo(a)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Benzo(a)pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Chrysene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Dibenz(a,h)anthracene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Fluoranthene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Fluorene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Naphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	23.5	EPA	0.02	0.02		0	1	No	No Ref. Conc.
Phenanthrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Total PAH	0	1	6.5	6.5	6.5	6.5			ND	6.5	U		NA				0	1	No	No Ref. Conc.
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	No Ref. Conc.
1,1,2-Trichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,1-Dichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,2-Dibromo-3-Chloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,2-Dibromoethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,2-Dichloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,2-Dichloropropane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
1,3-Dichlorobenzene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
2-Hexanone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
4-Methyl-2-Pentanone (MIBK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	No Ref. Conc.
Bromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Bromodichloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Bromoform	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Bromomethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Carbon disulfide	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Carbon tetrachloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Chloroethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Chloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA				0	1	No	No Ref. Conc.
cis-1,2-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
cis-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Dibromochloromethane	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Styrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Tetrachloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
trans-1,2-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
trans-1,3-Dichloropropene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Trichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Vinyl chloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.
Xylene (Total)	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	No Ref. Conc.

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
parameters. As a result, some average detections may exceed the Max detections
Parameters in bold were detected and exceeded Ref. Conc.s.

Table 13-1-14
Wetland 63A Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Manganese	None	None	None
Lead			
Barium			

Table 13-1-15
Wetland 63A 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				25	25	25	041W63A202	25	I		NA		Yes	No SV
Antimony	0	1	1.95	1.95	1.95	1.95			ND	1.95	U		NA		Yes	No SV
Arsenic	0	1	1.65	1.65	1.65	1.65			ND	1.65	U	36	EPA	0.05	No	Max SQL< SV
Barium	1	1				61	61	61	041W63A202	61			NA		Yes	No SV
Beryllium	1	1				0.44	0.44	0.44	041W63A202	0.44	I		NA		Yes	No SV
Cadmium	0	1	0.3	0.3	0.3	0.3			ND	0.3	U	9.3	EPA	0.03	No	Max SQL< SV
Calcium	1	1				76,000	76,000	76,000	041W63A202	76,000			NA		Yes	No SV
Chromium	0	1	0.7	0.7	0.7	0.7			ND	0.7	U	50	EPA	0.01	No	Max SQL< SV
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA		Yes	No SV
Copper	1	1				0.98	0.98	0.98	041W63A202	0.98	I	2.9	EPA	0.34	No	Max Detect < SV
Iron	1	1				140	140	140	041W63A202	140			NA		Yes	No SV
Lead	0	1	0.95	0.95	0.95	0.95			ND	0.95	U	8.5	EPA	0.11	No	Max SQL< SV
Magnesium	1	1				5,800	5,800	5,800	041W63A202	5,800			NA		Yes	No SV
Manganese	1	1				15	15	15	041W63A202	15			NA		Yes	No SV
Mercury	0	1	0.039	0.039	0.039	0.039			ND	0.039	U	0.025	EPA	1.56	Yes	Max SQL > SV
Nickel	0	1	0.75	0.75	0.75	0.75			ND	0.75	U	8.3	EPA	0.09	No	Max SQL< SV
Potassium	1	1				1,400	1,400	1,400	041W63A202	1,400			NA		Yes	No SV
Selenium	0	1	2.65	2.65	2.65	2.65			ND	2.65	U	71	EPA	0.04	No	Max SQL< SV
Silver	0	1	0.55	0.55	0.55	0.55			ND	0.55	U	0.23	EPA	2.39	Yes	Max SQL > SV
Sodium	1	1				14,000	14,000	14,000	041W63A202	14,000			NA		Yes	No SV
Thallium	0	1	3.8	3.8	3.8	3.8			ND	3.8	U	6.3	FDEP	0.60	No	Max SQL< SV
Vanadium	1	1				1.7	1.7	1.7	041W63A202	1.7	I		NA		Yes	No SV
Zinc	1	1				1.8	1.8	1.8	041W63A202	1.8	I	86	EPA	0.02	No	Max Detect < 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 13-1-16
Wetland 63A Phase IV
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Not Analyzed	Not Analyzed	Not Analyzed
Barium			
Beryllium			
Calcium			
Iron			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Antimony	Not Analyzed	Not Analyzed	Not Analyzed
Cobalt			
Mercury			
Silver			

Table 13-1-17
Wetland 63A 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.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	1	1				25	25	25	041W63A202	25	I		NA			2,930	0	1	No	Max Result < Ref. Conc.
Antimony	0	1	1.95	1.95	1.95	1.95			ND	1.95	U		NA			4.15	0	1	No	Max Result < Ref. Conc.
Barium	1	1				61	61	61	041W63A202	61			NA			9.43	1	1	Yes	Max Result > Ref. Conc.
Beryllium	1	1				0.44	0.44	0.44	041W63A202	0.44	I		NA			0.82	0	1	No	Max Result < Ref. Conc.
Calcium	1	1				76,000	76,000	76,000	041W63A202	76,000			NA			76,800	0	1	No	Max Result < Ref. Conc.
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA			2.38	0	1	No	Max Result < Ref. Conc.
Iron	1	1				140	140	140	041W63A202	140			NA			1,350	0	1	No	Max Result < Ref. Conc.
Magnesium	1	1				5,800	5,800	5,800	041W63A202	5,800			NA			244,000	0	1	No	Max Result < Ref. Conc.
Manganese	1	1				15	15	15	041W63A202	15			NA			12.2	1	1	Yes	Max Result > Ref. Conc.
Mercury	0	1	0.039	0.039	0.039	0.039			ND	0.039	U	0.025	EPA	1.56	1.56	0.21	0	1	No	Max Result < Ref. Conc.
Potassium	1	1				1,400	1,400	1,400	041W63A202	1,400			NA			81,300	0	1	No	Max Result < Ref. Conc.
Silver	0	1	0.55	0.55	0.55	0.55			ND	0.55	U	0.23	EPA	2.39	2.39	3.01	0	1	No	Max Result < Ref. Conc.
Sodium	1	1				14,000	14,000	14,000	041W63A202	14,000			NA			1,950,000	0	1	No	Max Result < Ref. Conc.
Vanadium	1	1				1.7	1.7	1.7	041W63A202	1.7	I		NA			6.69	0	1	No	Max Result < Ref. Conc.

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 n parameters. As a result, some average detections may exceed the Max detections
Parameters in bold were detected and exceeded Ref. Conc.s

Table 13-1-18
Wetland 63A Phase IV
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Manganese Barium	Not Analyzed	Not Analyzed	Not Analyzed

Table 13-1-19
Wetland 63A Phase II
Sediment Dermal Exposure Dose-Child Tresspasser 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	1.8E+02	=	5.5E+03	=	MG/KG	041M63A301	5 / 5	NAV	2.1E+03	1.0E-03	3	1.10E-06	5.50E-07	1.74E-05	1.16E-05
7440393	Barium	N	3.9E-01	J	1.6E+01	J	MG/KG	041M63A301	5 / 5	NAV	5.1E+00	1.0E-03	3	3.26E-09	1.63E-09	5.16E-08	3.45E-08
7440439	Cadmium	N	1.5E-01	J	7.7E+00	=	MG/KG	041M63A301	3 / 5	1.7E-01 / 3.7E-01	1.8E+00	1.0E-03	3	1.54E-09	7.70E-10	2.44E-08	1.63E-08
7440473	Chromium	N	5.1E-01	J	9.3E+01	=	MG/KG	041M63A301	5 / 5	NAV	2.1E+01	1.0E-03	3	1.85E-08	9.25E-09	2.93E-07	1.96E-07
7440484	Cobalt	C	2.6E-01	J	3.7E-01	J	MG/KG	041M63A301	2 / 5	1.3E-01 / 1.3E-01	1.7E-01	1.0E-03	3	7.40E-11	3.70E-11	1.67E-10	2.80E-10
7439896	Iron	N	2.9E+02	=	5.0E+03	=	MG/KG	041M63A301	5 / 5	NAV	1.8E+03	1.0E-03	3	1.00E-06	5.00E-07	1.58E-05	1.06E-05
7439921	Lead	N	9.3E-01	=	1.1E+02	=	MG/KG	041M63A301	5 / 5	NAV	2.9E+01	1.0E-03	3	2.12E-08	1.06E-08	3.36E-07	2.24E-07
7439965	Manganese	N	1.7E+00	=	4.5E+01	=	MG/KG	041M63A401	5 / 5	NAV	1.4E+01	1.0E-03	3	8.90E-09	4.45E-09	1.41E-07	9.42E-08
7487947	Mercury	N	N/A	N/A	1.4E-01	J	MG/KG	041M63A301	1 / 5	5.0E-02 / 7.0E-02	5.0E-02	1.0E-03	3	2.80E-11	1.40E-11	4.43E-10	2.96E-10
7440622	Vanadium	N	5.5E-01	J	1.4E+01	=	MG/KG	041M63A301	5 / 5	NAV	4.8E+00	1.0E-03	3	2.88E-09	1.44E-09	4.56E-08	3.05E-08
72548	4,4'-DDD	C	3.2E-04	J	5.6E-03	DJ	MG/KG	041M63A301	3 / 5	2.0E-04 / 2.1E-04	1.5E-03	3.0E-02	1	3.36E-11	1.68E-11	7.60E-11	1.27E-10
72559	4,4'-DDE	C	N/A	N/A	9.5E-04	=	MG/KG	041M63A201	1 / 5	2.0E-04 / 3.8E-04	3.0E-04	3.0E-02	1	5.70E-12	2.85E-12	1.29E-11	2.15E-11
50293	4,4'-DDT	C	2.9E-04	J	1.1E-03	J	MG/KG	041M63A301	3 / 5	2.0E-04 / 2.1E-04	4.8E-04	3.0E-02	1	6.60E-12	3.30E-12	1.49E-11	2.49E-11
5103719	alpha-Chlordane	C	N/A	N/A	1.0E-03	J	MG/KG	041M63A301	1 / 5	9.8E-05 / 1.3E-04	2.4E-04	4.0E-02	2	8.00E-12	4.00E-12	1.81E-11	3.02E-11
11096825	Aroclor-1260	C	1.1E-03	J	2.6E-01	DJ	MG/KG	041M63A301	4 / 5	N/A / 2.0E-03	5.6E-02	1.4E-02	3	7.18E-10	3.59E-10	1.62E-09	2.71E-09
319868	delta-BHC	C	N/A	N/A	2.4E-04	J	MG/KG	041M63A201	1 / 5	9.8E-05 / 1.9E-04	1.0E-04	4.0E-02	2	1.92E-12	9.60E-13	4.34E-12	7.26E-12
60571	Dieldrin	C	N/A	N/A	4.1E-03	J	MG/KG	041M63A301	1 / 5	2.0E-04 / 2.6E-04	9.1E-04	1.0E-01	2	8.20E-11	4.10E-11	1.85E-10	3.10E-10
1031078	Endosulfan sulfate	N	1.4E-03	J	1.4E-03	J	MG/KG	041M63A401	2 / 5	2.0E-04 / 2.2E-04	6.2E-04	1.0E-01	2	2.80E-11	1.40E-11	4.43E-10	2.96E-10
72208	Endrin	N	N/A	N/A	2.7E-03	J	MG/KG	041M63A301	1 / 5	2.0E-04 / 2.6E-04	6.3E-04	1.0E-01	2	5.40E-11	2.70E-11	8.55E-10	5.71E-10
58899	gamma-BHC (Lindane)	C	N/A	N/A	2.1E-04	J	MG/KG	041M63A201	1 / 5	9.8E-05 / 1.9E-04	9.4E-05	4.0E-02	2	1.68E-12	8.40E-13	3.80E-12	6.35E-12
57749	gamma-Chlordane	C	N/A	N/A	1.4E-03	=	MG/KG	041M63A301	1 / 5	9.8E-05 / 1.3E-04	3.2E-04	4.0E-02	2	1.12E-11	5.60E-12	2.53E-11	4.23E-11
56553	Benzo(a)anthracene	C	N/A	N/A	6.3E-02	=	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.7E-01	1.3E-01	2	1.64E-09	8.19E-10	3.70E-09	6.19E-09
50328	Benzo(a)pyrene	C	N/A	N/A	7.2E-02	=	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.8E-01	1.3E-01	2	1.87E-09	9.36E-10	4.23E-09	7.08E-09
205992	Benzo(b)fluoranthene	C	N/A	N/A	1.2E-01	=	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.9E-01	1.3E-01	2	3.12E-09	1.56E-09	7.06E-09	1.18E-08
191242	Benzo(g,h,i)perylene	C	N/A	N/A	4.8E-02	J	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.7E-01	1.3E-01	2	1.25E-09	6.24E-10	2.82E-09	4.72E-09
207089	Benzo(k)fluoranthene	C	N/A	N/A	3.7E-02	J	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.7E-01	1.3E-01	2	9.62E-10	4.81E-10	2.18E-09	3.64E-09
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	9.9E-02	J	1.3E-01	J	MG/KG	041M63A401	2 / 5	3.8E-01 / 1.5E+01	1.6E+00	1.0E-01	1	2.60E-09	1.30E-09	5.88E-09	9.83E-09
85687	Butylbenzylphthalate	N	2.2E-02	J	1.4E+00	J	MG/KG	041M63A301	3 / 5	4.0E-01 / 4.2E-01	3.8E-01	1.0E-01	2	2.80E-08	1.40E-08	4.43E-07	2.96E-07
218019	Chrysene	C	N/A	N/A	7.4E-02	=	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.8E-01	1.3E-01	2	1.92E-09	9.62E-10	4.35E-09	7.27E-09
206440	Fluoranthene	N	N/A	N/A	1.3E-01	=	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.9E-01	1.3E-01	2	3.38E-09	1.69E-09	5.35E-08	3.58E-08
193395	Indeno(1,2,3-cd)pyrene	C	N/A	N/A	4.7E-02	J	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.7E-01	1.3E-01	2	1.22E-09	6.11E-10	2.76E-09	4.62E-09
85018	Phenanthrene	N	N/A	N/A	4.7E-02	J	MG/KG	041M63A401	1 / 5	3.9E-02 / 1.5E+00	1.7E-01	1.0E-02	3	9.40E-11	4.70E-11	1.49E-09	9.95E-10
129000	Pyrene	N	2.4E-02	J	1.2E-01	=	MG/KG	041M63A401	2 / 5	3.9E-02 / 1.5E+00	1.9E-01	1.0E-02	3	2.40E-10	1.20E-10	3.80E-09	2.54E-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 13-1-20
Wetland 63A Phase II
Sediment Dermal Exposure Risk-Child Tresspasser 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: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	5.5E+03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	1.7E-04	N/A	1.2E-04	N/A
	Barium	N	1.6E+01	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	1.1E-05	N/A	7.0E-06	N/A
	Cadmium	N	7.7E+00	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	2.0E-03	N/A	1.3E-03	N/A
	Chromium	N	9.3E+01	N/A	N/A	2.5E-02	1	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	3.7E-01	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.0E-08	N/A	1.7E-08	N/A
	Iron	N	5.0E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	3.5E-04	N/A	2.4E-04	N/A
	Lead	N	1.1E+02	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	4.5E+01	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	1.5E-04	N/A	9.8E-05	N/A
	Mercury	N	1.4E-01	3.0E-04	N/A	7.0E-02	1	2.1E-05	N/A	2.1E-05	N/A	1.4E-05	N/A
	Vanadium	N	1.4E+01	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	2.5E-04	N/A	1.7E-04	N/A
	4,4'-DDD	C	5.6E-03	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	6.1E-10	N/A	1.0E-09
	4,4'-DDE	C	9.5E-04	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	1.5E-10	N/A	2.4E-10
	4,4'-DDT	C	1.1E-03	5.0E-04	3.4E-01	3.0E-02	2	1.5E-05	1.1E+01	9.9E-07	1.7E-10	1.7E-06	2.8E-10
	alpha-Chlordane	C	1.0E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	4.5E-08	7.9E-12	7.6E-08	1.3E-11
	Aroclor-1260	C	2.6E-01	N/A	2.0E+00	1.4E-01	2	N/A	1.4E+01	N/A	2.3E-08	N/A	3.9E-08
	delta-BHC	C	2.4E-04	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	6.1E-07	1.9E-09	1.0E-06	3.2E-09
	Dieldrin	C	4.1E-03	5.0E-05	1.6E+01	5.0E-01	3	2.5E-05	3.2E+01	7.4E-06	5.9E-09	1.2E-05	9.9E-09
	Endosulfan sulfate	N	1.4E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	1.5E-07	N/A	9.9E-08	N/A
	Endrin	N	2.7E-03	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	2.3E-04	N/A	1.5E-04	N/A
	gamma-BHC (Lindane)	C	2.1E-04	3.0E-04	1.3E+00	9.7E-01	3	2.9E-04	1.3E+00	1.3E-08	5.1E-12	2.2E-08	8.5E-12
	gamma-Chlordane	C	1.4E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	6.3E-08	1.1E-11	1.1E-07	1.9E-11
	Benzo(a)anthracene	C	6.3E-02	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	8.7E-09	N/A	1.5E-08
	Benzo(a)pyrene	C	7.2E-02	N/A	7.3E+00	3.1E-01	3	N/A	2.4E+01	N/A	1.0E-07	N/A	1.7E-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(g,h,i)perylene	C	4.8E-02	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	6.6E-09	N/A	1.1E-08
	Benzo(k)fluoranthene	C	3.7E-02	N/A	7.3E-02	3.1E-01	3	N/A	2.4E-01	N/A	5.1E-10	N/A	8.6E-10
	bis(2-Ethylhexyl)phthalate (BEHP)	C	1.3E-01	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	2.9E-06	8.2E-10	4.9E-06	1.4E-09
	Butylbenzylphthalate	N	1.4E+00	2.0E-01	N/A	1.7E-02	3	3.5E-03	N/A	1.3E-04	N/A	8.5E-05	N/A
	Chrysene	C	7.4E-02	7.3E-03	N/A	3.1E-01	3	2.3E-03	N/A	1.9E-06	N/A	3.2E-06	N/A
	Fluoranthene	N	1.3E-01	N/A	4.0E-02	3.1E-01	3	N/A	1.3E-01	N/A	6.9E-09	N/A	4.6E-09
	Indeno(1,2,3-cd)pyrene	C	4.7E-02	7.3E-01	N/A	3.1E-01	3	2.3E-01	N/A	1.2E-08	N/A	2.0E-08	N/A
	Phenanthrene	N	4.7E-02	N/A	3.0E-02	7.3E-01	3	N/A	4.1E-02	N/A	6.1E-11	N/A	4.1E-11
	Pyrene	N	1.2E-01	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	3.7E-10	N/A	2.5E-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 13-1-21
Wetland 63A Phase II
Sediment Incidental Ingestion Exposure Risk-Child Tresspasser 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	5.5E+03	1.0E+00	N/A	1.74E-03	N/A	1.12E-03	N/A
	Barium	N	1.6E+01	7.0E-02	N/A	7.37E-05	N/A	4.74E-05	N/A
	Cadmium	N	7.7E+00	5.0E-04	N/A	4.88E-03	N/A	3.13E-03	N/A
	Chromium	N	9.3E+01	N/A	N/A	N/A	N/A	N/A	N/A
	Cobalt	C	3.7E-01	2.0E-02	N/A	8.37E-07	N/A	1.34E-06	N/A
	Iron	N	5.0E+03	3.0E-01	N/A	5.28E-03	N/A	3.39E-03	N/A
	Lead	N	1.1E+02	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	4.5E+01	2.4E-02	N/A	5.87E-04	N/A	3.77E-04	N/A
	Mercury	N	1.4E-01	3.0E-04	N/A	1.48E-04	N/A	9.50E-05	N/A
	Vanadium	N	1.4E+01	7.0E-03	N/A	6.51E-04	N/A	4.19E-04	N/A
	4,4'-DDD	C	5.6E-03	N/A	2.4E-01	N/A	6.08E-11	N/A	9.77E-11
	4,4'-DDE	C	9.5E-04	N/A	3.4E-01	N/A	1.46E-11	N/A	2.35E-11
	4,4'-DDT	C	1.1E-03	5.0E-04	3.4E-01	9.95E-08	1.69E-11	1.60E-07	2.72E-11
	alpha-Chlordane	C	1.0E-03	5.0E-04	3.5E-01	9.05E-08	1.58E-11	1.45E-07	2.54E-11
	Aroclor-1260	C	2.6E-01	N/A	2.0E+00	N/A	2.35E-08	N/A	3.78E-08
	delta-BHC	C	2.4E-04	5.0E-04	6.3E+00	2.17E-08	6.84E-11	3.49E-08	1.10E-10
	Dieldrin	C	4.1E-03	5.0E-05	1.6E+01	3.71E-06	2.97E-09	5.96E-06	4.77E-09
	Endosulfan sulfate	N	1.4E-03	6.0E-03	N/A	7.39E-08	N/A	4.75E-08	N/A
	Endrin	N	2.7E-03	3.0E-04	N/A	2.85E-06	N/A	1.83E-06	N/A
	gamma-BHC (Lindane)	C	2.1E-04	3.0E-04	1.3E+00	3.17E-08	1.23E-11	5.09E-08	1.98E-11
	gamma-Chlordane	C	1.4E-03	5.0E-04	3.5E-01	1.27E-07	2.22E-11	2.04E-07	3.56E-11
	Benzo(a)anthracene	C	6.3E-02	N/A	7.3E-01	N/A	2.08E-09	N/A	3.34E-09
	Benzo(a)pyrene	C	7.2E-02	N/A	7.3E+00	N/A	2.38E-08	N/A	3.82E-08
	Benzo(b)fluoranthene	C	1.2E-01	N/A	7.3E-01	N/A	3.96E-09	N/A	6.37E-09
	Benzo(g,h,i)perylene	C	4.8E-02	N/A	7.3E-01	N/A	1.58E-09	N/A	2.55E-09
	Benzo(k)fluoranthene	C	3.7E-02	N/A	7.3E-02	N/A	1.22E-10	N/A	1.96E-10
	bis(2-Ethylhexyl)phthalate (BEHP)	C	1.3E-01	2.0E-02	1.4E-02	2.94E-07	8.23E-11	4.72E-07	1.32E-10
	Butylbenzylphthalate	N	1.4E+00	2.0E-01	N/A	2.22E-06	N/A	1.42E-06	N/A
	Chrysene	C	7.4E-02	7.3E-03	N/A	4.58E-07	N/A	7.37E-07	N/A
	Fluoranthene	N	1.3E-01	N/A	4.0E-02	N/A	1.65E-09	N/A	1.06E-09
	Indeno(1,2,3-cd)pyrene	C	4.7E-02	7.3E-01	N/A	2.91E-09	N/A	4.68E-09	N/A
	Phenanthrene	N	4.7E-02	N/A	3.0E-02	N/A	4.46E-10	N/A	2.87E-10
	Pyrene	N	1.2E-01	N/A	3.0E-02	N/A	1.14E-09	N/A	7.33E-10

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).
EPC_{sd} = Exposure point concentration in sediment (mg/kg).
IR_{sd} = 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:

IR_{sd} = 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 13-1-22
Wetland 63A 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	041W63A201	1 / 1	NAV	2.1E+03	2.1E-03	1.0E-03	5.41E-06	8.56E-05	1.14E-04
7440393	Barium	N	N/A	N/A	5.3E+01	J	UG/L	041W63A201	1 / 1	NAV	5.3E+01	5.3E-05	1.0E-03	1.39E-07	2.19E-06	2.93E-06
7439921	Lead	N	N/A	N/A	3.0E+02	=	UG/L	041W63A201	1 / 1	NAV	3.0E+02	3.0E-04	3.4E-04	2.64E-07	4.18E-06	5.59E-06
7439965	Manganese	N	N/A	N/A	2.8E+01	=	UG/L	041W63A201	1 / 1	NAV	2.8E+01	2.8E-05	1.0E-03	7.36E-08	1.16E-06	1.56E-06
7782492	Selenium	N	N/A	N/A	8.0E+00	=	UG/L	041W63A201	1 / 1	NAV	8.0E+00	8.0E-06	1.0E-03	2.08E-08	3.29E-07	4.40E-07
7440622	Vanadium	N	N/A	N/A	4.1E+00	J	UG/L	041W63A201	1 / 1	NAV	4.1E+00	4.1E-06	1.0E-03	1.07E-08	1.69E-07	2.26E-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).
tevent = 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).
tevent = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 13-1-23
Wetland 63A 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	2.1E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	8.6E-04	N/A	1.1E-03	N/A
	Barium	N	5.3E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	4.5E-04	N/A	6.0E-04	N/A
	Lead	N	3.0E-04	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.8E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	2.1E-04	N/A	2.8E-04	N/A
	Selenium	N	8.0E-06	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	1.2E-04	N/A	1.6E-04	N/A
	Vanadium	N	4.1E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	9.3E-04	N/A	1.2E-03	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:
RfDdermal = Dermal reference dose.
RFDoral = Oral reference dose.
SFdermal = Dermal slope factor.
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 13-1-24
Wetland 63A 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	2.1E-03	1.0E+00	N/A	6.6E-08	N/A	4.2E-08	N/A
	Barium	N	5.3E-05	7.0E-02	N/A	2.4E-08	N/A	1.5E-08	N/A
	Lead	N	3.0E-04	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.8E-05	1.4E-01	N/A	6.4E-09	N/A	4.1E-09	N/A
	Selenium	N	8.0E-06	5.0E-03	N/A	5.1E-08	N/A	3.3E-08	N/A
	Vanadium	N	4.1E-06	7.0E-03	N/A	1.9E-08	N/A	1.2E-08	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 = Chronic Daily Intake

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

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).
EPCsw = Exposure point concentration in surface water (mg/L).
IRsw = 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 13-1-25
Wetland 63A 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	2.5E+01	I	UG/L	041W63A202	1 / 1	NAV	2.5E+01	2.5E-05	1.0E-03	6.50E-08	1.03E-06	1.38E-06
7440393	Barium	N	N/A	N/A	6.1E+01	=	UG/L	041W63A202	1 / 1	NAV	6.1E+01	6.1E-05	1.0E-03	1.59E-07	2.51E-06	3.36E-06
7440417	Beryllium	N	N/A	N/A	4.4E-01	I	UG/L	041W63A202	1 / 1	NAV	4.4E-01	4.4E-07	1.0E-03	1.14E-09	1.81E-08	2.42E-08
7439965	Manganese	N	N/A	N/A	1.5E+01	=	UG/L	041W63A202	1 / 1	NAV	1.5E+01	1.5E-05	1.0E-03	3.90E-08	6.17E-07	8.25E-07
7440622	Vanadium	N	N/A	N/A	1.7E+00	I	UG/L	041W63A202	1 / 1	NAV	1.7E+00	1.7E-06	1.0E-03	4.42E-09	7.00E-08	9.36E-08

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:

DADsw = Dermal absorbed dose-water contact (mg/kg-day).
DAevent = 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).
tevent = 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,
Where:

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

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).
tevent = 2.6 hrs/dy (child trespasser/adult maintenance worker).

Table 13-1-26
Wetland 63A 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	2.5E-05	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	1.0E-05	N/A	1.4E-05	N/A
	Barium	N	6.1E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	5.1E-04	N/A	6.9E-04	N/A
	Beryllium	N	4.4E-07	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	1.3E-03	N/A	1.7E-03	N/A
	Manganese	N	1.5E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	1.1E-04	N/A	1.5E-04	N/A
	Vanadium	N	1.7E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	3.8E-04	N/A	5.1E-04	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 13-1-27
Wetland 63A 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	2.5E-05	1.0E+00	N/A	7.9E-10	N/A	5.1E-10	N/A
	Barium	N	6.1E-05	7.0E-02	N/A	2.8E-08	N/A	1.8E-08	N/A
	Beryllium	N	4.4E-07	2.0E-03	N/A	7.0E-09	N/A	4.5E-09	N/A
	Manganese	N	1.5E-05	1.4E-01	N/A	3.4E-09	N/A	2.2E-09	N/A
	Vanadium	N	1.7E-06	7.0E-03	N/A	7.7E-09	N/A	4.9E-09	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

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

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).
EPCsw = Exposure point concentration in surface water (mg/L).
IRsw = 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).

13.2 Wetland 63B — Screening Level Problem Formulation

13.2.1 Site Description and Habitats Present at Wetland 63B

Wetland 63B is located on the northeast side of Chevalier Field, along the shoreline of Pensacola Bay, and directly north of Site 14 (Figure 13-1). Wetland 63B is potentially impacted by Sites 14 (Dredge Spoil Fill) and 36 (Industrial Wastewater Treatment Plant Sewer Line). Wetland 63B is also surrounded by buildings and development to the west and Pensacola Bay to the east.

Photograph 1 Wetland 63B — Facing Southeast from Chevalier Field

Photograph 2 Wetland 63B — Facing Northwest from the Southeast Shore

Parsons and Pruitt (USEPA, 1991a) described this wetland as an estuarine emergent system. No storm water outfalls drain into the wetland, which is connected to and tidally influenced by Pensacola Bay via a narrow channel. The wetland is vegetated with plants typically found in disturbed areas. Estuarine plants found in the wetland include common reed *(Phragmites australis)* and saw grass *(Caladium jamaicense)*. There is a noticeable elevation in the topography as one moves inland from the coast at this site.

Wetland 63B is bordered by Sites 14 and Site 36. Site 14 (Dredge Spoil Fill) was created between 1975 and 1977 by deposition of spoils from dredging operations in Pensacola Bay, and used afterward to place spoils dredged for the carrier basin adjacent to Allegheny Pier. 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.

13.2.2 Wetland 63B — Sample Location Description

Phase II Sediment Sample Location Description

Four Phase II sediment samples were collected in Wetland 63B for the ERA (Figure 13-4). All sample locations were collected from the southern portion of the wetland. Sample location 041M63B101 was collected along the eastern side of this wetland and is the closest in proximity to Pensacola Bay. Sample locations 041M63B201 and 041M63B301 were collected from the southern shore of the wetland, and sample location 041M63B401 was collected from the western shore. Table 13-2-1 (tables are located at the end of each section) provides a physical description of the Phase II sediments collected at Wetland 63B. Phase II sediments at Wetland 63B were composed light yellowish brown poorly graded sand, medium, with organics (041M63B301) with 0.14% TOC to black silty sand with organics (041M63B101) with 2.52% TOC.

Phase II Surface Water Sample Location Description

Two surface water samples were collected at Wetland 63B and were collocated with the sediment stations 041M63B201 and 041M63B401 (Figure 13-4). Table 13-2-2 provides a physical description of the surface water collected at Wetland 63B. Surface water from Wetland 63B was found to be slightly hard and of slightly acidic pH.

13.2.3 Nature and Extent of Contamination

Phase II Wetland 63B Sediment

Figure 13-4 presents the Phase II sediment sampling locations for Wetland 63B. Table 13-2-3 presents a summary of the analytical results of the four Phase II sediment samples.

Metals — Nineteen inorganic constituents were detected during Phase II sediment sampling at Wetland 63B. The distribution of inorganic detections and reference value exceedances during Phase II at Wetland 63B were centered at location 041M63B101, near the southeast section of the wetland, where 18 analytes were detected. Of these 18 detections, two exceeded the estuarine reference values for barium and calcium. Inorganic constituents at the other three sample locations were below the reference value.

Pesticides and PCBs — Three pesticide compounds and the PCB aroclor-1260 were detected during Phase II sediment sampling at Wetland 63B. 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. Total DDT was not detected above the screening value at Wetland 63B.

Pesticides were detected at three of the four sample locations during Phase II sampling; however, concentrations were below the basewide reference concentration at all locations. Location 041M63B201, at the southern edge of the wetland, had three detections. Location 041M63B401, at the southwestern edge of the wetland, had two detections. Location 041M63B101, near the southeast edge of the wetland, had one detection. The PCB aroclor-1260 was detected at four locations, with the highest detection at 041M63B101. No reference concentration was established for aroclor-1260.

SVOCs — Fourteen SVOCs were detected in sediment samples collected during Phase II sampling at Wetland 63B. Location 041M63B401, near the southwest edge of the wetland, had the greatest number of SVOC detections, with 12 compounds; however, the concentrations were relatively low. Locations 041M63B101 and 041M63B201 had five and three detections, respectively, and similarly low concentrations. The distribution of SVOCs in Wetland 63B is similar to the pesticide constituents, relatively low concentrations at all locations with the exception of location 041M63B301, near the south end of the wetland, where SVOCs were not detected.

VOCs — No VOCs were detected in the Phase II sediment sampling at Wetland 63B.

Phase II Surface Water

Figure 13-4 presents the Phase II surface water sampling locations for Wetland 63B. Table 13-2-4 presents a summary of the analytical results of the two Phase II surface water samples.

Metals — Twelve metals were detected in Phase II surface water samples collected from Wetland 63B. Location 041W63B201, at the south end of the wetland, had 12 detections, four of which exceeded their reference concentrations. Note that this location generally exhibited the highest concentrations of metals, as well as greatest diversity. Location 041W63B401 had nine detections and two exceedances.

Pesticides and PCBs — No pesticides or PCBs were detected during Phase II surface water sampling at Wetland 63B.

SVOCs — One SVOC was detected in the Phase II surface water sampling at Wetland 63B. The detection of di-n-butylphthalate was limited to a single location — 041W63B201, located at the

south end of the wetland. Di-n-butylphthalate was also detected in one of the four sediment sample locations; however, the sediment detection was located at the southwest section of the wetland.

VOCs — No VOCs were detected in the Phase II surface water sampling at Wetland 63B.

13.2.4 Ecological Risk Assessment

Phase II Investigation Summary — Wetland 63B

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 13-2-5, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 13-2-6.

Baseline Problem Formulation — Wetland 63B 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
- Interpretative 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 13-2-7. A list of COPCs retained after refinement is presented in Table 13-2-8. Additionally, the tables compare: (1) average concentrations to screening and refinement values to

assess potential exposure across the entire wetland, and (2) Wetland 63B concentrations to reference concentrations.

As shown on Figure 13-5, total DDT and its daughter products were below the basewide levels, indicating that pesticide application levels in this area were in accordance with other base activities. As a result, total DDT and its daughter products were not carried forward as COPCs in the ERA process. The only pesticide detected and retained as a COPC was endosulfan sulfate. For Wetland 63B, barium exceeded its reference concentration and was retained as a COPC. Calcium also exceeded its reference concentration; however, calcium is considered an essential nutrient and is not retained as a COPC.

No VOCs were detected in Wetland 63B sediments. When normalized to detected TOC concentrations, PAHs did not appear to be a risk driver for Wetland 63B as shown on Figure 13-6. Benzo(b)fluoranthene and dibenzofuran were detected and retained as COPCs due to lack of screening criteria for these constituents.

Table 13-2-9 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, three sample locations (041M63B101 through 041M63B301) were determined to be Category 1, indicating these sediments were considered nontoxic. Station 041M63B401 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. Figure 13-7 shows the Mean ERM category for each sediment sample location at Wetland 63B.

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

As presented in Table 13-2-10, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 13-2-11.

Baseline Problem Formulation — Wetland 63B 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 13-2-12. COPCs retained after refinement are presented in Table 13-2-13. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

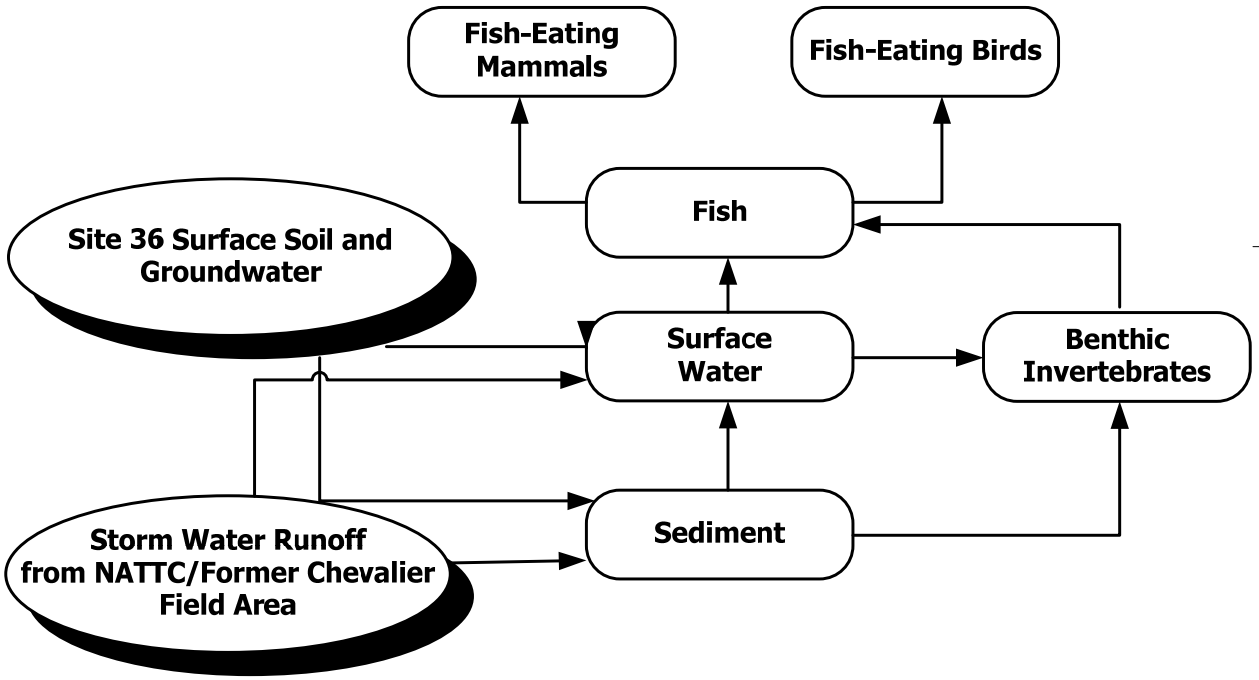
For Wetland 63B, barium, iron, and manganese exceeded their Site 41 estuarine reference surface water concentrations at sample location 041W63B201 (Table 13-2-12) and were retained as COPCs. Di-n-butylphthalate (SVOC) was also detected at sample location 041W63B201 and retained as a COPC.

There were no similar constituents retained for sediment and surface water at Wetland 63B.

Based on the Phase II results described above, Wetland 63B was identified as a Blue-Coded Wetland in the approved *Final RI/FS SAP Addendum* (E/A&H, 1997d), indicating that contaminants were present generally below screening values, and contaminants did not appear to be site related. Blue-Coded Wetlands were not assessed further in Phase III.

The constituents retained through the ERA process resemble constituents found in surface water runoff conditions. The conceptual model below symbolizes which environmental habitats may be impacted by Wetland 63B Phase II constituents retained during the ERA process.

Wetland 63B
Conceptual Site Model



13.2.5 Wetland 63B — Human Health Risk Assessment

Wetland 63 is described in Section 13.2.1, and the HHRA is summarized below.

13.2.5.1 Site Data

Section 13.2.3 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland 63B during the Phases II of the RI. Surface water and sediment data for Wetland 63B are summarized in Tables 13-2-3 and 13-2-4.

13.2.5.2 Conceptual Site Model

As described in Section 13.2.1, Wetland 63B is located on the northeast side of Chevalier Field, along the shoreline of Pensacola Bay, and directly north of Site 14. As described in Section 13.1.5.2, Wetland 63 is in an unrestricted area of the base, so the wetland is accessible to Navy personnel and trespassers. Wetlands 63A and 63B are intermittently flooded, so surface water contact was assessed for maintenance and trespasser scenarios. Sediment locations are inundated all year at some locations, preventing significant sediment exposure. However, sediment dries at other locations within these wetlands where exposure could be similar to

soil exposure. Contact with sediment was assessed for all sediment locations within these wetlands. Although trespassers may be able to access the site, water depths are too shallow to support regular fishing for game fish species. Consequently, fish tissue ingestion pathways were excluded.

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

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

13.2.5.3 Risk Characterization

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

Phase II Data

Maintenance Worker

As shown in Tables 13-2-14 through 13-2-16, 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 13-2-17 through 13-2-19, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Trespasser

As shown in Tables 13-2-14 through 13-2-16, sediment ingestion and dermal contact risk estimates for trespasser were below the FDEP risk threshold. Hazard indices were below 1.0.

As shown in Tables 13-2-17 through 13-2-19, surface water ingestion and dermal contact risk estimates for trespassers were below the FDEP risk threshold. Hazard indices were below 1.0.

Summary of Wetland 63B Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	1.68E-03	1.35E-07
	Surface water	6.46E-03	0.00E+00
Trespasser	Sediment	2.59E-03	8.62E-08
	Surface water	4.83E-03	0.00E+00

Based on Phase II data, no COCs for Wetland 63B were identified.

Wetland 63B HHRA COC Summary

No COCs were identified in the HHRA for Wetland 63B.

13.2.6 Wetland 63B — Fate and Transport Analysis

This wetland is located on the eastern side of former Chevalier Field and is bounded by Pensacola Bay on its western side. There were no borings or wells proximal to this wetland; therefore only the sediment/surface water transport pathways were completed.

Four sediment samples and two surface water samples were collected from this wetland and used to evaluate the transport pathways. Flow within the wetland is to the east, and flow from this wetland eventually empties into Pensacola Bay (see Figure 13-1).

Surface Water/Sediment Transport Within The Wetlands:

Surface Water — To evaluate this pathway, upgradient location 041W63B4 was compared to downgradient location 041W63B2. Evaluation of these two locations indicated an increase in detected parameters (nine metals in the upgradient location versus 12 metals and one organic in the downgradient location). For the metals, three parameters present in the downgradient location were not detected in the upgradient, one metal exhibited a decrease, and eight constituents exhibited slight increases. The only organic detected downgradient was a phthalate and may be a lab artifact.

Sediment — To evaluate this pathway, upgradient location 041M63B4 was compared to downgradient locations 041M63B2 and 041M63B1. Evaluation of 041M63B4 with 041M63B2 indicated an increase in inorganic detections and a decrease in organic detections (13 metals and 15 organics upgradient versus 16 metals and seven organics downgradient). For the metals, five parameters were present in the downgradient locations that were not detected in the upgradient location, and 13 constituent exhibited marked increases. For the organics,

two compounds were present in the downgradient locations that were not detected in the upgradient, one constituent remained the same, two compounds decreased in concentration, and two organics increased in concentration. TOC exhibited a marked increase, which may explain the increase in metals by supplying a ready substrate for adsorption. Organic detections and concentrations were notable in that there was a significant drop in BAP equivalents and napthalenes (likely derived from storm water runoff from Chevalier Field), indicating that these compounds were being fixed relatively rapidly within the wetland.

Evaluation of upgradient location 041M63B4 with downgradient location 041M63B2 also indicated an increase in inorganic detections and a decrease in organics (13 metals and 15 organics at the upgradient versus 16 metals and seven organics at the downgradient). For the metals, one parameter was present in the downgradient that was not present in the upgradient location, three metals exhibited a decrease, and 12 parameters exhibited an increase. For the organics, one compound was present in the downgradient location that was not detected in the upgradient, three constituents exhibited a decrease, and three organics exhibited an increase. The organics detected downgradient included more pesticides but fewer BAP equivalents and napthalenes than the upgradient location. Similar to the other downgradient location evaluated in this wetland (041M63B1), this indicated that these compounds were being fixed relatively rapidly within the wetland.

Table 13-2-1
Wetland 63B Phase II
Sediment Physical Parameters

Parameter	041M63B101	041M63B201	041M63B301	041M63B401
TOC (%)	2.52	0.24	0.143	0.295
Percent Solids (%)	69	69.7	76.4	75.7
Grain Size Analysis (percent of composition[1])				
Fine Gravel	0	0	1	0
Coarse Sand	0	1	1	0
Medium Sand	42	6	45	28
Fine Sand	39	91	52	71
Silt and Clay	19	2	1	1
Description	Black Silty Sand with Organics	Dark Grayish Brown Poorly Graded Sand, Fine, Trace of Silt, Organics	Light Yellowish Brown Poorly Graded Sand, Medium, with organics	Pale Brown Poorly Graded Sand, Fine

Note:
[1] = Derived from sieve analyses.

Table 13-2-2
Wetland 63B Phase II
Surface Water Physical Parameters

Parameter	041W63B201	041W63B201
Hardness as CaCO3 (mg/L)	141	136
pH	6.35	6.13
Specific Conductivity (mS/cm)	0.638	0.011
Turbidity (NTU)	5	13
Salinity (%)	0.02	0

Notes:

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

Table 13-2-3
Wetland 63B 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	0	4	4	101.0	1,960.0	650.0	041M63B101
Antimony	0.260	1	1	4	0.250	0.250	0.191	041M63B201
Arsenic	2.140	0	2	4	0.240	0.430	0.20	041M63B101
Barium	3.840	1	4	4	0.710	4.0	1.70	041M63B101
Beryllium	0.130	0	1	4	0.10	0.10	0.051	041M63B101
Calcium	1,978.80	1	4	4	191.0	3,230.0	1,320.0	041M63B101
Chromium	13.10	0	4	4	0.340	5.20	1.940	041M63B101
Cobalt	0.910	0	2	4	0.20	0.420	0.188	041M63B101
Copper	8.440	0	4	4	0.350	4.40	1.690	041M63B101
Iron	2,684.40	0	4	4	112.0	1,290.0	565.0	041M63B101
Lead	21.040	0	4	4	0.950	13.0	4.410	041M63B101
Magnesium	2,943.60	0	4	4	33.60	410.0	151.0	041M63B101
Manganese	9.810	0	4	4	0.880	7.10	3.250	041M63B101
Nickel	3.690	0	1	4	0.880	0.880	0.450	041M63B101
Potassium	899.720	0	4	4	10.30	121.0	47.40	041M63B101
Selenium	0.660	0	1	4	0.40	0.40	0.201	041M63B101
Sodium	11,439.60	0	4	4	28.40	129.0	70.0	041M63B101
Vanadium	8.590	0	4	4	0.350	3.90	1.490	041M63B101
Zinc	14.360	0	4	4	0.790	13.0	4.50	041M63B101
PAHs (µg/kg)								
2-Methylnaphthalene	N/A	0	1	4	24.0	24.0	25.90	041M63B401
Acenaphthene	N/A	0	1	4	39.0	39.0	19.40	041M63B401
Anthracene	N/A	0	1	4	44.0	44.0	30.90	041M63B401
Benzo(a)pyrene	N/A	0	1	4	39.0	39.0	26.30	041M63B101
Fluoranthene	N/A	0	3	4	41.0	86.0	51.80	041M63B201
Fluorene	N/A	0	1	4	47.0	47.0	21.40	041M63B401
Naphthalene	N/A	0	1	4	23.0	23.0	25.60	041M63B401
Phenanthrene	N/A	0	1	4	120.0	120.0	49.90	041M63B401
Pyrene	N/A	0	3	4	41.0	65.0	42.0	041M63B201
Total PAHs	N/A	0	3	4	380.0	507.0	395.0	041M63B401
Pesticides and PCBs (µg/kg)								
Aroclor-1260	N/A	0	4	4	1.20	6.30	3.0	041M63B101
Total PCBs	N/A	0	4	4	6.30	10.70	8.790	041M63B401
Endosulfan sulfate	N/A	0	1	3	0.980	0.980	0.398	041M63B201
4,4'-DDD	50.0	0	2	3	0.230	0.340	0.225	041M63B201
4,4'-DDE	40.0	0	3	4	0.270	0.370	0.276	041M63B401

Table 13-2-3
Wetland 63B 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.								
Total DDT	110.0	0	3	4	0.360	0.725	0.527	041M63B201
SVOCs (µg/kg)					30.701	43.805	32.627	041M63B401
Benzo(b)fluoranthene	N/A	0	1	4	28.535	41.664	31.398	041M63B401
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	3	4	26.370	39.524	30.170	041M63B401
Butylbenzylphthalate	N/A	0	1	4	24.205	37.383	28.941	041M63B101
Dibenzofuran	N/A	0	1	4	22.039	35.242	27.712	041M63B201
Di-n-butylphthalate	N/A	0	1	4	19.874	33.102	26.484	041M63B401

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

Table 13-2-4
Wetland 63B 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	2,927.5	0	2	2	157.0	1,300.0	729.0	041W63B201
Arsenic	3.6	0	1	2	3.1	3.1	3.1	041W63B201
Barium	9.43	2	2	2	44.7	53.0	48.9	041W63B201
Calcium	76,800.0	0	2	2	37,800.0	39,000.0	38,400.0	041W63B201
Iron	1,352.0	1	2	2	206.0	1,560.0	883.0	041W63B201
Lead	13.75	0	1	2	5.3	5.3	5.3	041W63B201
Magnesium	243,650.0	0	2	2	10,100.0	10,600.0	10,400.0	041W63B201
Manganese	12.15	2	2	2	21.4	40.1	30.8	041W63B201
Potassium	81,250.0	0	2	2	7,720.0	7,900.0	7,810.0	041W63B401
Sodium	1,952,000.0	0	2	2	64,400.0	71,700.0	68,100.0	041W63B201
Vanadium	6.69	0	1	2	3.5	3.5	3.5	041W63B201
Zinc	12.88	1	2	2	4.8	13.7	9.25	041W63B201
SVOCs (µg/L)								
Di-n-butylphthalate	N/A	0	1	2	22.0	22.0	22.0	041W63B201

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

Table 13-2-5
Wetland 63B 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	4	4			101	1,960	041M63B101	1,960	J		N/A		Yes	No SV
Antimony	1	4	0.065	0.385	0.25	0.25	041M63B201	0.25	J	12	2	0.02	No	Max Detect < SV
Arsenic	2	4	0.065	0.065	0.24	0.43	041M63B101	0.43	J	7.24	1, 2	0.06	No	Max Detect < SV
Barium	4	4			0.71	4	041M63B101	4	J		N/A		Yes	No SV
Beryllium	1	4	0.03	0.04	0.1	0.1	041M63B101	0.1	J		N/A		Yes	No SV
Cadmium	0	4	0.065	0.075			ND	0.075	U	0.676	1	0.11	No	Max SQL< SV
Calcium	4	4			191	3,230	041M63B101	3,230	J		N/A		Yes	No SV
Chromium	4	4			0.34	5.2	041M63B101	5.2		52.3	1, 2	0.10	No	Max Detect < SV
Cobalt	2	4	0.065	0.065	0.2	0.42	041M63B101	0.42	J		N/A		Yes	No SV
Copper	4	4			0.35	4.4	041M63B101	4.4		18.7	1, 2	0.24	No	Max Detect < SV
Cyanide (CN)	0	4	0.31	0.35			ND	0.35	U		N/A		Yes	No SV
Iron	4	4			112	1,290	041M63B101	1,290			N/A		Yes	No SV
Lead	4	4			0.95	13	041M63B101	13		30.2	1, 2	0.43	No	Max Detect < SV
Magnesium	4	4			33.6	410	041M63B101	410			N/A		Yes	No SV
Manganese	4	4			0.88	7.1	041M63B101	7.1			N/A		Yes	No SV
Mercury	0	4	0.025	0.035			ND	0.035	U	0.13	1, 2	0.27	No	Max SQL< SV
Nickel	1	4	0.285	0.34	0.88	0.88	041M63B101	0.88	J	15.9	1, 2	0.06	No	Max Detect < SV
Potassium	4	4			10.3	121	041M63B101	121	J		N/A		Yes	No SV
Selenium	1	4	0.125	0.15	0.4	0.4	041M63B101	0.4			N/A		Yes	No SV
Silver	0	4	0.155	0.195			ND	0.195	U	0.733	1	0.27	No	Max SQL< SV
Sodium	4	4			28.4	129	041M63B101	129	J		N/A		Yes	No SV
Thallium	0	4	0.125	0.155			ND	0.155	U		N/A		Yes	No SV
Vanadium	4	4			0.35	3.9	041M63B101	3.9			N/A		Yes	No SV
Zinc	4	4			0.79	13	041M63B101	13		124	1, 2	0.11	No	Max Detect < SV
PAHs (µg/kg)														
2-Methylnaphthalene	**1**	**4**	**21**	**35.5**	**24**	**24**	**041M63B401**	**24**	**J**	**20.2**	**1**	**1.19**	No	TOC Normalized PAHs<TEC
Acenaphthene	**1**	**4**	**10.5**	**17**	**39**	**39**	**041M63B401**	**39**		**6.71**	**1**	**5.81**	No	TOC Normalized PAHs<TEC
Acenaphthylene	0	4	21	35.5			ND	35.5	U	5.87	1	6.05	No	TOC Normalized PAHs<TEC
Anthracene	1	4	21	35.5	44	44	041M63B401	44		46.9	1	0.94	No	TOC Normalized PAHs<TEC
Benzo(a)anthracene	0	4	21	35.5			ND	35.5	U	74.8	1	0.48	No	TOC Normalized PAHs<TEC
Benzo(a)pyrene	1	4	21	23	39	39	041M63B101	39	J	88.8	1	0.44	No	TOC Normalized PAHs<TEC
Chrysene	0	4	21	35.5			ND	35.5	U	108	1	0.33	No	TOC Normalized PAHs<TEC
Dibenz(a,h)anthracene	0	4	21	35.5			ND	35.5	U	6.22	1	5.71	No	TOC Normalized PAHs<TEC
Fluoranthene	3	4	21	21	41	86	041M63B201	86		113	1	0.76	No	TOC Normalized PAHs<TEC
Fluorene	**1**	**4**	**10.5**	**17**	**47**	**47**	**041M63B401**	**47**		**21.2**	**1**	**2.22**	No	TOC Normalized PAHs<TEC
Naphthalene	1	4	21	35.5	23	23	041M63B401	23	J	34.6	1	0.67	No	TOC Normalized PAHs<TEC
Phenanthrene	**1**	**4**	**21**	**35.5**	**120**	**120**	**041M63B401**	**120**		**86.7**	**1**	**1.38**	No	TOC Normalized PAHs<TEC
Pyrene	3	4	21	21	41	65	041M63B201	65		153	1	0.43	No	TOC Normalized PAHs<TEC
Total PAHs	3	4	252	252	380	507	041M63B401	507		1,684	1, 2	0.30	No	TOC Normalized PAHs<TEC
TOC Normalized PAHs	3	4	176.22	176.22	17.42	171.86	041M63B401	171.86		290	3	0.59	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	3	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1221	0	3	2.1	2.35			ND	2.35	U	67	2	0.04	No	Max SQL< SV
Aroclor-1232	0		1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1242	0	3	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1248	0	3	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1254	0	3	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1260	4	4			1.2	6.3	041M63B401	6.3		21.6	N/A	0.29	No	Max Detect < SV
Total PCBs	4	4			6.3	10.7	041M63B401	10.7		21.6	1	0.50	No	Max Detect < SV
Pesticides (µg/kg)														
Aldrin	0	3	0.055	0.06			ND	0.06	U		N/A		Yes	No SV
Dieldrin	0	3	0.105	0.115			ND	0.115	U	0.716	1	0.16	No	Max SQL< SV
Endosulfan I	0	3	0.055	0.06			ND	0.06	U		N/A		Yes	No SV
Endosulfan II	0	3	0.105	0.115			ND	0.115	U		N/A		Yes	No SV
Endosulfan sulfate	1	3	0.105	0.11	0.98	0.98	041M63B201	0.98	J		N/A		Yes	No SV
Heptachlor	0	3	0.055	0.06			ND	0.06	U		N/A		Yes	No SV
Heptachlor epoxide	0	3	0.055	0.06			ND	0.06	U		N/A		Yes	No SV
Methoxychlor	0	3	0.55	0.6			ND	0.6	U		N/A		Yes	No SV
Toxaphene	0	3	10.5	12			ND	12	U		N/A		Yes	No SV
alpha-Chlordane	0	3	0.055	0.06			ND	0.06	U	1.7	1	0.04	No	Max SQL< SV
gamma-Chlordane	0	3	0.055	0.06			ND	0.06	U	1.7	1	0.04	No	Max SQL< SV
Total Chlordane	0	3	0.11	0.12			ND	0.12	U	1.7	1	0.07	No	Max SQL< SV
Endrin	0	3	0.105	0.115			ND	0.115	U	3.3	2	0.03	No	Max SQL< SV
Endrin aldehyde	0	3	0.105	0.115			ND	0.115	U	3.3	2	0.03	No	Max SQL< SV
Endrin ketone	0	3	0.105	0.115			ND	0.115	U	3.3	2	0.03	No	Max SQL< SV
Total Endrin	0	3	0.315	0.345			ND	0.345	U	3.3	2	0.11	No	Max SQL< SV
alpha-BHC	0	3	0.055	0.06			ND	0.06	U		N/A		Yes	No SV
beta-BHC	0	3	0.055	0.06			ND	0.06	U	0.32	N/A	0.19	No	Max SQL< SV
delta-BHC	0	3	0.055	0.06			ND	0.06	U	0.32	N/A	0.19	No	Max SQL< SV
gamma-BHC (Lindane)	0	3	0.055	0.06			ND	0.06	U	0.32	1	0.19	No	Max SQL< SV
Total BHC	0	3	0.22	0.24			ND	0.24	U	0.32	2	0.75	No	Max SQL< SV
4,4'-DDD	2	3	0.105	0.105	0.23	0.34	041M63B201	0.34	J	1.22	1	0.28	No	Max Detect < SV
4,4'-DDE	3	4	0.105	0.105	0.27	0.37	041M63B401	0.37	J	2.07	1	0.18	No	Max Detect < SV
4,4'-DDT	0	3	0.105	0.115			ND	0.115	U	1.19	1	0.10	No	Max SQL< SV
Total DDT	3	4	0.315	0.315	0.36	0.725	041M63B201	0.725		3.3	2	0.22	No	Max Detect < SV
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	4	500	850			ND	850	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	4	500	850			ND	850	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	4	210	355			ND	355	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	4	210	355			ND	355	U		N/A		Yes	No SV
2-Chloronaphthalene	0	4	210	355			ND	355	U		N/A		Yes	No SV
2-Chlorophenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	4	500	850			ND	850	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	4	210	355			ND	355	U		N/A		Yes	No SV
2-Nitroaniline	0	4	210	355			ND	355	U		N/A		Yes	No SV
2-Nitrophenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	4	210	355			ND	355	U		N/A		Yes	No SV
3-Nitroaniline	0	4	500	850			ND	850	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	4	210	355			ND	355	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	4	210	355			ND	355	U		N/A		Yes	No SV
4-Chloroaniline	0	4	210	355			ND	355	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	4	210	355			ND	355	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	4	210	355			ND	355	U		N/A		Yes	No SV
4-Nitroaniline	0	4	500	850			ND	850	U		N/A		Yes	No SV
4-Nitrophenol	0	4	500	850			ND	850	U		N/A		Yes	No SV
Benzo(b)fluoranthene	1	4	21	23	56	56	041M63B101	56	J		N/A		No	TOC Normalized PAHs<TEC
Benzo(g,h,i)perylene	0	4	21	35.5			ND	35.5	U		N/A		No	TOC Normalized PAHs<TEC
Benzo(k)fluoranthene	0	4	21	35.5			ND	35.5	U		N/A		No	TOC Normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	4	210	355			ND	355	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	4	21	35.5			ND	35.5	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	3	4	210	210	33	97	041M63B101	97	J	182	1, 2	0.53	No	Max Detect < SV
Butylbenzylphthalate	1	4	210	355	29	29	041M63B401	29	J	182	1, 2	0.16	No	Max Detect < SV
Carbazole	0	4	210	355			ND	355	U		N/A		Yes	No SV
Dibenzofuran	1	4	210	355	34	34	041M63B401	34	J		N/A		Yes	No SV
Diethylphthalate	0	4	210	355			ND	355	U	182	1, 2	1.95	Yes	Max SQL > SV
Dimethylphthalate	0	4	210	355			ND	355	U	182	1, 2	1.95	Yes	Max SQL > SV
Di-n-butylphthalate	1	4	210	355	27	27	041M63B401	27	J	182	1, 2	0.15	No	Max Detect < SV
Di-n-octylphthalate	0	4	210	355			ND	355	U	182	1, 2	1.95	Yes	Max SQL > SV
Hexachlorobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
Hexachlorobutadiene	0	4	210	355			ND	355	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	4	210	355			ND	355	U		N/A		Yes	No SV
Hexachloroethane	0	4	210	355			ND	355	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	4	21	35.5			ND	35.5	U		N/A		No	TOC Normalized PAHs<TEC
Isophorone	0	4	210	355			ND	355	U		N/A		Yes	No SV
Nitrobenzene	0	4	210	355			ND	355	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	4	21	35.5			ND	35.5	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	4	210	355			ND	355	U		N/A		Yes	No SV
Pentachlorophenol	0	4	500	850			ND	850	U		N/A		Yes	No SV
Phenol	0	4	210	355			ND	355	U		N/A		Yes	No SV

Table 13-2-5
Wetland 63B 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
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,1-Dichloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,1-Dichloroethene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,2-Dichloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
1,2-Dichloropropane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
2-Butanone (MEK)	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
2-Hexanone	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Acetone	0	4	7	29.5			ND	29.5	U		N/A		Yes	No SV
Benzene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Bromodichloromethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Bromoform	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Bromomethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Carbon disulfide	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Carbon tetrachloride	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Chlorobenzene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Chloroethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Chloroform	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Chloromethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Dibromochloromethane	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Ethylbenzene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Methylene chloride	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Styrene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Tetrachloroethene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Toluene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Trichloroethene	0	4	6.5	12			ND	12	U		N/A		Yes	No SV
Vinyl chloride	0	4	2	3.5			ND	3.5	U		N/A		Yes	No SV
Xylene (Total)	0	4	6.5	12			ND	12	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 13-2-6
Wetland 63B Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Endosulfan sulfate	Dibenzofuran	None
Barium			
Beryllium			
Calcium			
Cobalt			
Iron			
Magnesium			
Manganese			
Potassium			
Selenium			
Sodium			
Vanadium			
		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
	Endosulfan I	1,3-Dichlorobenzene	1,1,2-Trichloroethane
	Endosulfan II	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-Dichloroethene (total)
	Toxaphene	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	Acetone
		2-Chloronaphthalene	Benzene
		2-Chlorophenol	Bromodichloromethane
		2-Methyl-4,6-Dinitrophenol	Bromoform
		2-Methylphenol (o-Cresol)	Bromomethane
		2-Nitroaniline	Carbon disulfide
		2-Nitrophenol	Carbon tetrachloride
		3,3'-Dichlorobenzidine	Chlorobenzene
		3-Nitroaniline	Chloroethane
		4-Bromophenyl-phenylether	Chloroform
		4-Chloro-3-methylphenol	Chloromethane
		4-Chloroaniline	cis-1,3-Dichloropropene
		4-Chlorophenylphenyl ether	Dibromochloromethane
		4-Methylphenol (p-Cresol)	Ethylbenzene
		4-Nitroaniline	Methylene chloride
		4-Nitrophenol	Styrene
		bis(2-Chloroethoxy)methane	Tetrachloroethene
		bis(2-Chloroethyl)ether	Toluene
		Carbazole	trans-1,3-Dichloropropene
		Diethylphthalate	Trichloroethene
		Dimethylphthalate	Vinyl chloride
		Di-n-octylphthalate	Xylene (Total)
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 13-2-7
Wetland 63B 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	Number Analyzed	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																								
Aluminum	4	4				650	101	1,960	1,960	J	041M63B101			NA					0	4,274	0	4	No	EPC < RC
Barium	4	4				1.7	0.71	4	4	J	041M63B101			NA					0	3.84	1	4	Yes	EPC > RC and no RV
Beryllium	1	4	0.035	0.03	0.04	0.0513	0.1	0.1	0.1	J	041M63B101			NA					0	0.13	0	4	No	EPC < RC
Calcium	4	4				1320	191	3,230	3,230	J	041M63B101			NA					0	1,978.80	1	4	No	Essential Nutrient
Cobalt	2	4	0.065	0.065	0.065	0.188	0.2	0.42	0.42	J	041M63B101			NA					0	0.91	0	4	No	EPC < RC
Cyanide (CN)	0	4	0.333	0.31	0.35	0.333			0.35	U	ND			NA					0	1.29	0	4	No	Parameter Not Detected
Iron	4	4				565	112	1,290	1,290		041M63B101			NA					0	2,684.40	0	4	No	EPC < RC
Magnesium	4	4				151	33.6	410	410		041M63B101			NA					0	2,943.60	0	4	No	EPC < RC
Manganese	4	4				3.25	0.88	7.1	7.1		041M63B101			NA					0	9.81	0	4	No	EPC < RC
Potassium	4	4				47.4	10.3	121	121	J	041M63B101			NA					0	899.72	0	4	No	EPC < RC
Selenium	1	4	0.135	0.125	0.15	0.201	0.4	0.4	0.4		041M63B101			NA					0	0.66	0	4	No	EPC < RC
Sodium	4	4				70	28.4	129	129	J	041M63B101			NA					0	11,439.60	0	4	No	EPC < RC
Thallium	0	4	0.14	0.125	0.155	0.14			0.155	U	ND			NA					0	0.39	0	4	No	Parameter Not Detected
Vanadium	4	4				1.5	0.35	3.9	3.9		041M63B101			NA					0	8.59	0	4	No	EPC < RC
Pesticides (µg/kg)																								
Aldrin	0	3	0.0567	0.055	0.06	0.0567			0.06	U	ND			NA					0		0	3	No	Parameter Not Detected
Endosulfan I	0	3	0.0567	0.055	0.06	0.0567			0.06	U	ND			NA					0		0	3	No	Parameter Not Detected
Endosulfan II	0	3	0.11	0.105	0.115	0.11			0.115	U	ND			NA					0		0	3	No	Parameter Not Detected
Endosulfan sulfate	1	3	0.108	0.105	0.11	0.398	0.98	0.98	0.98	J	041M63B201			NA					0		0	3	Yes	No SV, no RV, and no RC
Heptachlor	0	3	0.0567	0.055	0.06	0.0567			0.06	U	ND			NA					0		0	3	No	Parameter Not Detected
Heptachlor epoxide	0	3	0.0567	0.055	0.06	0.0567			0.06	U	ND			NA					0		0	3	No	Parameter Not Detected
Methoxychlor	0	3	0.567	0.55	0.6	0.567			0.6	U	ND			NA					0		0	3	No	Parameter Not Detected
Toxaphene	0	3	11.3	10.5	12	11.3			12	U	ND			NA					0		0	3	No	Parameter Not Detected
alpha-BHC	0	3	0.0567	0.055	0.06	0.0567			0.06	U	ND		0.99	PEL			0.06	0.06	0		0	3	No	Parameter Not Detected
SVOCs (µg/kg)																								
1,2,4-Trichlorobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
1,2-Dichlorobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
1,3-Dichlorobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
1,4-Dichlorobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4-Dichlorophenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4-Dimethylphenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4-Dinitrophenol	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
2,4-Dinitrotoluene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2,6-Dinitrotoluene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Chloronaphthalene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Chlorophenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Nitroaniline	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Nitrophenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
3-Nitroaniline	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Chloroaniline	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Nitroaniline	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Nitrophenol	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	4	25.4	21	35.5	25.4			35.5	U	ND			NA					0		0	4	No	Parameter Not Detected
Carbazole	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Dibenzofuran	1	4	265	210	355	207	34	34	34	J	041M63B401			NA					0		0	4	Yes	No SV, no RV, and no RC
Diethylphthalate	0	4	254	210	355	254			355	U	ND	182	2,647	PEL	1.95	1.39	0.13	0.10	0		0	4	No	Parameter Not Detected
Dimethylphthalate	0	4	254	210	355	254			355	U	ND	182	2,647	PEL	1.95	1.39	0.13	0.10	0		0	4	No	Parameter Not Detected
Di-n-octylphthalate	0	4	254	210	355	254			355	U	ND	182	2,647	PEL	1.95	1.39	0.13	0.10	0		0	4	No	Parameter Not Detected
Hexachlorobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Hexachlorobutadiene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Hexachloroethane	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Isophorone	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Nitrobenzene	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	4	25.4	21	35.5	25.4			35.5	U	ND			NA					0		0	4	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected
Pentachlorophenol	0	4	613	500	850	613			850	U	ND			NA					0		0	4	No	Parameter Not Detected
Phenol	0	4	254	210	355	254			355	U	ND			NA					0		0	4	No	Parameter Not Detected

Table 13-2-7
Wetland 63B 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	Number Analyzed	COPC Retained (Y/N)	Rationale
VOCs (µg/kg)																								
1,1,1-Trichloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,1,2-Trichloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,1-Dichloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,1-Dichloroethene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,2-Dichloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
1,2-Dichloropropane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Butanone (MEK)	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
2-Hexanone	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Acetone	0	4	17.8	7	29.5	17.8			29.5	U	ND			NA					0		0	4	No	Parameter Not Detected
Benzene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Bromodichloromethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Bromoform	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Bromomethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Carbon disulfide	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Carbon tetrachloride	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Chlorobenzene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Chloroethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Chloroform	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Chloromethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Dibromochloromethane	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Ethylbenzene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Methylene chloride	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Styrene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Tetrachloroethene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Toluene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Trichloroethene	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	No	Parameter Not Detected
Vinyl chloride	0	4	2.38	2	3.5	2.38			3.5	U	ND			NA					0		0	4	No	Parameter Not Detected
Xylene (Total)	0	4	8.25	6.5	12	8.25			12	U	ND			NA					0		0	4	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 detection
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT

Table 13-2-8
Wetland 63B Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Endosulfan sulfate	Dibenzofuran	None

Table 13-2-9
Wetland 63B Phase II
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M63B101	1/18/1996	mg/kg	0.43	J	Arsenic	8.2	70	0.01
041M63B101	1/18/1996	mg/kg	0.075	U	Cadmium	1.2	9.6	0.01
041M63B101	1/18/1996	mg/kg	5.2		Chromium	81	370	0.01
041M63B101	1/18/1996	mg/kg	4.4		Copper	34	270	0.02
041M63B101	1/18/1996	mg/kg	13		Lead	46.7	218	0.06
041M63B101	1/18/1996	mg/kg	0.035	U	Mercury	0.15	0.71	0.05
041M63B101	1/18/1996	mg/kg	0.88	J	Nickel	20.9	51.6	0.02
041M63B101	1/18/1996	mg/kg	0.195	U	Silver	1	3.7	0.05
041M63B101	1/18/1996	mg/kg	13		Zinc	150	410	0.03
041M63B101	1/18/1996	µg/kg	0.36	J	4,4'-DDE	2.2	27	0.01
041M63B101	1/18/1996	µg/kg	6.3		Total PCBs	22.7	180	0.04
041M63B101	1/18/1996	µg/kg	35.5	U	2-Methylnaphthalene	70	670	0.05
041M63B101	1/18/1996	µg/kg	17	U	Acenaphthene	16	500	0.03
041M63B101	1/18/1996	µg/kg	35.5	U	Acenaphthylene	44	640	0.06
041M63B101	1/18/1996	µg/kg	35.5	U	Anthracene	85.3	1,100	0.03
041M63B101	1/18/1996	µg/kg	35.5	U	Benzo(a)anthracene	261	1,600	0.02
041M63B101	1/18/1996	µg/kg	39	J	Benzo(a)pyrene	430	1,600	0.02
041M63B101	1/18/1996	µg/kg	35.5	U	Chrysene	384	2,800	0.01
041M63B101	1/18/1996	µg/kg	35.5	U	Dibenz(a,h)anthracene	63.4	260	0.14
041M63B101	1/18/1996	µg/kg	41	J	Fluoranthene	600	5,100	0.01
041M63B101	1/18/1996	µg/kg	17	U	Fluorene	19	540	0.03
041M63B101	1/18/1996	µg/kg	35.5	U	Naphthalene	160	2,100	0.02
041M63B101	1/18/1996	µg/kg	35.5	U	Phenanthrene	240	1,500	0.02
041M63B101	1/18/1996	µg/kg	41	J	Pyrene	665	2,600	0.02
041M63B101	1/18/1996				ERM Quotient Sum			0.77
041M63B101	1/18/1996				Mean ERM Quotient			0.03
041M63B101	1/18/1996				Mean ERM Quotient without ND			0.01
041M63B101	1/18/1996				Mean ERM Quotient Category			1
041M63B201	1/18/1996	mg/kg	0.24	J	Arsenic	8.2	70	0.00
041M63B201	1/18/1996	mg/kg	0.075	U	Cadmium	1.2	9.6	0.01
041M63B201	1/18/1996	mg/kg	1.3		Chromium	81	370	0.00
041M63B201	1/18/1996	mg/kg	1.1	J	Copper	34	270	0.00
041M63B201	1/18/1996	mg/kg	1.8		Lead	46.7	218	0.01
041M63B201	1/18/1996	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M63B201	1/18/1996	mg/kg	0.34	U	Nickel	20.9	51.6	0.01
041M63B201	1/18/1996	mg/kg	0.19	U	Silver	1	3.7	0.05
041M63B201	1/18/1996	mg/kg	2.6		Zinc	150	410	0.01
041M63B201	1/18/1996	µg/kg	0.27	J	4,4'-DDE	2.2	27	0.01
041M63B201	1/18/1996	µg/kg	0.115	U	4,4'-DDT	1.58	46.1	0.00
041M63B201	1/18/1996	µg/kg	9.6		Total PCBs	22.7	180	0.05
041M63B201	1/18/1996	µg/kg	23	U	2-Methylnaphthalene	70	670	0.03
041M63B201	1/18/1996	µg/kg	11	U	Acenaphthene	16	500	0.02
041M63B201	1/18/1996	µg/kg	23	U	Acenaphthylene	44	640	0.04
041M63B201	1/18/1996	µg/kg	23	U	Anthracene	85.3	1,100	0.02
041M63B201	1/18/1996	µg/kg	23	U	Benzo(a)anthracene	261	1,600	0.01
041M63B201	1/18/1996	µg/kg	23	U	Benzo(a)pyrene	430	1,600	0.01
041M63B201	1/18/1996	µg/kg	23	U	Chrysene	384	2,800	0.01
041M63B201	1/18/1996	µg/kg	23	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M63B201	1/18/1996	µg/kg	86		Fluoranthene	600	5,100	0.02
041M63B201	1/18/1996	µg/kg	11	U	Fluorene	19	540	0.02
041M63B201	1/18/1996	µg/kg	23	U	Naphthalene	160	2,100	0.01

Table 13-2-9
Wetland 63B Phase II
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M63B201	1/18/1996	µg/kg	23	U	Phenanthrene	240	1,500	0.02
041M63B201	1/18/1996	µg/kg	65		Pyrene	665	2,600	0.03
041M63B201	1/18/1996				ERM Quotient Sum			0.53
041M63B201	1/18/1996				Mean ERM Quotient			0.02
041M63B201	1/18/1996				Mean ERM Quotient without ND			0.01
041M63B201	1/18/1996				Mean ERM Quotient Category			1
041M63B301	1/18/1996	mg/kg	0.065	U	Arsenic	8.2	70	0.00
041M63B301	1/18/1996	mg/kg	0.065	U	Cadmium	1.2	9.6	0.01
041M63B301	1/18/1996	mg/kg	0.34	J	Chromium	81	370	0.00
041M63B301	1/18/1996	mg/kg	0.35	J	Copper	34	270	0.00
041M63B301	1/18/1996	mg/kg	0.95		Lead	46.7	218	0.00
041M63B301	1/18/1996	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M63B301	1/18/1996	mg/kg	0.285	U	Nickel	20.9	51.6	0.01
041M63B301	1/18/1996	mg/kg	0.155	U	Silver	1	3.7	0.04
041M63B301	1/18/1996	mg/kg	0.79	J	Zinc	150	410	0.00
041M63B301	1/18/1996	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M63B301	1/18/1996	µg/kg	0.105	U	4,4'-DDT	1.58	46.1	0.00
041M63B301	1/18/1996	µg/kg	8.55		Total PCBs	22.7	180	0.05
041M63B301	1/18/1996	µg/kg	21	U	2-Methylnaphthalene	70	670	0.03
041M63B301	1/18/1996	µg/kg	10.5	U	Acenaphthene	16	500	0.02
041M63B301	1/18/1996	µg/kg	21	U	Acenaphthylene	44	640	0.03
041M63B301	1/18/1996	µg/kg	21	U	Anthracene	85.3	1,100	0.02
041M63B301	1/18/1996	µg/kg	21	U	Benzo(a)anthracene	261	1,600	0.01
041M63B301	1/18/1996	µg/kg	21	U	Benzo(a)pyrene	430	1,600	0.01
041M63B301	1/18/1996	µg/kg	21	U	Chrysene	384	2,800	0.01
041M63B301	1/18/1996	µg/kg	21	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M63B301	1/18/1996	µg/kg	21	U	Fluoranthene	600	5,100	0.00
041M63B301	1/18/1996	µg/kg	10.5	U	Fluorene	19	540	0.02
041M63B301	1/18/1996	µg/kg	21	U	Naphthalene	160	2,100	0.01
041M63B301	1/18/1996	µg/kg	21	U	Phenanthrene	240	1,500	0.01
041M63B301	1/18/1996	µg/kg	21	U	Pyrene	665	2,600	0.01
041M63B301	1/18/1996				ERM Quotient Sum			0.43
041M63B301	1/18/1996				Mean ERM Quotient			0.02
041M63B301	1/18/1996				Mean ERM Quotient without ND			0.00
041M63B301	1/18/1996				Mean ERM Quotient Category			1
041M63B401	1/24/1996	mg/kg	0.065	U	Arsenic	8.2	70	0.00
041M63B401	1/24/1996	mg/kg	0.065	U	Cadmium	1.2	9.6	0.01
041M63B401	1/24/1996	mg/kg	0.91		Chromium	81	370	0.00
041M63B401	1/24/1996	mg/kg	0.9	J	Copper	34	270	0.00
041M63B401	1/24/1996	mg/kg	1.9		Lead	46.7	218	0.01
041M63B401	1/24/1996	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M63B401	1/24/1996	mg/kg	0.295	U	Nickel	20.9	51.6	0.01
041M63B401	1/24/1996	mg/kg	0.165	U	Silver	1	3.7	0.04
041M63B401	1/24/1996	mg/kg	1.6		Zinc	150	410	0.00
041M63B401	1/24/1996	µg/kg	0.37	J	4,4'-DDE	2.2	27	0.01
041M63B401	1/24/1996	µg/kg	0.11	U	4,4'-DDT	1.58	46.1	0.00
041M63B401	1/24/1996	µg/kg	10.7		Total PCBs	22.7	180	0.06
041M63B401	1/24/1996	µg/kg	24	J	2-Methylnaphthalene	70	670	0.04
041M63B401	1/24/1996	µg/kg	39		Acenaphthene	16	500	0.08
041M63B401	1/24/1996	µg/kg	22	U	Acenaphthylene	44	640	0.03
041M63B401	1/24/1996	µg/kg	44		Anthracene	85.3	1,100	0.04

Table 13-2-9
Wetland 63B Phase II
Mean ERM Quotient

Sample_ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M63B401	1/24/1996	µg/kg	22	U	Benzo(a)anthracene	261	1,600	0.01
041M63B401	1/24/1996	µg/kg	22	U	Benzo(a)pyrene	430	1,600	0.01
041M63B401	1/24/1996	µg/kg	22	U	Chrysene	384	2,800	0.01
041M63B401	1/24/1996	µg/kg	22	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M63B401	1/24/1996	µg/kg	59		Fluoranthene	600	5,100	0.01
041M63B401	1/24/1996	µg/kg	47		Fluorene	19	540	0.09
041M63B401	1/24/1996	µg/kg	23	J	Naphthalene	160	2,100	0.01
041M63B401	1/24/1996	µg/kg	120		Phenanthrene	240	1,500	0.08
041M63B401	1/24/1996	µg/kg	41	J	Pyrene	665	2,600	0.02
041M63B401	1/24/1996				ERM Quotient Sum			0.70
041M63B401	1/24/1996				Mean ERM Quotient			0.03
041M63B401	1/24/1996				Mean ERM Quotient without ND			0.02
041M63B401	1/24/1996				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 13-2-10
Wetland 63B 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	2				729	157	1,300	041W63B201	1,300			NA		Yes	No SV
Antimony	0	2	3	1	5	3			ND	5	U		NA		Yes	No SV
Arsenic	1	2	1	1	1	2.05	3.1	3.1	041W63B201	3.1	J	36	EPA	0.09	No	Max Detect < SV
Barium	2	2				48.9	44.7	53	041W63B201	53	J		NA		Yes	No SV
Beryllium	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Cadmium	0	2	1	1	1	1			ND	1	UJ	9.3	EPA	0.11	No	Max SQL< SV
Calcium	2	2				38,400	37,800	39,000	041W63B201	39,000			NA		Yes	No SV
Chromium	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	50	EPA	0.05	No	Max SQL< SV
Cobalt	0	2	1	1	1	1			ND	1	U		NA		Yes	No SV
Copper	0	2	2	2	2	2			ND	2	U	2.9	EPA	0.69	No	Max SQL< SV
Cyanide (CN)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	1	EPA	2.5	Yes	Max SQL > SV
Iron	2	2				883	206	1560	041W63B201	1,560			NA		Yes	No SV
Lead	1	2	1	1	1	3.15	5.3	5.3	041W63B201	5.3		8.5	EPA	0.62	No	Max Detect < SV
Magnesium	2	2				10,400	10,100	10,600	041W63B201	10,600			NA		Yes	No SV
Manganese	2	2				30.8	21.4	40.1	041W63B201	40.1			NA		Yes	No SV
Mercury	0	2	0.065	0.065	0.065	0.065			ND	0.065	U	0.025	EPA	2.6	Yes	Max SQL > SV
Nickel	0	2	4.5	4.5	4.5	4.5			ND	4.5	U	8.3	EPA	0.54	No	Max SQL< SV
Potassium	2	2				7,810	7,720	7,900	041W63B401	7,900			NA		Yes	No SV
Selenium	0	2	2	2	2	2			ND	2	U	71	EPA	0.03	No	Max SQL< SV
Silver	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	0.23	EPA	10.9	Yes	Max SQL > SV
Sodium	2	2				68,100	64,400	71,700	041W63B201	71,700			NA		Yes	No SV
Thallium	0	2	2	2	2	2			ND	2	U	6.3	FDEP	0.32	No	Max SQL< SV
Vanadium	1	2	1	1	1	2.25	3.5	3.5	041W63B201	3.5	J		NA		Yes	No SV
Zinc	2	2				9.25	4.8	13.7	041W63B201	13.7	J	86	EPA	0.16	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	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		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	0.025	0.025	0.025	0.025			ND	0.025	U	0.016	EPA	1.56	Yes	Max SQL > SV
Total BHC	0	2	0.1	0.1	0.1	0.1			ND	0.1	U		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

Table 13-2-10
Wetland 63B 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)																
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	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	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
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	2.5	2.5	2.5	2.5			ND	2.5	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	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-Methylphenol (p-Cresol)	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	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	0.5	0.5	0.5	0.5			ND	0.5	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
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	**1**	**2**	**2.5**	**2.5**	**2.5**	**12.3**	**22**	**22**	**041W63B201**	**22**		**3.4**	**EPA**	**6.47**	**Yes**	**Max Detect > 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	0.5	0.5	0.5	0.5			ND	0.5	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	UJ		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	0.5	0.5	0.5	0.5			ND	0.5	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	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Phenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV

Table 13-2-10
Wetland 63B 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)																
2-Methylnaphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chrysene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluorene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Naphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	23.5	EPA	0.02	No	Max SQL< SV
Phenanthrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Total PAH	0	2	6.5	6.5	6.5	6.5			ND	6.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	2	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	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	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		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-Dibromo-3-Chloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dibromoethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	19.7	EPA	0.03	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-Dichloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,3-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	3	FDEP	0.17	No	Max SQL< SV
2-Hexanone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		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
Bromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No 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-1,2-Dichloroethene	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	1.75	1	2.5	1.75			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	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	37	EPA	0.01	No	Max SQL< SV
trans-1,2-Dichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		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	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 13-2-11
Wetland 63B Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	Di-n-butylphthalate	None
Barium			
Calcium			
Iron			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Antimony	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Beryllium	Dieldrin	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1,2-Trichloroethane
Cobalt	Endosulfan I	2,4,5-Trichlorophenol	1,1-Dichloroethane
Cyanide (CN)	Endosulfan II	2,4,6-Trichlorophenol	1,2-Dibromo-3-Chloropropane
Mercury	Endosulfan sulfate	2,4-Dichlorophenol	1,2-Dibromoethane
Silver	Heptachlor	2,4-Dimethylphenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4-Dinitrophenol	1,2-Dichloropropane
	Methoxychlor	2,4-Dinitrotoluene	1,3-Dichlorobenzene
	Toxaphene	2,6-Dinitrotoluene	2-Hexanone
	alpha-Chlordane	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	gamma-Chlordane	2-Chlorophenol	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-Chloro-3-methylphenol	cis-1,2-Dichloroethene
	gamma-BHC (Lindane)	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	Trichloroethene
	Aroclor-1221	Benzo(k)fluoranthene	Vinyl chloride
	Aroclor-1232	bis(2-Chloroethoxy)methane	Xylene (Total)
	Aroclor-1242	bis(2-Chloroethyl)ether	
	Aroclor-1248	bis(2-Ethylhexyl)phthalate (BEHP)	
	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 13-2-12
Wetland 63B Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maxmum SQL	Average Result	Minimum Detected	Maximum 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	2	2				729	157	1300	041W63B201	1,300			NA			2,930	0	2	No	Max Result < Ref. Conc.
Antimony	0	2	3	1	5	3			ND	5	U		NA			4.15	1	2	No	Max Result > Ref. Conc.;Parameter Not Detected
Barium	2	2				48.9	44.7	53	041W63B201	53	J		NA			9.43	2	2	Yes	Max Result > Ref. Conc.
Beryllium	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA			0.82	0	2	No	Max Result < Ref. Conc.
Calcium	2	2				38,400	37,800	39,000	041W63B201	39,000			NA			76,800	0	2	No	Max Result < Ref. Conc.
Cobalt	0	2	1	1	1	1			ND	1	U		NA			2.38	0	2	No	Max Result < Ref. Conc.
Cyanide (CN)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	1	EPA	2.5	2.5	4.1	0	2	No	Max Result < Ref. Conc.
Iron	2	2				883	206	1560	041W63B201	1,560			NA			1350	1	2	Yes	Max Result > Ref. Conc.
Magnesium	2	2				10,400	10,100	10,600	041W63B201	10,600			NA			244,000	0	2	No	Max Result < Ref. Conc.
Manganese	2	2				30.8	21.4	40.1	041W63B201	40.1			NA			12.2	2	2	Yes	Max Result > Ref. Conc.
Mercury	0	2	0.065	0.065	0.065	0.065			ND	0.065	U	0.025	EPA	2.6	2.6	0.21	0	2	No	Max Result < Ref. Conc.
Potassium	2	2				7810	7,720	7,900	041W63B401	7,900			NA			81,300	0	2	No	Max Result < Ref. Conc.
Silver	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	0.23	EPA	11	10.9	3.01	0	2	No	Max Result < Ref. Conc.
Sodium	2	2				68,100	64,400	71,700	041W63B201	71,700			NA			1,950,000	0	2	No	Max Result < Ref. Conc.
Vanadium	1	2	1	1	1	2.25	3.5	3.5	041W63B201	3.5	J		NA			6.69	0	2	No	Max Result < Ref. Conc.
Pesticides (µg/L)																				
Aldrin	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Dieldrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
Endosulfan II	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Endosulfan sulfate	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
Heptachlor epoxide	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.00004	FDEP	625	625		0	2	No	No Ref. Conc.; Parameter Not Detected
Methoxychlor	0	2	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Toxaphene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
alpha-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
gamma-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
Endrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Endrin aldehyde	0	2	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
Total Endrin	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
beta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
delta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
gamma-BHC (Lindane)	0	2	0.025	0.025	0.025	0.025			ND	0.025	U	0.016	EPA	2	1.56		0	2	No	No Ref. Conc.; Parameter Not Detected
Total BHC	0	2	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDD	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP	167	167		0	2	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDE	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP	250	250		0	2	No	No Ref. Conc.; Parameter Not Detected
4,4'-DDT	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP	85	84.7		0	2	No	No Ref. Conc.; Parameter Not Detected
Total DDT	0	2	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
PCBs (µg/L)																				
Aroclor-1016	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1221	0	2	1	1	1	1			ND	1	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1232	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1242	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1248	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Aroclor-1254	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
Total PCB	0	2	4	4	4	4			ND	4	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
SVOCs (µg/L)																				
1,2,4-Trichlorobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4,5-Trichlorophenol	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4,6-Trichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4-Dichlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4-Dimethylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,4-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2,6-Dinitrotoluene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Chloronaphthalene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Chlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Methylphenol (o-Cresol)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Nitroaniline	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Nitrophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
3,3'-Dichlorobenzidine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
3-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Bromophenyl-phenylether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Chloro-3-methylphenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Chloroaniline	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Chlorophenylphenyl ether	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Methylphenol (p-Cresol)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Nitroaniline	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Nitrophenol	0	2	10	10	10	10			ND	10	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Benzo(b)fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Benzo(g,h,i)perylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Benzo(k)fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected

Table 13-2-12
Wetland 63B Phase II
Surface Water Refinement

Parameter	Number Detected	Number Analyzed	Average SQL	Minimum SQL	Maxmum SQL	Average Result	Minimum Detected	Maximum 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.																				
bis(2-Chloroethoxy)methane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
bis(2-Chloroethyl)ether	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Butylbenzylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Dibenzofuran	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Diethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Dimethylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Di-n-butylphthalate	**1**	**2**	**2.5**	**2.5**	**2.5**	**12.3**	**22**	**22**	**041W63B201**	**22**		**3.4**	**EPA**	**6.47**	**3.6**		**0**	**2**	**Yes**	**No Ref. Conc.**
Di-n-octylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Hexachlorobutadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Hexachlorocyclopentadiene	0	2	2.5	2.5	2.5	2.5			ND	2.5	UJ		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Hexachloroethane	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Isophorone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Nitrobenzene	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
N-Nitroso-di-n-propylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
N-Nitrosodiphenylamine	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Pentachlorophenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Phenol	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
PAHs (µg/L)																				
2-Methylnaphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Acenaphthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Acenaphthylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Benzo(a)pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Chrysene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Dibenz(a,h)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Fluorene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Naphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	23.5	EPA	0.02	0.02		0	2	No	No Ref. Conc.; Parameter Not Detected
Phenanthrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Total PAH	0	2	6.5	6.5	6.5	6.5			ND	6.5	U		NA				0	2	No	No Ref. Conc.; 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	2	No	No Ref. Conc.; Parameter Not Detected
1,1,2-Trichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,1-Dichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,2-Dibromo-3-Chloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,2-Dibromoethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,2-Dichloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
1,3-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
2-Hexanone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Bromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Bromodichloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Bromoform	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Bromomethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Carbon disulfide	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Carbon tetrachloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Chloroethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Chloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
cis-1,2-Dichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
cis-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Dibromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Styrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Tetrachloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
trans-1,2-Dichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
trans-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Trichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Vinyl chloride	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	No	No Ref. Conc.; Parameter Not Detected
Xylene (Total)	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	2	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 13-2-13
Wetland 63B Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Iron Manganese Barium	None	Di-n-butylphthalate	None

Table 13-2-14
Wetland 63B 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	1.0E+02	J	2.0E+03	J	MG/KG	041M63B101	4 / 4	NAV	6.5E+02	1.0E-03	3	3.92E-07	1.96E-07	6.21E-06	4.15E-06
7440393	Barium	N	7.1E-01	J	4.0E+00	J	MG/KG	041M63B101	4 / 4	NAV	1.7E+00	1.0E-03	3	8.00E-10	4.00E-10	1.27E-08	8.47E-09
7440417	Beryllium	N	N/A	N/A	1.0E-01	J	MG/KG	041M63B101	1 / 4	6.0E-02 / 8.0E-02	5.1E-02	1.0E-03	3	2.00E-11	1.00E-11	3.17E-10	2.12E-10
7440484	Cobalt	C	2.0E-01	J	4.2E-01	J	MG/KG	041M63B101	2 / 4	1.3E-01 / 1.3E-01	1.9E-01	1.0E-03	3	8.40E-11	4.20E-11	1.90E-10	3.17E-10
7439896	Iron	N	1.1E+02	=	1.3E+03	=	MG/KG	041M63B101	4 / 4	NAV	5.6E+02	1.0E-03	3	2.58E-07	1.29E-07	4.08E-06	2.73E-06
7439965	Manganese	N	8.8E-01	J	7.1E+00	=	MG/KG	041M63B101	4 / 4	NAV	3.2E+00	1.0E-03	3	1.42E-09	7.10E-10	2.25E-08	1.50E-08
7782492	Selenium	N	N/A	N/A	4.0E-01	=	MG/KG	041M63B101	1 / 4	2.5E-01 / 3.0E-01	2.0E-01	1.0E-03	3	8.00E-11	4.00E-11	1.27E-09	8.47E-10
7440622	Vanadium	N	3.5E-01	J	3.9E+00	=	MG/KG	041M63B101	4 / 4	NAV	1.5E+00	1.0E-03	3	7.80E-10	3.90E-10	1.23E-08	8.25E-09
72548	4,4'-DDD	C	2.3E-04	J	3.4E-04	J	MG/KG	041M63B201	2 / 4	2.1E-04 / 3.6E-04	2.1E-04	3.0E-02	1	2.04E-12	1.02E-12	4.61E-12	7.71E-12
72559	4,4'-DDE	C	2.7E-04	J	3.7E-04	J	MG/KG	041M63B401	3 / 4	N/A / 2.1E-04	2.8E-04	3.0E-02	1	2.22E-12	1.11E-12	5.02E-12	8.39E-12
11096825	Aroclor-1260	C	1.2E-03	J	6.3E-03	J	MG/KG	041M63B101	4 / 4	NAV	3.0E-03	1.4E-02	3	1.74E-11	8.69E-12	3.93E-11	6.57E-11
1031078	Endosulfan sulfate	N	N/A	N/A	9.8E-04	J	MG/KG	041M63B201	1 / 4	2.1E-04 / 3.6E-04	3.4E-04	1.0E-01	2	1.96E-11	9.80E-12	3.10E-10	2.07E-10
91576	2-Methylnaphthalene	N	N/A	N/A	2.4E-02	J	MG/KG	041M63B401	1 / 4	4.2E-02 / 7.1E-02	2.6E-02	1.0E-02	3	4.80E-11	2.40E-11	7.60E-10	5.08E-10
83329	Acenaphthene	N	N/A	N/A	3.9E-02	=	MG/KG	041M63B401	1 / 4	2.1E-02 / 3.4E-02	1.9E-02	1.0E-02	3	7.80E-11	3.90E-11	1.23E-09	8.25E-10
120127	Anthracene	N	N/A	N/A	4.4E-02	=	MG/KG	041M63B401	1 / 4	4.2E-02 / 7.1E-02	3.1E-02	1.0E-02	3	8.80E-11	4.40E-11	1.39E-09	9.31E-10
50328	Benzo(a)pyrene	C	N/A	N/A	3.9E-02	J	MG/KG	041M63B101	1 / 4	4.2E-02 / 4.6E-02	2.6E-02	1.3E-01	2	1.01E-09	5.07E-10	2.29E-09	3.83E-09
205992	Benzo(b)fluoranthene	C	N/A	N/A	5.6E-02	J	MG/KG	041M63B101	1 / 4	4.2E-02 / 4.6E-02	3.1E-02	1.3E-01	2	1.46E-09	7.28E-10	3.29E-09	5.50E-09
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.3E-02	J	9.7E-02	J	MG/KG	041M63B101	3 / 4	N/A / 4.2E-01	9.6E-02	1.0E-01	1	1.94E-09	9.70E-10	4.39E-09	7.33E-09
85687	Butylbenzylphthalate	N	N/A	N/A	2.9E-02	J	MG/KG	041M63B401	1 / 4	4.2E-01 / 7.1E-01	2.1E-01	1.0E-01	2	5.80E-10	2.90E-10	9.18E-09	6.14E-09
132649	Dibenzofuran	N	N/A	N/A	3.4E-02	J	MG/KG	041M63B401	1 / 4	4.2E-01 / 7.1E-01	2.1E-01	1.0E-02	3	6.80E-11	3.40E-11	1.08E-09	7.20E-10
84742	Di-n-butylphthalate	N	N/A	N/A	2.7E-02	J	MG/KG	041M63B401	1 / 4	4.2E-01 / 7.1E-01	2.1E-01	1.0E-01	2	5.40E-10	2.70E-10	8.55E-09	5.71E-09
206440	Fluoranthene	N	4.1E-02	J	8.6E-02	=	MG/KG	041M63B201	3 / 4	N/A / 4.2E-02	5.2E-02	1.3E-01	2	2.24E-09	1.12E-09	3.54E-08	2.37E-08
86737	Fluorene	N	N/A	N/A	4.7E-02	=	MG/KG	041M63B401	1 / 4	2.1E-02 / 3.4E-02	2.1E-02	1.0E-02	3	9.40E-11	4.70E-11	1.49E-09	9.95E-10
91203	Naphthalene	N	N/A	N/A	2.3E-02	J	MG/KG	041M63B401	1 / 4	4.2E-02 / 7.1E-02	2.6E-02	1.0E-02	3	4.60E-11	2.30E-11	7.28E-10	4.87E-10
85018	Phenanthrene	N	N/A	N/A	1.2E-01	=	MG/KG	041M63B401	1 / 4	4.2E-02 / 7.1E-02	5.0E-02	1.0E-02	3	2.40E-10	1.20E-10	3.80E-09	2.54E-09
129000	Pyrene	N	4.1E-02	J	6.5E-02	=	MG/KG	041M63B201	3 / 4	N/A / 4.2E-02	4.2E-02	1.0E-02	3	1.30E-10	6.50E-11	2.06E-09	1.38E-09

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 13-2-15
Wetland 63B 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: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	2.0E+03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	6.2E-05	N/A	4.1E-05	N/A
	Barium	N	4.0E+00	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	2.6E-06	N/A	1.7E-06	N/A
	Beryllium	N	1.0E-01	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	2.3E-05	N/A	1.5E-05	N/A
	Cobalt	C	4.2E-01	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.2E-08	N/A	2.0E-08	N/A
	Iron	N	1.3E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	9.1E-05	N/A	6.1E-05	N/A
	Manganese	N	7.1E+00	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	2.3E-05	N/A	1.6E-05	N/A
	Selenium	N	4.0E-01	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	4.6E-07	N/A	3.1E-07	N/A
	Vanadium	N	3.9E+00	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	6.8E-05	N/A	4.5E-05	N/A
	4,4'-DDD	C	3.4E-04	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	3.7E-11	N/A	6.2E-11
	4,4'-DDE	C	3.7E-04	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	5.7E-11	N/A	9.5E-11
	Aroclor-1260	C	6.3E-03	N/A	2.0E+00	1.4E-01	2	N/A	1.4E+01	N/A	5.6E-10	N/A	9.4E-10
	Endosulfan sulfate	N	9.8E-04	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	1.0E-07	N/A	6.9E-08	N/A
	2-Methylnaphthalene	N	2.4E-02	8.0E-02	N/A	5.0E-01	3	4.0E-02	N/A	1.9E-08	N/A	1.3E-08	N/A
	Acenaphthene	N	3.9E-02	6.0E-02	N/A	4.2E-02	3	2.5E-03	N/A	4.9E-07	N/A	3.3E-07	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)pyrene	C	3.9E-02	N/A	7.3E+00	3.1E-01	3	N/A	2.4E+01	N/A	5.4E-08	N/A	9.0E-08
	Benzo(b)fluoranthene	C	5.6E-02	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	7.8E-09	N/A	1.3E-08
	bis(2-Ethylhexyl)phthalate (BEHP)	C	9.7E-02	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	2.2E-06	6.1E-10	3.7E-06	1.0E-09
	Butylbenzylphthalate	N	2.9E-02	2.0E-01	N/A	1.7E-02	3	3.5E-03	N/A	2.6E-06	N/A	1.8E-06	N/A
	Dibenzofuran	N	3.4E-02	4.0E-03	N/A	8.0E-01	3	3.2E-03	N/A	3.4E-07	N/A	2.2E-07	N/A
	Di-n-butylphthalate	N	2.7E-02	1.0E-01	N/A	3.1E-01	3	3.1E-02	N/A	2.8E-07	N/A	1.8E-07	N/A
	Fluoranthene	N	8.6E-02	N/A	4.0E-02	3.1E-01	3	N/A	1.3E-01	N/A	4.6E-09	N/A	3.1E-09
	Fluorene	N	4.7E-02	4.0E-02	N/A	3.1E-01	3	1.2E-02	N/A	1.2E-07	N/A	8.0E-08	N/A
	Naphthalene	N	2.3E-02	2.0E-02	N/A	5.9E-02	3	1.2E-03	N/A	6.2E-07	N/A	4.1E-07	N/A
	Phenanthrene	N	1.2E-01	N/A	3.0E-02	7.3E-01	3	N/A	4.1E-02	N/A	1.6E-10	N/A	1.0E-10
	Pyrene	N	6.5E-02	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	2.0E-10	N/A	1.3E-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 13-2-16
Wetland 63B 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
Sediment Incidental Ingestion	Aluminum	N	2.0E+03	1.0E+00	N/A	6.21E-04	N/A	3.99E-04	N/A
	Barium	N	4.0E+00	7.0E-02	N/A	1.81E-05	N/A	1.16E-05	N/A
	Beryllium	N	1.0E-01	2.0E-03	N/A	1.58E-05	N/A	1.02E-05	N/A
	Cobalt	C	4.2E-01	2.0E-02	N/A	9.50E-07	N/A	1.53E-06	N/A
	Iron	N	1.3E+03	3.0E-01	N/A	1.36E-03	N/A	8.75E-04	N/A
	Manganese	N	7.1E+00	2.4E-02	N/A	9.37E-05	N/A	6.02E-05	N/A
	Selenium	N	4.0E-01	5.0E-03	N/A	2.53E-05	N/A	1.63E-05	N/A
	Vanadium	N	3.9E+00	7.0E-03	N/A	1.76E-04	N/A	1.13E-04	N/A
	4,4'-DDD	C	3.4E-04	N/A	2.4E-01	N/A	3.69E-12	N/A	5.93E-12
	4,4'-DDE	C	3.7E-04	N/A	3.4E-01	N/A	5.69E-12	N/A	9.14E-12
	Aroclor-1260	C	6.3E-03	N/A	2.0E+00	N/A	5.70E-10	N/A	9.16E-10
	Endosulfan sulfate	N	9.8E-04	6.0E-03	N/A	5.17E-08	N/A	3.32E-08	N/A
	2-Methylnaphthalene	N	2.4E-02	8.0E-02	N/A	9.50E-08	N/A	6.11E-08	N/A
	Acenaphthene	N	3.9E-02	6.0E-02	N/A	2.06E-07	N/A	1.32E-07	N/A
	Anthracene	N	4.4E-02	3.0E-01	N/A	4.64E-08	N/A	2.98E-08	N/A
	Benzo(a)pyrene	C	3.9E-02	N/A	7.3E+00	N/A	1.29E-08	N/A	2.07E-08
	Benzo(b)fluoranthene	C	5.6E-02	N/A	7.3E-01	N/A	1.85E-09	N/A	2.97E-09
	bis(2-Ethylhexyl)phthalate (BEHP)	C	9.7E-02	2.0E-02	1.4E-02	2.19E-07	6.14E-11	3.53E-07	9.87E-11
	Butylbenzylphthalate	N	2.9E-02	2.0E-01	N/A	4.59E-08	N/A	2.95E-08	N/A
	Dibenzofuran	N	3.4E-02	4.0E-03	N/A	2.69E-06	N/A	1.73E-06	N/A
	Di-n-butylphthalate	N	2.7E-02	1.0E-01	N/A	8.55E-08	N/A	5.50E-08	N/A
	Fluoranthene	N	8.6E-02	N/A	4.0E-02	N/A	1.09E-09	N/A	7.00E-10
	Fluorene	N	4.7E-02	4.0E-02	N/A	3.72E-07	N/A	2.39E-07	N/A
	Naphthalene	N	2.3E-02	2.0E-02	N/A	3.64E-07	N/A	2.34E-07	N/A
	Phenanthrene	N	1.2E-01	N/A	3.0E-02	N/A	1.14E-09	N/A	7.33E-10
	Pyrene	N	6.5E-02	N/A	3.0E-02	N/A	6.17E-10	N/A	3.97E-10

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)

Equation for Chronic Daily Intake, sediment risk:

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

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

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

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 13-2-17
Wetland 63B 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	1.6E+02	J	1.3E+03	=	UG/L	041W63B201	2 / 2	NAV	7.3E+02	1.3E-03	1.0E-03	3.38E-06	5.35E-05	7.15E-05
7440393	Barium	N	4.5E+01	J	5.3E+01	J	UG/L	041W63B201	2 / 2	NAV	4.9E+01	5.3E-05	1.0E-03	1.38E-07	2.18E-06	2.92E-06
7439896	Iron	N	2.1E+02	=	1.6E+03	=	UG/L	041W63B201	2 / 2	NAV	8.8E+02	1.6E-03	2.5E-04	1.01E-06	1.61E-05	2.15E-05
7439921	Lead	N	N/A	N/A	5.3E+00	=	UG/L	041W63B201	1 / 2	N/A / 2.0E+00	3.2E+00	5.3E-06	3.4E-04	4.69E-09	7.42E-08	9.92E-08
7439965	Manganese	N	2.1E+01	=	4.0E+01	=	UG/L	041W63B201	2 / 2	NAV	3.1E+01	4.0E-05	1.0E-03	1.04E-07	1.65E-06	2.21E-06
7440622	Vanadium	N	N/A	N/A	3.5E+00	J	UG/L	041W63B201	1 / 2	N/A / 2.0E+00	2.3E+00	3.5E-06	1.0E-03	9.10E-09	1.44E-07	1.93E-07
84742	Di-n-butylphthalate	N	N/A	N/A	2.2E+01	=	UG/L	041W63B201	1 / 2	N/A / 5.0E+00	1.2E+01	2.2E-05	2.4E-02	5.41E-06	8.57E-05	1.15E-04

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 13-2-18
Wetland 63B 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	1.3E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	5.4E-04	N/A	7.2E-04	N/A
	Barium	N	5.3E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	4.5E-04	N/A	6.0E-04	N/A
	Iron	N	1.6E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	5.3E-06	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	4.0E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	2.9E-04	N/A	3.9E-04	N/A
	Vanadium	N	3.5E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	7.9E-04	N/A	1.1E-03	N/A
	Di-n-butylphthalate	N	2.2E-05	1.0E-01	N/A	3.1E-01	3	3.1E-02	N/A	2.8E-03	N/A	3.7E-03	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 13-2-19
Wetland 63B Phase II
Surface Water Incidental Ingestion Exposure Risk-Child Tresspasser 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	1.3E-03	1.0E+00	N/A	4.1E-08	N/A	2.6E-08	N/A
	Barium	N	5.3E-05	7.0E-02	N/A	2.4E-08	N/A	1.5E-08	N/A
	Iron	N	1.6E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	5.3E-06	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	4.0E-05	1.4E-01	N/A	9.1E-09	N/A	5.8E-09	N/A
	Vanadium	N	3.5E-06	7.0E-03	N/A	1.6E-08	N/A	1.0E-08	N/A
	Di-n-butylphthalate	N	2.2E-05	1.0E-01	N/A	7.0E-09	N/A	4.5E-09	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).

13.3 Chevalier Field Wetlands Evaluation

All the wetlands associated with the former Chevalier Fields (Wetlands 63A and 63B) were evaluated collectively to help determine the locations that represent the highest probabilities of unacceptable risk. This evaluation is also used to determine if constituents detected were likely to be related to the IR sites associated with the former Chevalier Fields. This section will include a discussion of the following topics for Wetlands 63A and 63B together.

- **Food-Chain Models:** Many of the upper-level predators likely to be exposed within Site 41 wetlands would likely be exposed to constituents in more than one wetland. To evaluate this scenario, food-chain models were developed using constituent concentrations from Wetlands 63A and 63B.

- **Mean ERM Quotients:** This methodology is an effective way to pinpoint areas of potential risk from a mixture of constituents. It is also useful in identifying locations most likely to be impacted by direct toxicity.

- **Basewide Total DDT-Level Comparison:** A basewide level was established for total 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 Chevalier Field wide figures to identify locations where PAHs may occur at levels most likely to cause adverse effects.

13.3.1 Chevalier Field Wetlands Food-Chain Modeling

To evaluate the potential for risk to upper-trophic-level receptors that forage within Wetlands 63A and 63B, a food-chain model was prepared following the methodology presented in Section 8.0. No resampling was done in Wetlands 63A or 63B during Phase III, so prey tissue concentrations were estimated using literature-based BSAFs. The sediment and surface water exposure concentrations utilized in the food-chain models are presented in Appendix M. Tables 13-3-1 through 13-3-3 (tables are located at the end of each section) show the results of the food-chain models for the following receptor groups:

- Piscivorous Birds (green heron used as representative species) (Table 13-3-1)
- Piscivorous Mammals (mink used as a representative species) (Table 13-3-2)
- Predatory Fish (red drum used as representative species) (Table 13-3-3)

13.3.1.1 Food-Chain Modeling Results

The following assessment endpoints were proposed and approved in the *Final RI/FS SAP, Site 41* (E/A&H, 1995g).

Assessment Endpoint 1 — Health and Viability of Piscivorous Bird Communities that Forage Throughout Chevalier Field Wetlands

No constituent generated an HQ greater than 1 for this assessment endpoint, indicating that no adverse effects are likely based on bioaccumulation to piscivorous birds in Wetlands 63A and 63B.

Assessment Endpoint 2 — Health and Viability of Piscivorous Mammal Communities that Forage Throughout Chevalier Field Wetlands

No constituent generated an HQ greater than 1 for this assessment endpoint, indicating that no adverse effects were likely based on bioaccumulation to piscivorous mammals in Wetlands 63A and 63B.

Assessment Endpoint 3 — Health and Viability of Predatory Fish Communities that Forage in and around Chevalier Field Wetlands

Phase II Evaluation

Mercury generated a max NOAEL HQ of 2.4 and a max LOAEL of 1.2, indicating the potential for adverse effects to predatory fish with forage ranges within Wetlands 63A and 63B. However, it should be noted that in the nine samples collected from these wetlands, the only detection was 0.14 mg/kg at location 041M63A3. The average concentration HQs were less than 1. This food-chain model indicated that at the location of the sole detection, adverse effects were possible. However, given that no other detections were identified in either Wetland 63A or 63B, it is unlikely that the conditions that would generate adverse effects exist over a large enough area to affect the predatory fish community. Mercury was also not identified as a concern in the Site 42 RI (Pensacola Bay) and was only detected in seven samples out of the 141 collected throughout the Bay.

13.3.2 Mean ERM Quotients

Figure 13-7 shows only two sample locations within the Chevalier Field wetlands (041M63B4 and 041M63A3) where there is some potential for risk. Of these two samples, only 041M63A3 had

any constituents exceeding its ERM (PCBs). However, the food-chain models indicated that PCBs present no unacceptable levels of risk in the Chevalier Field wetlands.

13.3.3 Basewide Total DDT-Levels

No sample locations within Chevalier Field wetlands exceeded the basewide total DDT levels.

13.3.4 TOC-Normalized PAHs

No sample locations within the Chevalier Field wetlands exceeded the Swartz TEC and were unlikely to cause any adverse effects due to exposures to PAHs.

13.4 Conclusions

Based on the evaluations included as part of the ecological risk assessment, it is unlikely that any adverse effects are occurring within the Chevalier Field wetlands. The only potential risk identified was to predatory fish from a single detection of mercury at 0.14 mg/kg in sediment. Therefore, no further action is recommended for the Chevalier Field wetlands.

Table 13-3-1
Chevalier Field Wetlands FCM (Phase 2)
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	0.1400	0	0.28	0.0000322	0.0000	0.0032	0.0032522	0.0135	0.44	0.86	3.07E-02	1.57E-02
	Average	0.0405	0.0001	0.081	0.000009315	0.0000	0.0009	0.000943085	0.0039	0.44	0.86	8.89E-03	4.55E-03
Total BHC													
	Max	0.0007	0	0.0007	0.000000161	0.0000	0.0000	0.000008211	0.0000	0.563	2.25	6.05E-05	1.51E-05
	Average	0.0003	0.0001	0.0003	0.000000069	0.0000	0.0000	0.000005789	0.0000	0.563	2.25	4.27E-05	1.07E-05
Total Chlordane													
	Max	0.0024	0	0.00564	0.000000552	0.0000	0.0001	0.000065412	0.0003	2.14	10.7	1.27E-04	2.54E-05
	Average	0.0004	0.0001	0.00094	0.000000092	0.0000	0.0000	0.000013172	0.0001	2.14	10.7	2.55E-05	5.11E-06
Dieldrin													
	Max	0.0041	0	0.019803	0.000000943	0.0000	0.0002	0.000228678	0.0009	0.044	0.44	2.16E-02	2.16E-03
	Average	0.0006	0.0001	0.002898	0.000000138	0.0000	0.0000	0.000035735	0.0001	0.044	0.44	3.37E-03	3.37E-04
Total DDT													
	Max	0.0071	0	0.030459	0.000001633	0.0000	0.0004	0.000351912	0.0015	0.051	0.512	2.86E-02	2.85E-03
	Average	0.0015	0.0002	0.006435	0.000000345	0.0000	0.0001	7.88875E-05	0.0003	0.051	0.512	6.42E-03	6.39E-04
Total Endrin													
	Max	0.0035	0	0.0035	0.000000805	0.0000	0.0000	0.000041055	0.0002	0.01	0.1	1.70E-02	1.70E-03
	Average	0.0007	0.0001	0.0007	0.000000161	0.0000	0.0000	0.000010481	0.0000	0.01	0.1	4.35E-03	4.35E-04
Total PCB													
	Max	0.2864	0	0.470	0.000065872	0.0000	0.0054	0.005467376	0.0227	0.112	1.12	2.03E-01	2.03E-02
	Average	0.0466	0.004	0.076	0.000010718	0.0001	0.0009	0.000980394	0.0041	0.112	1.12	3.63E-02	3.63E-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.

Table 13-3-2
Chevalier Field Wetlands FCM (Phase 2)
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	0.1400	0	0.28	0.00042	0.0000	0.0081	0.00854	0.0155	0.032	0.16	4.85E-01	9.70E-02
	Average	0.0405	0.0001	0.081	0.0001215	0.0000	0.0023	0.00247628	0.0045	0.032	0.16	1.41E-01	2.81E-02
Total BHC													
	Max	0.0007	0	0.0007	0.0000021	0.0000	0.0000	0.0000224	0.0000	0.014	0.14	2.91E-03	2.91E-04
	Average	0.0003	0.0001	0.0003	0.0000009	0.0000	0.0000	0.00001538	0.0000	0.014	0.14	2.00E-03	2.00E-04
Total Chlordane													
	Max	0.0024	0	0.00564	0.0000072	0.0000	0.0002	0.00017076	0.0003	3.9	7.8	7.96E-05	3.98E-05
	Average	0.0004	0.0001	0.00094	0.0000012	0.0000	0.0000	0.00003424	0.0001	3.9	7.8	1.60E-05	7.98E-06
Dieldrin													
	Max	0.0041	0	0.019803	0.0000123	0.0000	0.0006	0.000586587	0.0011	0.015	0.15	7.11E-02	7.11E-03
	Average	0.0006	0.0001	0.002898	0.0000018	0.0000	0.0001	0.000091622	0.0002	0.015	0.15	1.11E-02	1.11E-03
Total DDT													
	Max	0.0071	0	0.030459	0.0000213	0.0000	0.0009	0.000904611	0.0016	0.6	3	2.74E-03	5.48E-04
	Average	0.0015	0.0002	0.006435	0.0000045	0.0000	0.0002	0.000202675	0.0004	0.6	3	6.14E-04	1.23E-04
Total Endrin													
	Max	0.0035	0	0.0035	0.0000105	0.0000	0.0001	0.000112	0.0002	0.092	0.92	2.21E-03	2.21E-04
	Average	0.0007	0.0001	0.0007	0.0000021	0.0000	0.0000	0.00002818	0.0001	0.092	0.92	5.57E-04	5.57E-05
Total PCB													
	Max	0.2864	0	0.470	0.0008592	0.0000	0.0136	0.014480384	0.0263	0.05	0.1	5.27E-01	2.63E-01
	Average	0.0466	0.004	0.076	0.0001398	0.0002	0.0022	0.002587296	0.0047	0.05	0.1	9.41E-02	4.70E-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.

Table 13-3-3
Red Drum Exposure Model
Chevalier Field Phase II Data

Chevalier Field	Hg 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
Chevalier Field Maximum	0.14	0.168	0.0392	0.014	0.36	**2.40**	**1.20**
Chevalier Field Average	0.04	0.048	0.0112	0.004	0.10	0.69	0.34

Note:
A = Forage Fish tissue concentrations calculated BSAF of 2.0 from Evans and Engel 1994.

14.0 UST 18 — WETLANDS

The UST 18 wetlands include Wetlands 52, 72 and W1 (Figure 14-1 — figures are located at the end of each section). UST 18 occupies approximately 48 acres along the southwestern border of Forrest Sherman Field. The site is bounded to the east by Runway 19, to the north by a paved taxiway, to the west by scattered brush and woods, and to the south by an open field. The site topography is characterized by a swale paralleling Runway 19 in the east-central portion of the site, bounded on the east and west by higher, generally flat areas (Figure 14-2). The swale constitutes a storm water drainage system consisting of several catch basins in the swale's axis at the lowest elevations. Wetland W1 is located in the center of this drainage swale.

Surface runoff (i.e., storm water) flows into the swale and is captured by two storm water drainage lines. Storm water collected in the northern catch basins drains northward to Wetland 72, which is a drainage canal that eventually discharges into Bayou Grande. Runoff entering the southern catch basins drains southward into a small creek that flows into Wetland 52, which lies south of the site and drains into Sherman's Inlet.

Site History

Previously named IR Site 3, UST 18 contains at least eight burn pits used to train fire fighters for aircraft crash response since 1955 (NEESA, 1983). Historically, during training exercises, approximately 30 to 50 gallons of fuel, (possibly JP-4, JP-5, aviation gas, lube oil, or water-tainted fuel), were poured into unlined pits or on various pieces of equipment and ignited to simulate post-crash aircraft fires. As many as five training fires may have been set each week, using an estimated 450-gallons of fuel. In 1991, the northernmost pit was lined with an impermeable geofabric membrane called Bentomat, a two-layer woven cloth separated by bentonite. Thereafter, only the northern pit was used, and training exercises were performed approximately twice per month using up to 700-gallons of fuel per event. Aircraft fire-fighting foam was used along with water to extinguish the fires. In 1997, crash crew training was moved to environmentally friendly training facilities at the NATTC.

Previous Site Investigations

1984 — Geraghty & Miller Investigation

In July 1984, G&M studied 18 sites at NAS Pensacola, including Site 3. During that study, 18 soil borings were advanced to determine if product was free-floating in the local groundwater. In addition, six shallow monitoring wells were installed. The soil borings did not indicate any free-product contamination. Groundwater samples collected from each of the six monitoring wells were analyzed for VOCs. Three wells (GM-20, GM-21, and GM-23) contained low concentrations of

VOCs. The VS recommended no further studies be conducted at the site (G&M, 1984); consequently, Site 3 was not included in the subsequent Characterization Study.

1991 — E&E Phase I Investigation

As part of the Navy's IR program, E&E performed a Phase I investigation of Site 3 in 1991 to identify areas with potential contaminants of concern. Physical surveys completed during this investigation included an air photograph analysis, an organic vapor analyses emissions survey, a particulate air screening, a geophysical survey, a utilities survey, and soil headspace survey. The results of the headspace survey revealed values up to 1,000 parts per million (ppm) were at the northern and central burn areas. Based on the results of the physical surveys, sediment, soil, surface water, and groundwater samples were collected and submitted for laboratory analyses. Metals (chromium, lead, cadmium, and iron), TRPHs, VOCs, PAHs, BNAs, and phenols were identified in site groundwater. Surface water contained chromium, TRPHs, VOCs, and phenols. Chromium, lead, TRPHs, VOCs, PAHs, and phenols were detected in site soil and sediment.

1994-1995 — E/A&H Investigation

UST 18 (previously named IR Site 3) contain at least eight burn pits used to train fire fighters for aircraft crash response since 1955 (NEESA, 1983). Historically, during training exercises, approximately 30 to 50 gallons of fuel (possibly JP-4, JP-5, aviation gas, lube oil, or water-tainted fuel) were poured into unlined pits or on various pieces of equipment and ignited to simulate post-crash aircraft fires. In 1991, the northernmost pit was lined with an impermeable geofabric membrane called Bentomat, a two-layer woven cloth separated by bentonite, and became the only pit used for training exercises. Aircraft fire-fighting foam was used along with water to extinguish the fires. In 1997, crash crew training was moved to environmentally friendly training facilities at the NATTC.

E/A&H prepared a CAR for UST Site 18 in January 1996. Twenty-two permanent shallow and intermediate groundwater monitoring wells were installed and soil, sediment, groundwater, and surface water samples were collected and analyzed for petroleum constituents. BTEX, EDB, naphthalene, and lead were detected (E/A&H, 1996a).

EnSafe prepared a RAP for UST Site 18 on December 19, 1997. The RAP proposed landfarming to remediate the soil contamination and thereby removing the source of groundwater contamination. Groundwater modeling indicated that natural attenuation would remediate the groundwater once the landfarming was complete. A Monitoring Only Plan (MOP) was proposed for groundwater remediation (EnSafe, 1997a).

2000 - 2002 — CH2MHILL Landfarming and Monitoring

CH2MHILL performed a remedial action for the impacted soil at UST Site 18 that consisted of the landfarming of petroleum contaminated soil in the four former firefighter training burn pits. Landfarming activities were conducted between September 2000 and September 2001 and consisted of biweekly soil tilling using a farm tractor and disk harrow. Soil samples were collected monthly. Landfarming operations ceased when soil analytical results indicated that soil cleanup goals had been achieved in September 2001 (CH2MHILL, 2003a).

Groundwater monitoring was performed monthly from December 2000 through August 2001 and quarterly until December 2002 by CH2MHill. BTEX, PAHs, TRPH, and lead were consistently reported to exceed FDEP GCTLs during quarterly sampling (CH2MHILL, 2003a).

2003 to Present — TtNUS Treatability Study and Additional Assessment

TtNUS performed a treatability study to evaluate PermeOx® Plus for remediation of petroleum hydrocarbons. TtNUS performed supplemental site assessment activities in August 2003 to delineate the groundwater contamination and to provide a baseline for the treatability study. Two main areas of contamination were identified during the additional groundwater investigation. A northern plume was identified around the four former pits. A southern plume was found to exist south of the four former pits. Both plumes were migrating southeast (with the groundwater flow direction) from their source areas. (TtNUS, 2003a). Extent of groundwater contamination was delineated during this investigation.

The PermeOx® Plus injection event was conducted from December 3 to December 17, 2003. This pilot-scale treatability study consisted of the installation of 219 injection borings (143 in the northern plume and 76 in the southern plume) into which a PermeOx® Plus enriched slurry was injected. Select groundwater monitoring wells were then monitored for site contaminants of concern (COCs) and natural attenuation parameters for four quarters to evaluate the effectiveness of enhanced bioremediation (TtNUS, 2005).

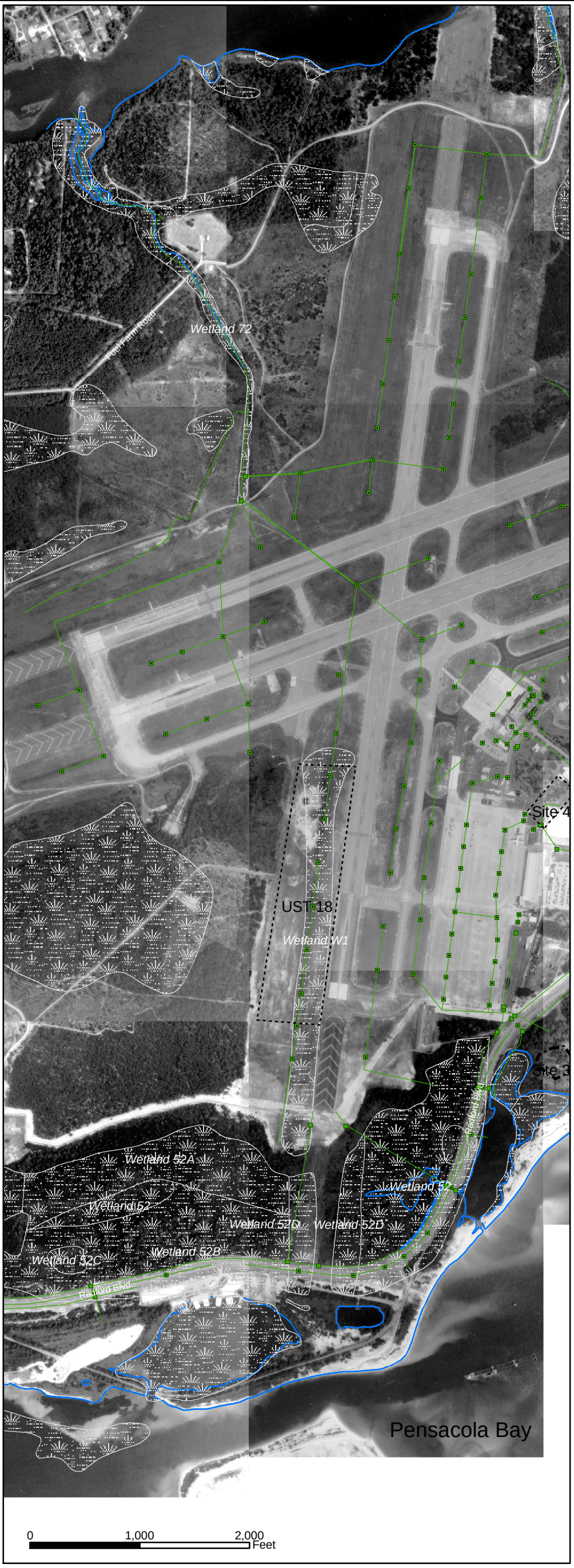
The Enhanced Natural Attenuation Study (PermeOx® Plus injection) concluded that there was no clear evidence of a reduction in site COCs after one year of monitoring. While COC concentrations had decreased temporarily in several wells, there was a rebound and no evidence that conditions favorable to enhanced biodegradation were occurring. Free product was detected in a shallow monitoring well (NASP18-GS26) on the northern portion of the site. The presence of free product indicated there was a continuing source of contamination and that previous soil remediation (landfarming) efforts may have not effectively removed all the

contaminated soil (TtNUS, 2005). It was reasoned that contaminated soil exists around the smear zone (underneath the landfarming effort) and continually contributes to the groundwater contamination. Additional characterization has been recommended for the site (TtNUS, 2006).

UST 18 Wetlands

The Site 41 wetlands associated with UST 18 include Wetlands 52, 72, and W1. As shown in Figure 14-1, Wetland 52 is located south of the UST 18 area. It receives storm water from the southern end of the UST 18 area and discharges to Pensacola Bay via Sherman's Inlet. Wetland 72 is a drainage ditch located on the northwest side of Runway 19 and receives storm water from the northern end of UST 18. Wetland W1 occupies the drainage swale located directly east of UST 18, between the site and Runway 19 of Forrest Sherman Field.

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 14-5 presents Total DDT results for sediment, Figure 14-6 presents the Swartz TOC normalized PAHs, and Figure 14-7 presents the Mean ERM quotient categories. Figure 14-8 presents chemistry and/or 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 UST 18 is presented in Section 14.4.



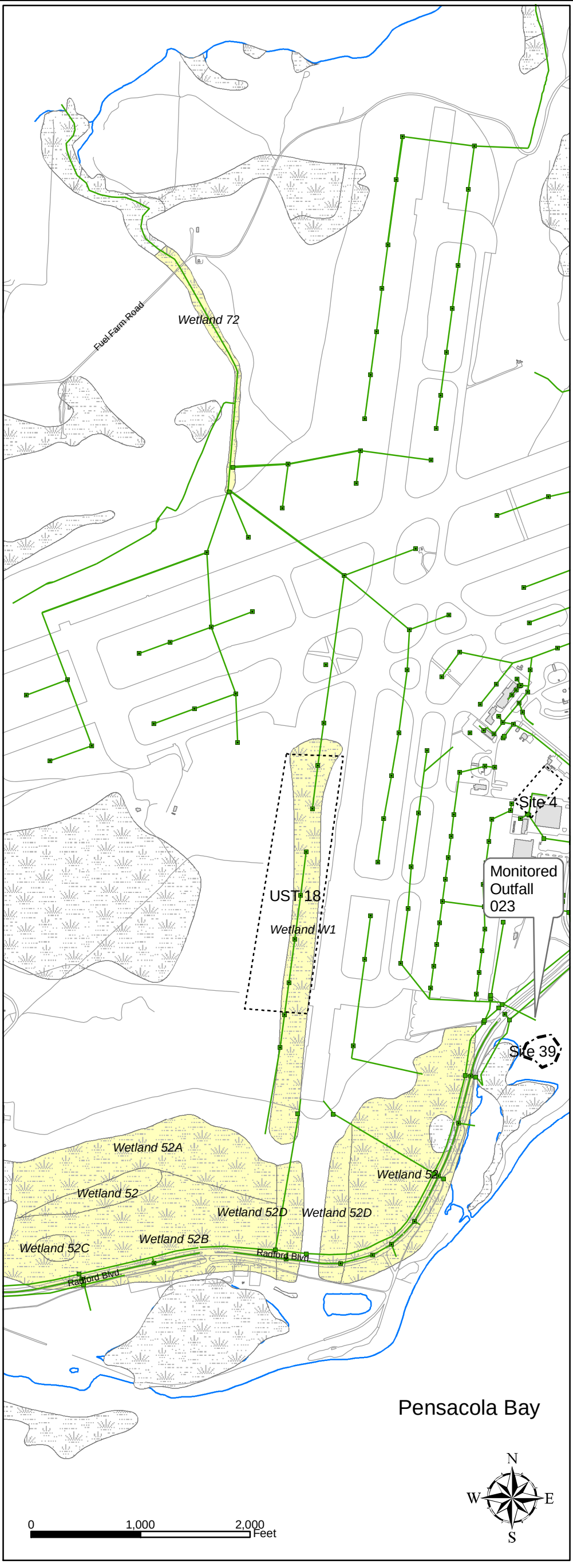


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FIGURE 14-1
UST 18 Wetlands
and Nearby Sites

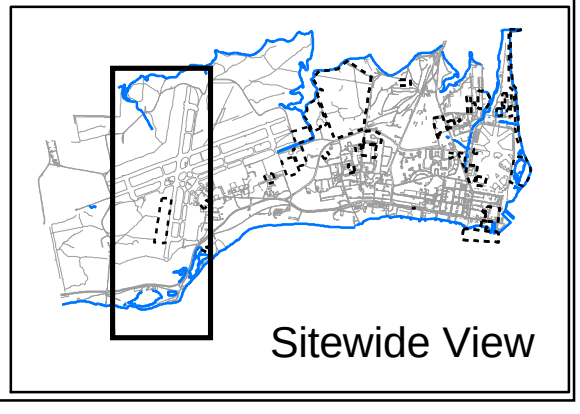
Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

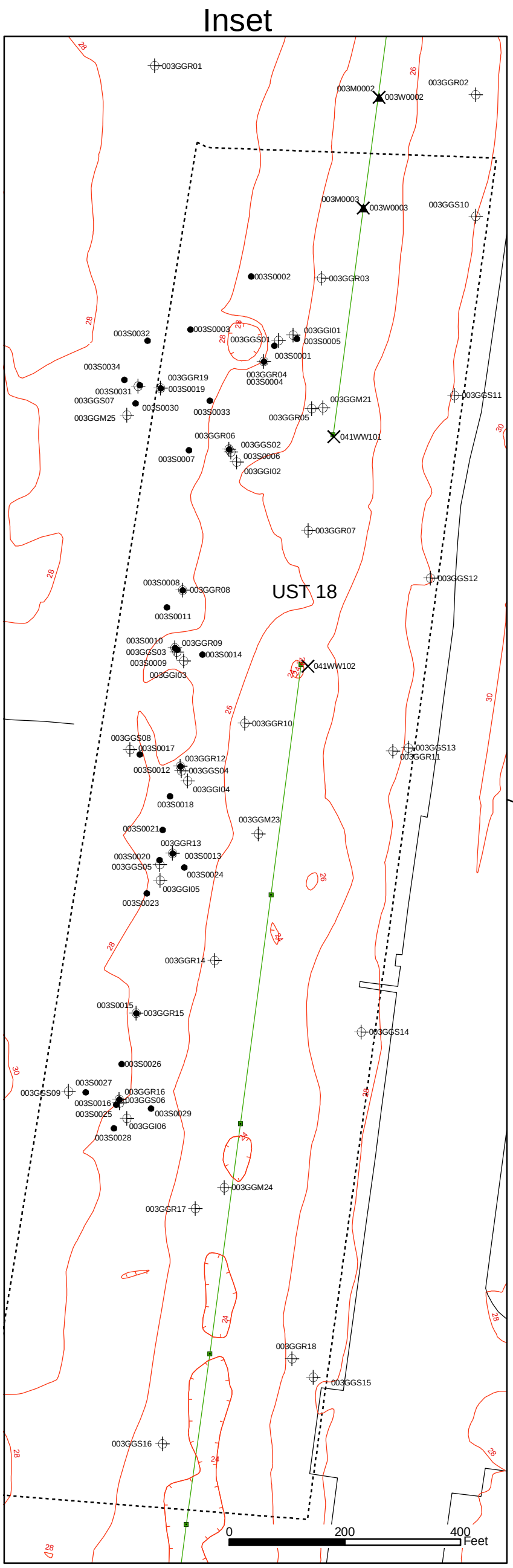
Date: 10/4/04 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-1.mxd

Legend

- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Shoreline
- Road
- Storm water Pipe
- Storm water Inlet
- Storm water Headwall

Note: Only the wetlands associated with UST 18 have labels.





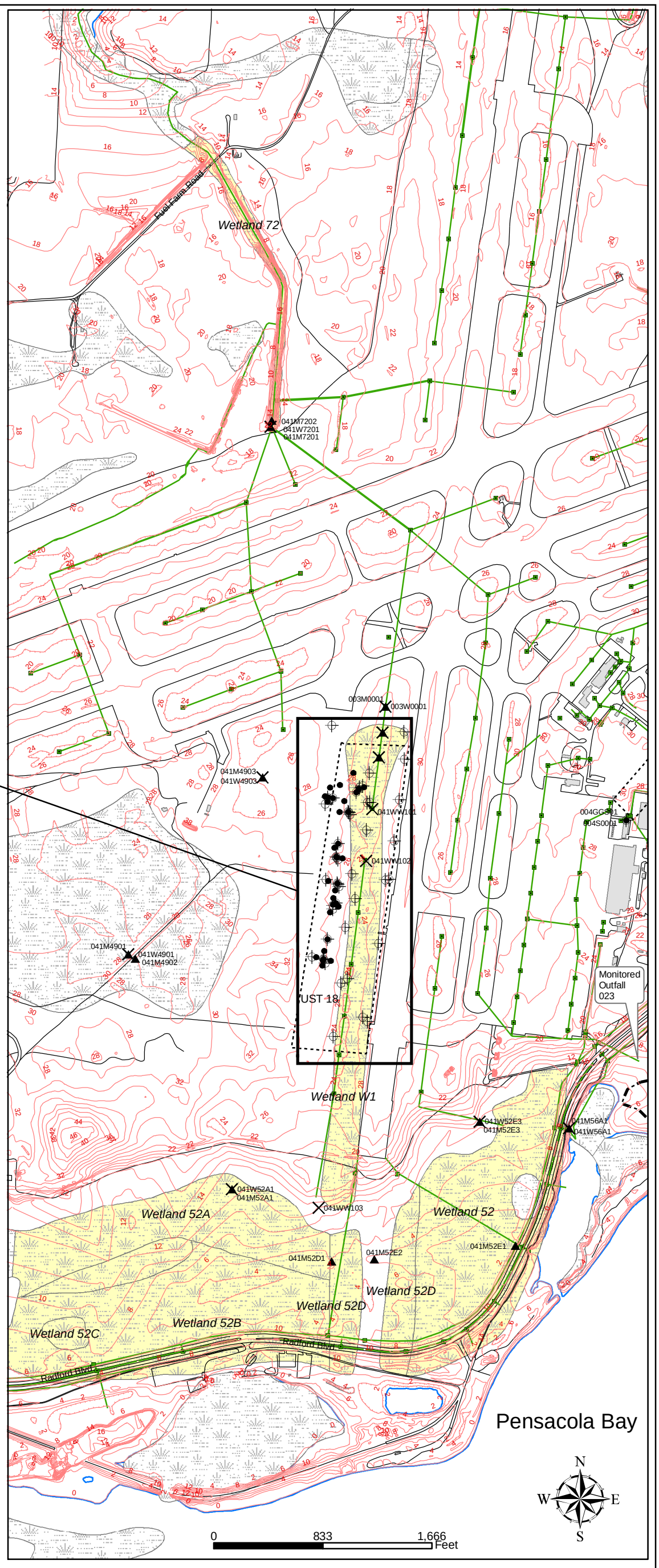


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FIGURE 14-2
UST 18 Wetlands
Study Area Topography

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date: 10/3/04 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-2.mxd

Legend

Sitewide Sample Locations

- Soil
- Site 41 RI Sediment
- Site 41 RI Surface Water
- Groundwater
- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Topographic Contour(ft)
- Shoreline
- Road
- Storm water Pipe
- Storm water Inlet
- Storm water Headwall

Note: Only the wetlands associated with UST 18 have labels.

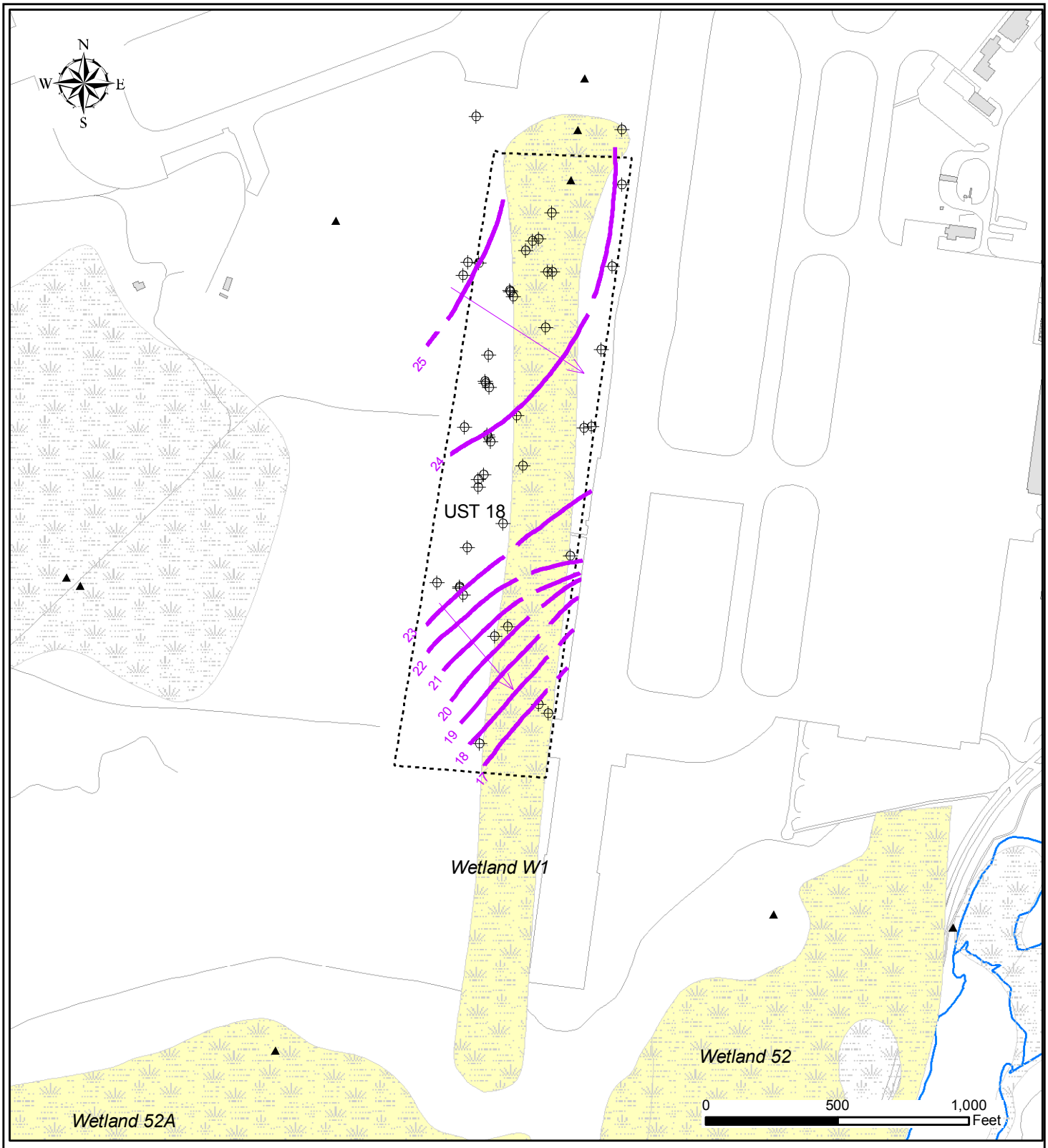

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FIGURE 14-3
UST 18 Wetlands
Shallow Potentiometric Surface

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date: 8/14/05 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-3.mxd

Legend

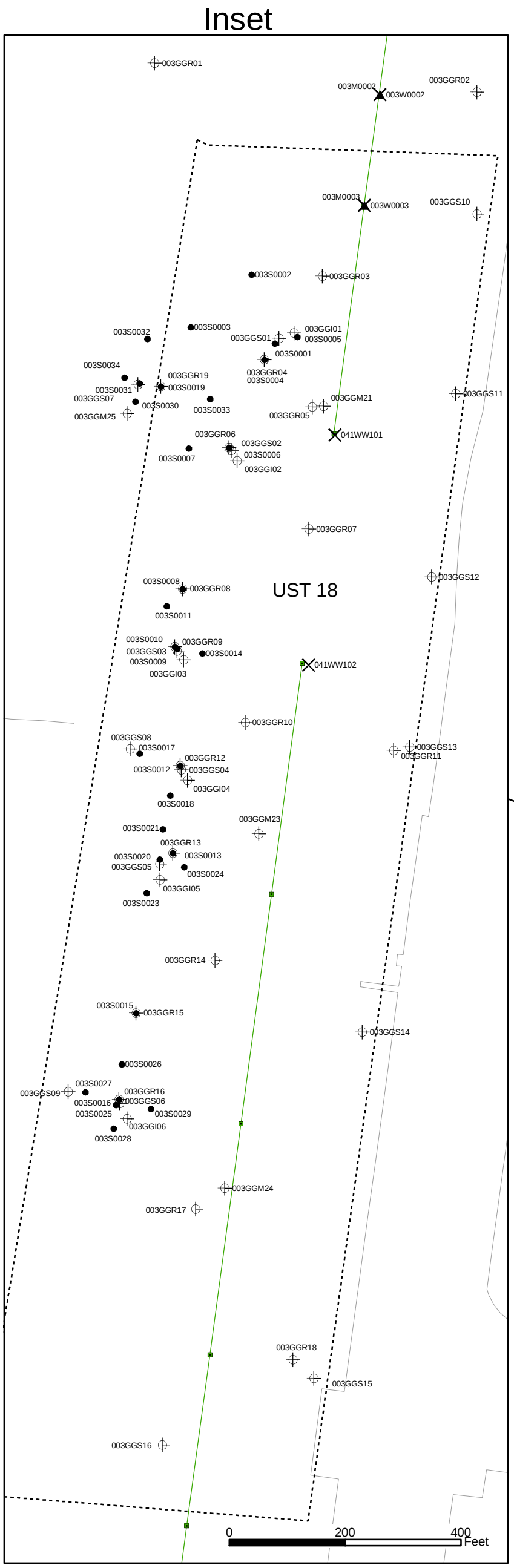
Shallow Potentiometric Surface

- Contour (1ft interval)
- Groundwater Flow Direction

Sitewide Sample Location

- Sediment Sample
- Groundwater Well
- UST 18 Wetland-Approximate
- Wetland- Approximate
- Operable Unit (OU)
- Site
- Building
- Shoreline
- Road

Note:
Groundwater potentiometric contours are from the UST 18 Contamination Assessment Report, 1995. Only the wetlands associated with UST 18 have labels.



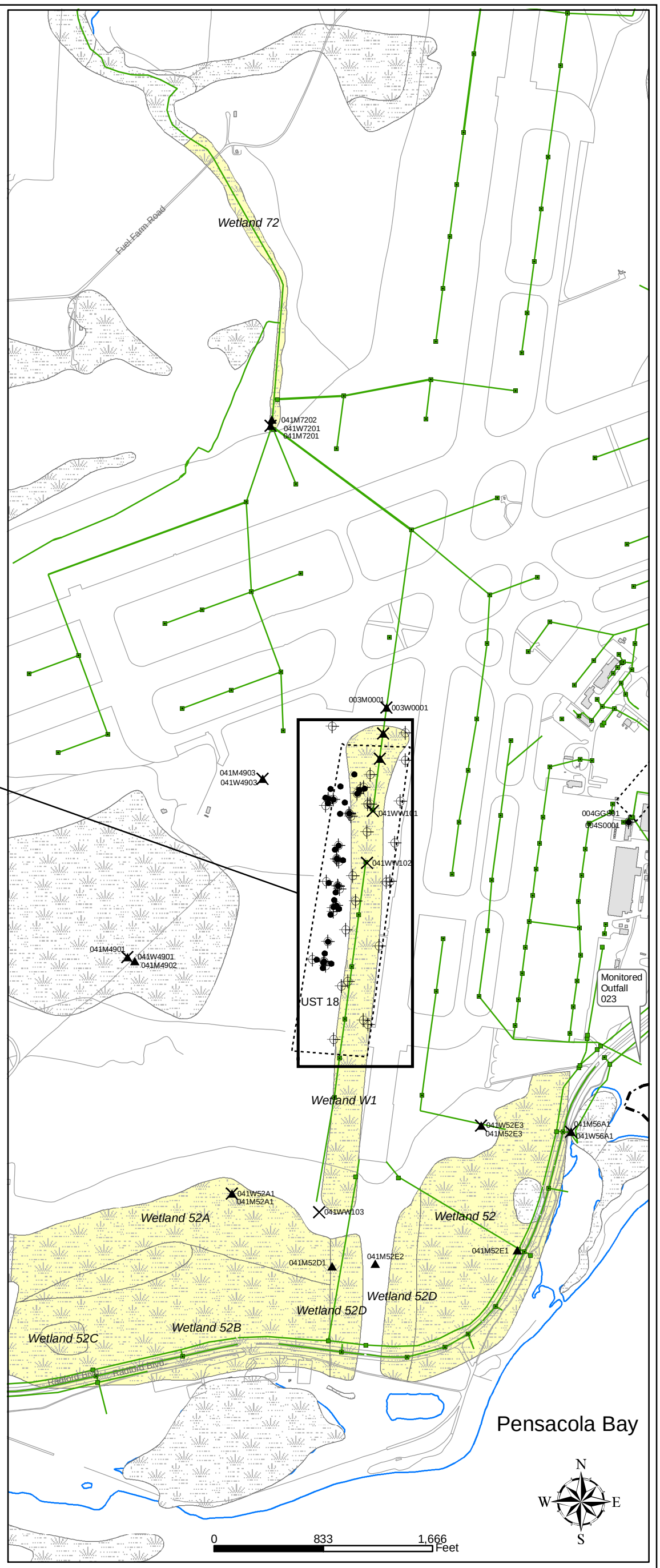


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FIGURE 14-4
UST 18 Wetlands, Nearby Sites and Adjacent Soil Borings and Monitoring Wells

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date: 10/3/04 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-4.mxd

Legend

Sitewide Sample Locations

- Soil
- Site 41 RI Sediment
- Site 41 RI Surface Water
- Groundwater
- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Shoreline
- Road
- Storm water Pipe
- Storm water Inlet
- Storm water Headwall

Note: Only the wetlands associated with UST 18 have labels.

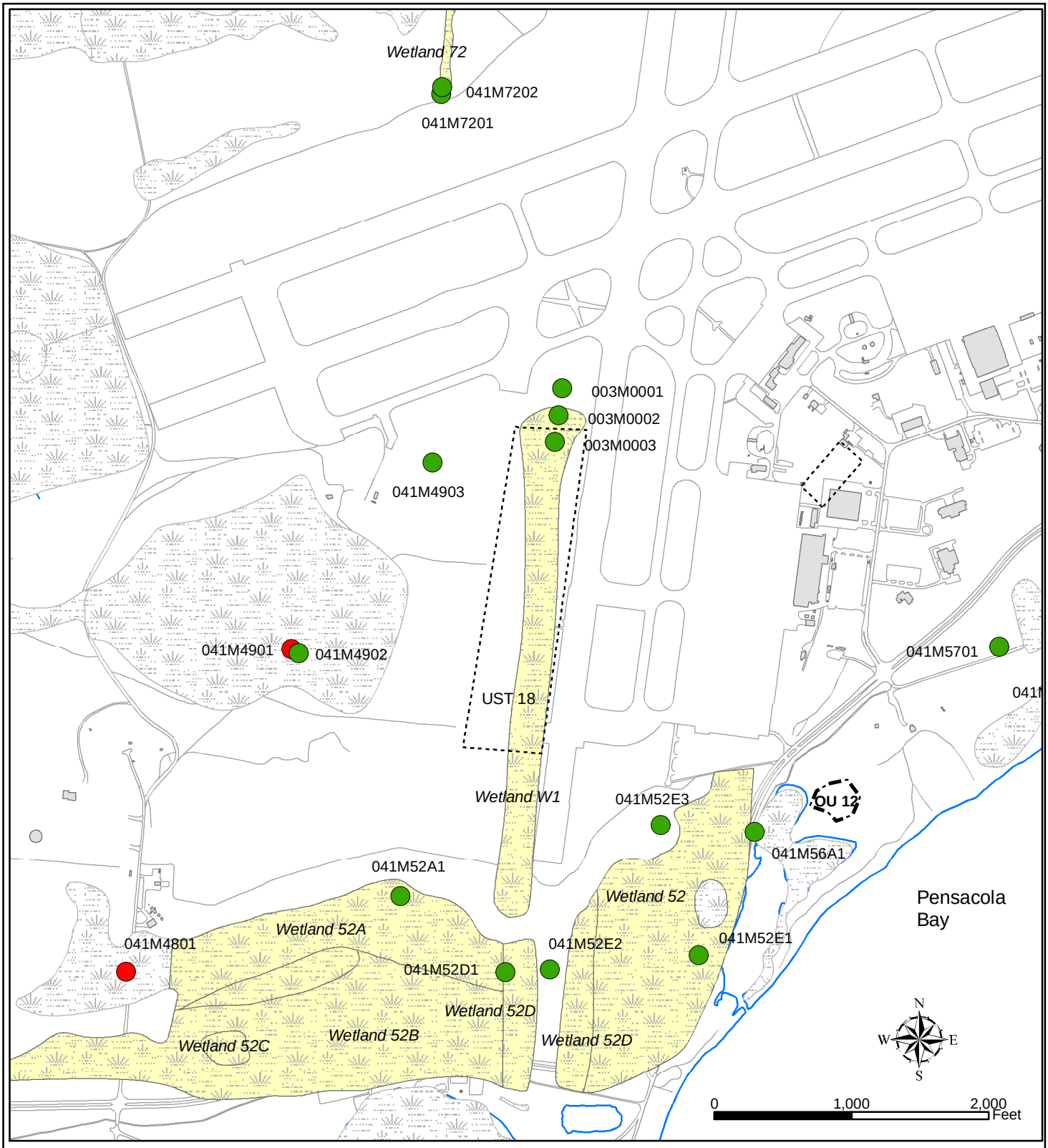

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FIGURE 14-5
UST 18 Wetlands
Sediment Total DDT

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date: 10/4/04 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-5.mxd

Legend

Site 41 RI Sediment Sample
Phase II Total DDT

- 0.285 - 109.99
- 110.00(BL) - 3460.00
- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Shoreline
- Road

Note:
BL is the total DDT basewide level.
Result units are ug/kg.
Only the wetlands associated with UST 18 have labels.

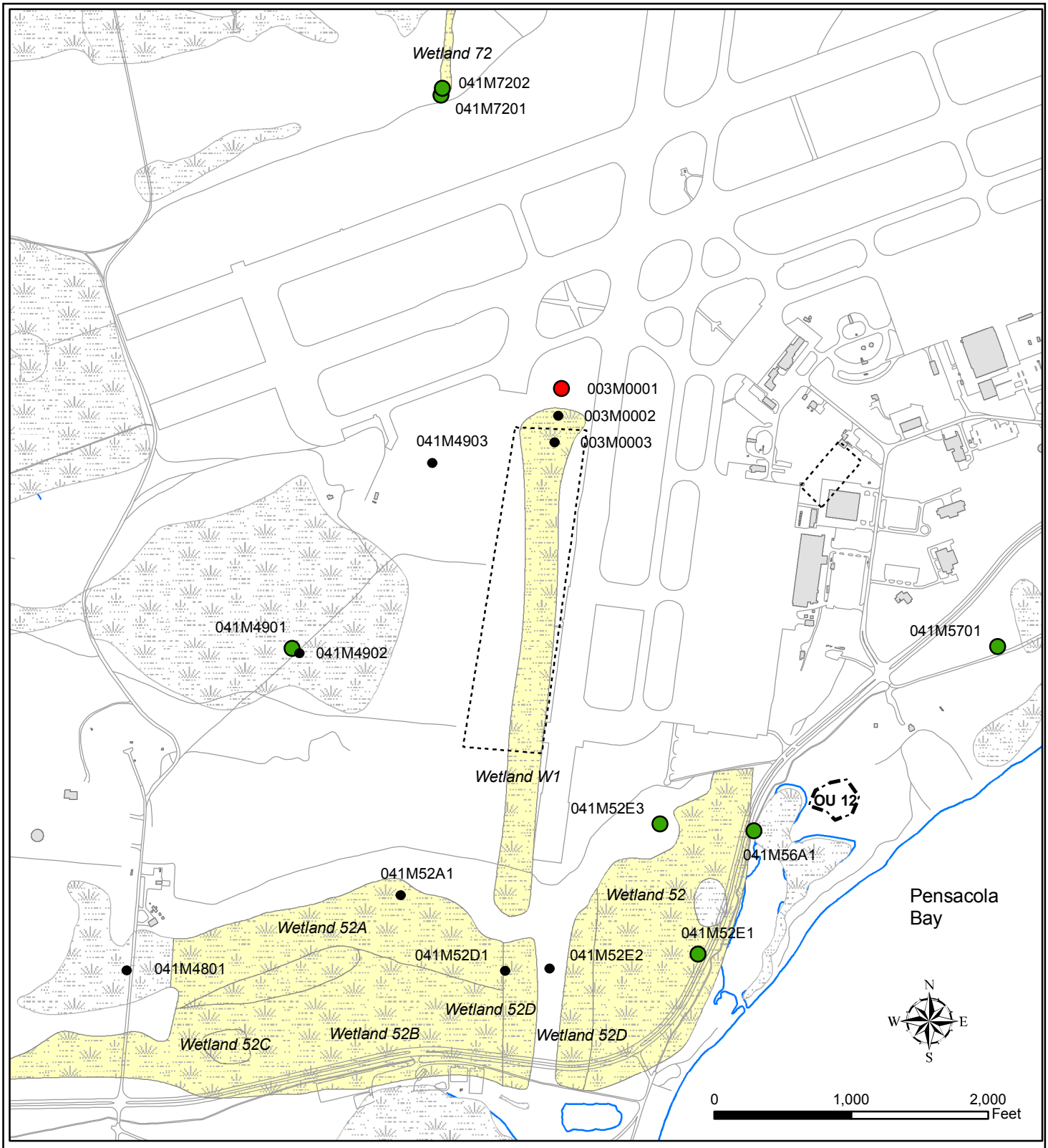

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FIGURE 14-6
UST 18 Wetlands
Sediment Swartz Normalized Total PAHs

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date:3/9/05 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-5.mxd

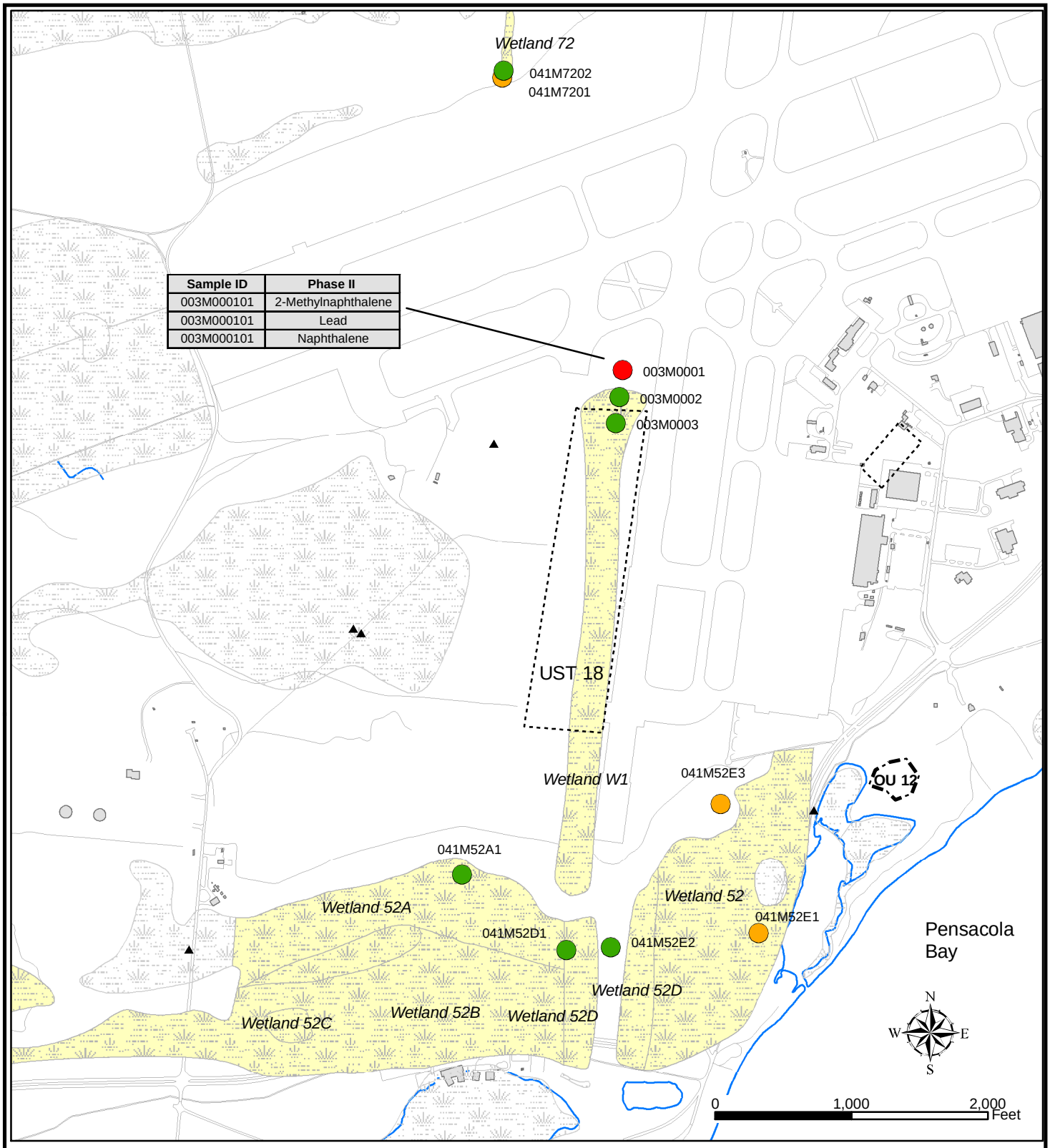
Legend

Site 41 RI Sediment Sample

Phase II TOC Normalized Total PAHs

- 1.94 - 289.99
- 290.00(TEC) - 1262.56
- Nondetect TOC Normalized Total PAH
- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Shoreline
- Road

Note:
Result units are mg/kg-oc.
Only the wetlands associated with UST 18 have labels.



Sample ID	Phase II
003M000101	2-Methylnaphthalene
003M000101	Lead
003M000101	Naphthalene

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FIGURE 14-7
UST 18 Wetlands Sediment Sample ERM Quotient Categories and Parameters that Exceed the ERM

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date:10/19/04 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-7.mxd

Legend

UST 18 Sediment Sample with ERM Category
Phase II Mean ERM Quotient Category

- 1
- 2
- 3
- Site 41 RI Sediment associated to another OU
- Operable Unit (OU)

- Site
- UST 18 Wetland- Approximate
- Wetland- Approximate
- Building
- Shoreline
- Road

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

Note:
Samples without parameter table do not have parameters that exceeded the ERM value.
Only the wetlands associated with UST 18 have labels.

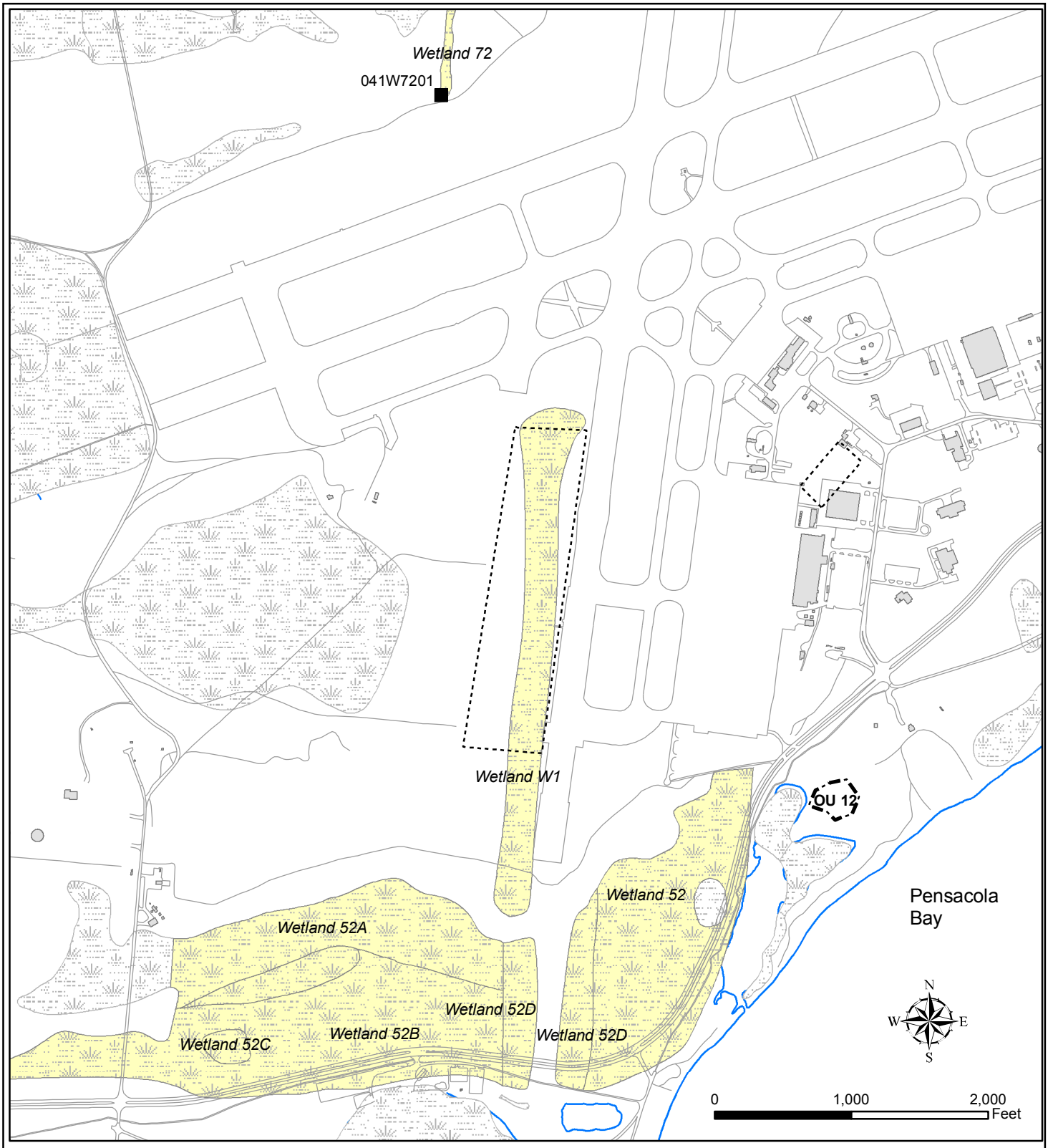

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FIGURE 14-8
UST 18 Wetlands
Chemistry and Toxicity Sample Locations

Final Remedial Investigation Report
Site 41
NAS Pensacola, FL

Date:4/1/05 | Drwn by: CT | File: K:/GIS/Navy-Pensacola/CTO-036/Projects/Fig14-8.mxd

Legend

Sediment Sample
- Chemistry only
- Chemistry and Toxicity

Surface Water Sample
- Total and Dissolved Metals only
- Total and Dissolved Metals and VOCs
- Chemistry only
- Chemistry and Toxicity
- Species Diversity Sample

- Fish Tissue Sample
- Operable Unit (OU)
- Site
- Wetland- Approximate
- UST 18 Wetland-Approximate
- Building
- Shoreline
- Road

14.1 Wetland 52 — Screening Level Problem Formulation

14.1.1 Site Description and Habitats Present at Wetland 52

Wetland 52 is located at the southern end of Forrest Sherman Field and on the northern side of Blue Angel Parkway. Wetland 52 is due south of Site 19 and encompasses approximately 100 acres of land directly south of Forrest Sherman Field (Figure 14-1).

The IR sites potentially affecting Wetland 52 are UST 18, formerly Site 3 (Crash Crew Fire Fighting Training Area), Site 4 (Army Rubble Disposal Area), Site 19 (Fuel Farm Pipeline Leak), and Site 37 (Sherman Field Area).

Photograph 1 Wetland 52 — Facing Southeast

In the 1950s, rubble from the former Fort Barrancas was disposed in the area of Site 4. The rubble included timber, pipes, mattresses, and other wastes. None of the wastes was documented as being incinerated before disposal. Inorganic constituents exceeding PRGs in site soil were similar to those identified at previously investigated sites in the eastern portion of NAS Pensacola (E/A&H, 1997e). The detected PAH contaminants are likely associated with routine activities such as automobile traffic or the

asphalt pavement (E/A&H, 1997e). The USEPA (USEPA Region 4, 1997b) and FDEP (FDEP, 1997c) approved remedial alternative for Site 4 was no action.

UST 18 (previously named IR Site 3) contains at least eight burn pits used to train fire fighters for aircraft crash response since 1955 (NEESA, 1983). Historically, during training exercises, approximately 30 to 50 gallons of fuel, (possibly JP-4, JP-5, aviation gas, lube oil, or water-tainted fuel) were poured into unlined pits or on various pieces of equipment, and ignited to simulate post-crash aircraft fires. In 1991, the northernmost pit was lined with an impermeable geofabric membrane called Bentomat, a two-layer woven cloth separated by bentonite, and became the only pit used for training exercises. Aircraft fire-fighting foam was used along with water to extinguish the fires. In 1997, crash crew training was moved to environmentally friendly training facilities at the NATTC.

E/A&H prepared a CAR for UST Site 18 in January 1996. Twenty-two permanent shallow and intermediate groundwater monitoring wells were installed and soil, sediment, groundwater, and surface water samples were collected and analyzed for petroleum constituents. BTEX, EDB, naphthalene, and lead were detected (E/A&H, 1996a).

EnSafe prepared a RAP for UST Site 18 on December 19, 1997. The RAP proposed landfarming to remediate the soil contamination and thereby removing the source of groundwater contamination. Groundwater modeling indicated that natural attenuation would remediate the groundwater once the landfarming was complete. A Monitoring Only Plan (MOP) was proposed for groundwater remediation (EnSafe, 1997a).

CH2MHILL performed a remedial action for the impacted soil at UST Site 18 that consisted of the landfarming of petroleum contaminated soil in the four former firefighter training burn pits. Landfarming activities were conducted between September 2000 and September 2001 and consisted of biweekly soil tilling using a farm tractor and disk harrow. Soil samples were collected monthly. Landfarming operations ceased when soil analytical results indicated that soil cleanup goals had been achieved in September 2001 (CH2MHILL, 2003a).

Groundwater monitoring was performed monthly from December 2000 through August 2001 and quarterly until December 2002 by CH2MHill. BTEX, PAHs, TRPH, and lead were consistently reported to exceed FDEP GCTLs during quarterly sampling (CH2MHILL, 2003a).

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The PermeOx® Plus injection event was conducted from December 3 to December 17, 2003. This pilot-scale treatability study consisted of the installation of 219 injection borings (143 in the northern plume and 76 in the southern plume) into which a PermeOx® Plus enriched slurry was injected. Select groundwater monitoring wells were then monitored for site contaminants of concern (COCs) and natural attenuation parameters for four quarters to evaluate the effectiveness of enhanced bioremediation (TtNUS, 2005).

The Enhanced Natural Attenuation Study (PermeOx® Plus injection) concluded that there was no clear evidence of a reduction in site COCs after one year of monitoring. While COC concentrations had decreased temporarily in several wells, there was a rebound and no evidence that conditions favorable to enhanced biodegradation were occurring. Free product was detected in a shallow monitoring well (NASP18-GS26) on the northern portion of the site. The presence of free product indicated there was a continuing source of contamination and that previous soil remediation (landfarming) efforts may have not effectively removed all the contaminated soil (TtNUS, 2005). It was reasoned that contaminated soil exists around the smear zone (underneath the landfarming effort) and continually contributes to the groundwater contamination. Additional characterization has been recommended for the site (TtNUS, 2006).

Site 19 (Fuel Farm Pipeline Leak) was the site where a leak occurred in 1958 between an underground fuel pipeline which led from the fuel farm to the aircraft refueling facility at Forrest Sherman Field. This leak resulted in the direct discharge of 860,000 gallons of fuel oil, which resulted in trees and other vegetation being killed in a 200 by 400 foot area.

Site 37 (Sherman Field Fuel Farm Area) is located south of the western end of Forrest Sherman Field. The site consists of an approximately 3.5-acre, fenced area around the former fuel farm including four cut-and-cover storage tanks (Tank Nos. 1884, 1886, 1887, and 1888). The petroleum storage tank system was installed in approximately 1945 and used to store JP-4 Jet Fuel. The fuel storage tanks were abandoned in place in approximately 1995 after a new fuel facility was constructed adjacent to the south side of the original fuel farm. An equipment malfunction in 1983 resulted in the release of

approximately 48,000 gallons of JP-4 Jet Fuel. Initial recovery efforts by NAS Pensacola personnel included the installation of four recovery ditches along the fence line in the northwestern corner resulting in the recovery of approximately 600-700 gallons of free product. However, recovery efforts were discontinued by direction of the NAS Pensacola Fire Marshall due to the proximity of open excavations containing free product to the active fuel farm area. Additional recovery efforts in August 1983 included the installation of a product/groundwater recovery well system from approximately 50 to 140 feet west-northwest of the fuel farm. The system proved unsatisfactory, apparently due to its location, and recovery operations were discontinued.

Wetland 52 was described as palustrine in nature, with unique vegetative types from Forrested shrub-scrub to emergent. Parsons and Pruitt divided this area into five distinctive areas: Wetland 52A, 52B, 52C, 52D, and 52E. This large forested wetland has surface water from Wetland W1 draining into it. Wetland W1 is located to the west of the north/south runway of Forrest Sherman Field. This site may be important due to its proximity to this highly active landing site. The area between Wetland sections 52D east and west is mowed and maintained as an emergency overrun runway.

The area located directly south of the runway (Wetland 52D) is filled with water year round. The main vegetation appears to be water lillies indicating a quiet waterbody. When this area fills up, it eventually spills over into Shermans Inlet, which also maintains an active NPDES permit at this site. This area has been known to backup due to tidal activity.

Wetland 52A has a stream which passes west to east along the border between 52A and 52B. This stream continues across both sections 52D through 52E, and empties into Sherman's Inlet after passing under Blue Angel Parkway. This stream originates in Wetland 48 and follows a topographic low across 52 A/B. The topographic low showed evidence of sporadic/periodic ponding, but no stream, and is virtually impassable because of dense titi forests.

14.1.2 Wetland 52 — Sample Location Description

Phase II Sediment Sample Location Description

Five Phase II sediment samples were collected in Wetland 52 to support the Site 41 RI (Figure 14-4). Sample location 041M52A101 was collected along the northern edge of the western side of wetland area designated Wetland 52A. Sample locations 041M52D101 and 041M52E201 were also collected on the western side of this wetland complex. Sample locations 041M52E101 and 041M52E301 were collected from the eastern side of the wetland, with station location 041M52E101 adjacent to Radford Boulevard Table 14-1-1 (tables are located at the end of each section) provides a physical description of the Phase II sediments collected at Wetland 52. Phase II sediments at Wetland 52 were composed of

black silty sand with organics (041M52D101, 041M52E101 and 041M52E201) to black organic silt (041M52A101). TOC concentrations ranged from 0.68% (041M52E301) to 46.8% (041M52A101).

Phase II Surface Water Sample Location Description

Two surface water samples (041W52A101 and 041W52E301) were collected at Wetland 52, and were co-located with the sediment stations 041M52A101 and 041M52E301 (Figure 14-4). Table 14-1-2 provides a physical description of the surface water samples collected at Wetland 52. Surface water from Wetland 52B was found to be relatively soft ($CaCO_3$ levels were < 30 mg/L) and very acidic.

14.1.3 Wetland 52 — Nature and Extent of Contamination

Phase II Sediment

Figure 14-4 presents the Phase II sediment sampling locations for Wetland 52. Table 14-1-3 present a summary of the analytical results of the five Phase II sediment samples.

Metals — Eighteen metals were detected during Phase II sediment sampling at Wetland 52. Barium exceeded reference values at 041M52A101 and 04152E201, which are located near the center of the wetland. Selenium exceeded its reference value at location 041M52A101.

Pesticides and PCBs — Thirteen pesticide compounds and the PCB aroclor-1260 were detected during Phase II sediment sampling at Wetland 52. Total DDT was calculated for each location by adding the concentrations of 4,4-DDD, 4,4-DDE and 4,4-DDT. Likewise, a base-wide total DDT reference concentration was calculated using the base-wide concentrations for these same constituents.

Pesticides were detected in all five of the Wetland 52 sample locations during the Phase II investigation. Locations 041M52E301, 041M52D101, and 041M52E201 exhibited three detections whereas the other two locations each exhibited four detections. No reference values for 4,4-DDT compounds and total DDT were exceeded.

SVOCs — Twenty SVOCs were detected in sediment samples collected during Phase II sampling at Wetland 52. Sample location 041M52D101, 041M52A101, and 041M52E201 exhibited one, two, and three detections of SVOCs, respectively. Locations 041M52E101 and 041M52E301 exhibited 12 detections each. These locations are on the eastern side of the wetland.

VOCs — Acetone and toluene were detected in sediments collected from Wetland 52 during Phase II sampling. Acetone was detected at location 041M52A101, and toluene was detected at location 041M52E201.

Phase II Surface Water

Figure 14-4 presents the Phase II surface sampling locations for Wetland 52. Table 14-1-4 present a summary of the analytical results of the two Phase II surface water samples.

Metals — Eleven metals were detected in Phase II surface water samples taken from Wetland 52. Location 041W52A101 exhibited eight detections, with two of the eight exceeding reference values. Likewise, location 041W52E301 exhibited ten detections, with four of the ten exceeding reference values. Analytes exceeding reference concentrations are aluminum, barium, calcium, copper, and zinc.

Pesticides and PCBs — No pesticides and PCBs were detected during Phase II surface water sampling at Wetland 52.

SVOCs — No SVOCs were detected in surface water samples collected during the Phase II sampling effort.

VOCs — No VOCs were detected in surface water samples collected during the Phase II sampling effort.

14.1.4 Ecological Risk Assessment

Phase II Investigation Summary — Wetland 52

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 14-1-5, 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 are carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-1-6.

Baseline Problem Formulation — Wetland 52 Sediment COPC Refinement

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

The COPC refinement process will include:

- Comparison of maximum concentrations to RVs
- Comparison of average concentrations to SVs and RVs
- Comparison to base-wide (reference) concentrations for DDT
- Comparison of inorganic constituents to reference wetland values
- Interpretative 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 in the Site 41 ERA Process is detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 14-1-7. COPCs retained after refinement are presented in Table 14-1-8. Additionally, the tables compare: 1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland 52 concentrations to reference concentrations.

As shown on Figure 14-5, Total DDT and its daughter products were below the base-wide levels, indicating that pesticide application levels in this area were in accordance with other base activities. As a result, Total DDT and its daughter products are not carried forward as COPCs in the ERA Process. Four other pesticides were detected and retained as COPCs for Wetland 52: aldrin, dieldrin, endosulfan I, and endosulfan sulfate.

For Wetland 52, barium and selenium were the only two inorganic constituents, which exceeded their Site 41 freshwater sediment reference concentrations and are therefore carried forward in the ERA Process. However, barium concentrations did not appear enriched when normalized to aluminum and iron concentrations using FDEP's interpretative tool (Appendix K).

Seven SVOCs were detected and retained as COPCs during the ERA process. Those constituents include 4-methylphenol, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, carbazole, dibenzofuran, and indeno(1,2,3-cd)pyrene. Two VOCs, acetone and toluene, were detected and retained as COPCs for Wetland 52. When normalized to detected TOC concentrations, both VOCs and PAHs did not appear to be risk drivers for Wetland 52. Normalized PAH results are shown in Figure 14-6.

Table 14-1-9 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, three sample locations (041M52A101, 041M52D101, and 041M52E201) were determined to be Category 1, which identifies these sediments to be nontoxic. Stations 041M52E101 and 041M52E301 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. Figure 14-7 shows the Mean ERM category for each sediment sample location at Wetland 52.

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

As presented in Table 14-1-10, 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 are carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-1-11.

Baseline Problem Formulation — Wetland 52 Surface Water COPC Refinement

During the surface water COPC refinement, additional information will be 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 will include:

- 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

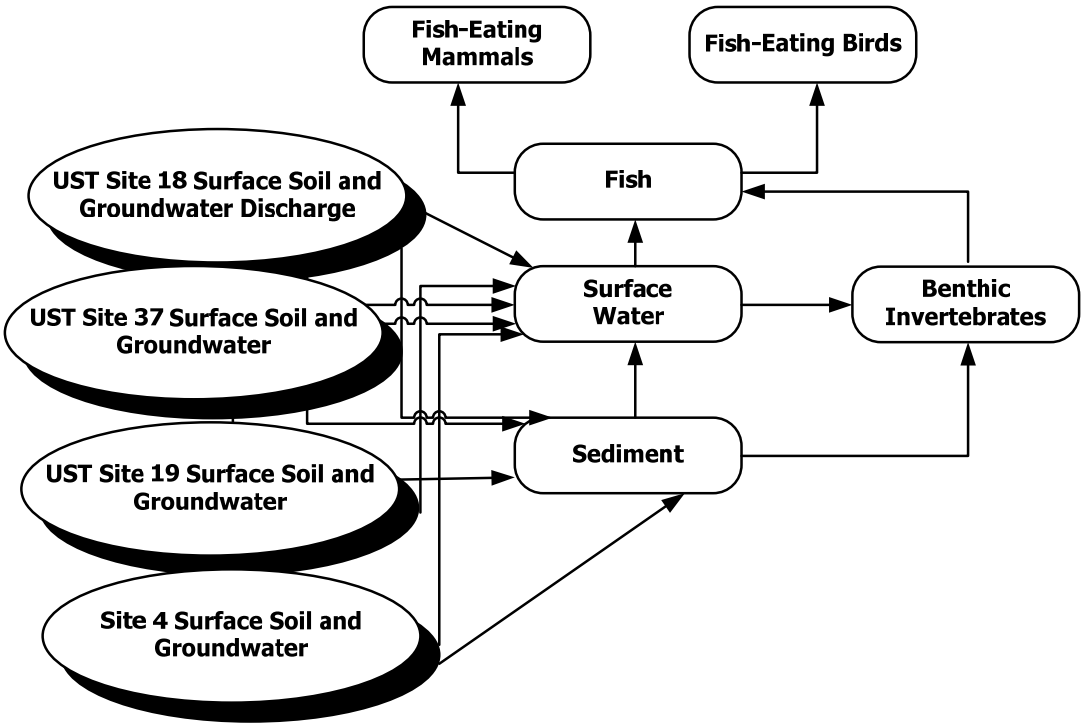
The methods used in the COPC refinement in the Site 41 ERA Process are detailed in Section 8. Comparison of maximum detected concentrations with refinement values are presented in Table 14-1-12. COPCs retained after refinement are presented in Table 14-1-13. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 52, aluminum and barium exceeded their Site 41 freshwater reference surface water concentrations (Table 14-1-12) and are retained as COPCs. Calcium also exceeded its reference concentration; however, it is considered an essential nutrient and is not retained.

During the Wetland 52 Phase II investigation, barium was the only constituents detected and retained in both sediment and surface water samples. Sediments had an assortment of PAHs, which are likely remnants from routine grass maintenance and runway activities. Several pesticides were also detected, many of which are very persistent and laws prohibiting product application (i.e., dieldrin) curtail their usage today.

The conceptual model below symbolizes which environmental habitats that may be impacted by Wetland 52 Phase II constituents retained during the ERA Process.

Wetland 52
Conceptual Site Model



Based on the Phase II results described above, Wetland 52 was identified as a Blue-Coded Wetland in the approved *Final RI/FS SAP Addendum* (E/A&H, 1997d), indicating that contaminants were present generally below screening values, and contaminants did not appear to be site related. Blue-Coded Wetlands were not assessed further in Phase III.

14.1.5 Wetland 52 — Human Health Risk Assessment

Wetland 52 is described in Section 14.1.1, and the HHRA is summarized below.

14.1.5.1 Site Data

Section 14.1.2 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland 52 during Phase II of the RI. Surface water and sediment data for 52 are summarized in Tables 14-1-3 and 14-1-4.

14.1.5.2 Conceptual Site Model

As described in Section 14.1.1, Wetland 52 is due south of Site 19 and encompasses approximately 100 acres of land directly south of Forrest Sherman Field. Because Wetland 52 is located in a restricted area of the base, the wetland is only accessible to Navy personnel. Trespassing is restricted and enforced by the homeland security act.

Wetland 52 is intermittently flooded, so surface water contact was assessed for maintenance worker scenario. Sediment locations are inundated all year at some locations, preventing significant sediment exposure. However, sediment dries at other locations within this wetland where exposure could be similar to soil exposure. Contact with sediment was assessed for all sediment locations within these wetlands. Although water depths support habitat for freshwater game fish species, enforcement of homeland security restrictions prevents fishing by trespassers. Consequently, fish tissue ingestion pathways were excluded.

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

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

14.1.5.3 Risk Characterization

The adult maintenance worker scenario for surface water and sediment were assessed for this wetland as described in Section 9.

Phase II Data

Maintenance Worker

As shown in Tables 14-1-14 through 14-1-16, 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 14-1-17 through 14-1-19, 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 52 Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	1.96E-03	6.18E-07
	Surface water	2.41E-03	N/A

Based on Phase II data, no COCs for Wetland 52 were identified.

Wetland 52 HHRA COC Summary

No COCs were identified in the HHRA for Wetland 52.

14.1.6 Wetland 52 — Fate and Transport Analysis

The wetland actually is comprised of a number of shallow but widespread wetland environments, and contains sub-wetlands A, B, C, D, and E (see Figure 14-1). Six sediment and two surface water samples collected from this wetland were used to evaluate the transport pathways. The wetland occupies an area south of the southern end of the north-south trending Forrest Sherman runway. Flow within the wetland is complex, and is expected to be generally west to east, and north to south from A, B, and C to D. Flow in the western portion of the wetland is expected to exit the system to the south into Wetland 55. Flow in the eastern portion of the complex, including an eastern portion of 52D and 52E, especially in the northern sector, is expected to flow east and exits the system into Wetland 56. In the southern sector, flow is expected to be more complex, and is possibly to the south.

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Tables 14-1-8 and 14-1-13. Provided below are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis; these wells and borings are associated with the southern end of UST Site 18.

Monitoring Wells Associated with Wetland 52: 003GGS03, 003GGR09, 003GGI03, 003GGR10, 003GGS08, 003GGR12, 003GGS04, 003GGI04, 003GGM23, 003GGR10, 003GGR13, 003GGS05, 003GGI05, 003GGR14, 003GGR15, 003GGS09, 003GGS06, 003GGR16, 003GGI06, 003GGR17, 003GGM24, 003GGS16, 003GGM24, 003GGR18, 003GGS15, 003GGS14, 003GGR11, 003GGS13, 003GGS12, 003GGR07

Borings Associated with Wetland 52: 003S0008, 003S0010, 003S0014, 003S0011, 003S0017, 003S0012, 003S0013, 003S0020, 003S0024, 003S0023, 003S0015, 003S0026, 003S0027, 003S0016, 003S0029, 003S0028

Note: These wells and borings are the same as those associated with the southern half of Wetland W1.

Surface Water/Sediment Transport into the Wetlands Media:

Surface Water — 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 water drainage to this wetland is from the southern area of Forrest Sherman Field, and in particular the southernmost portion of the north-south runway (including drainage from UST Site 18; borings and wells from this site were evaluated as to potential impacts to the wetland).

Sediment — Based on surface soil data from the associated borings, the storm water to wetland sediment pathway is valid and significant for selenium and barium.

Groundwater Discharge into the Wetland Media:

Surface Water — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway is validated and significant for the following parameters:

Phase II
Aluminum
Barium

Sediment — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway is valid and significant for the following parameters:

Phase II
Selenium
Barium
4-methylphenol

Surface Water/Sediment Transport within the Wetlands:

To evaluate these pathways in Wetland 52, flow regimes were separated into a western side (upgradient sediment location 041M52A1, and downgradient sediment locations 041M52D1 and 041M52E2) and an eastern side (upgradient sediment location 041M52E3 and downgradient

location 041M52E1). The two surface water samples collected are both from upgradient positions and are not conducive to evaluating the surface water pathway.

Sediment — Western Side: Evaluation of Wetland 52 upgradient location 041M52A1 with downgradient location 041M52D1 indicates a decrease in detected parameters (15 metals/seven organics versus 14 metals/five organics respectively). Upgradient to downgradient, there was a marked decrease in TOC. For the metals, in the downgradient location compared to the upgradient, 11 exhibited a decrease, one remained the same, and two were present downgradient but were not detected upgradient. For the organics, five present in the downgradient location were not detected in the upgradient location; the organics detected consisted of pesticides, a PCB and a phthalate.

Evaluation of upgradient location 041M52D1 with downgradient location 041M52E2 indicates an increase in detected parameters (14 metals/five organics versus 15 metals/eight organics respectively). There was marked increase in TOC downgradient. From upgradient to downgradient, for metals, there was a marked increase in concentration — 14 increased, and one was not detected in the upgradient location; for organics there was only a moderate increase in concentrations with no general trend — two increased, two decreased, and four were not detected in the upgradient. Organics included pesticides, VOCs and SVOCs, which are likely derived from runoff from Forrest Sherman Field, and potentially from UST Site 18 (located to the north of the wetland) runoff and groundwater discharge; the detected phtathlates may be laboratory artifacts.

Sediment — Eastern Side: For the purpose of this evaluation, flow within the wetland was assumed southeasterly. Evaluation of Wetland 52 upgradient location 041M52E3 with downgradient location 041M52E1 indicates detections of 16 metals/15 organics in the upgradient location versus 15 metals/16 organics in the downgradient. Upgradient to downgradient, there was an increase TOC; for the metals, eight exhibited a decrease, six exhibited an increase, and one was not detected in the upgradient location; for the organics, 12 were present in the downgradient locations that were not detected in the upgradient, and four exhibited an increase. In general, the majority of organics detected in both consisted of pesticides and BAP equivalents, indicative of application residue and runoff from asphalt surfaces and/or incomplete combustion byproducts — all consistent with runoff from Sherman Field.

Table 14-1-1
Wetland 52 Phase II
Sediment Physical Parameters

Parameter	041M52A101	041M52D101	041M52E101	041M52E201	041M52E301
TOC (%)	46.8	5.25	2.28	22.1	0.68
Percent Solids (%)	11.5	46.7	53.4	12.2	69.7
Grain Size Analysis (percent of composition[1])					
Medium Sand	10	11	12	11	21
Fine Sand	5	72	77	66	71
Silt and Clay	85	17	11	23	8
Description	Black Organic Silt	Black Silty Sand With Organics	Black Silty Sand with Organics	Black Silty Sand with Organics	Brown Sand with Silt and Organics

Note:
[1] — Derived from sieve analyses.

Table 14-1-2
Wetland 52 Phase II
Surface Water Physical Parameters

Parameter	041W52A101	041W52E301
Hardness as CaCO3 (mg/L)	5.8	30.4
pH	4.63	5.86
Specific Conductivity (mS/cm)	0.052	0.063
Turbidity (NTU)	65	27
Salinity (%)	0	0

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

Table 14-1-3
Wetland 52 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	5	5	667.0	6,230.0	3,060.0	041M52A101
Arsenic	6.620	0	1	5	0.310	0.310	0.272	041M52E301
Barium	14.0	2	5	5	2.20	43.30	15.0	041M52A101
Beryllium	0.840	0	1	5	0.680	0.680	0.205	041M52A101
Calcium	10,756.670	0	5	5	526.0	3,670.0	1,900.0	041M52E201
Chromium	39.370	0	5	5	1.20	6.70	3.320	041M52E201
Cobalt	2.80	0	3	5	0.210	1.40	0.478	041M52A101
Copper	19.50	0	5	5	0.920	6.40	2.980	041M52E201
Iron	11,911.670	0	5	5	361.0	2,300.0	1,160.0	041M52E201
Lead	82.470	0	5	5	2.60	17.70	7.360	041M52E201
Magnesium	7,513.330	0	5	5	110.0	1,280.0	613.0	041M52A101
Manganese	37.970	0	5	5	2.0	15.80	9.080	041M52A101
Nickel	9.280	0	4	5	0.990	5.20	2.270	041M52E201
Potassium	1,628.670	0	5	5	22.20	160.0	80.50	041M52E201
Selenium	3.450	1	4	5	0.730	10.20	2.990	041M52A101
Sodium	18,993.330	0	3	5	61.10	169.0	78.40	041M52E201
Vanadium	28.670	0	5	5	1.10	6.60	4.10	041M52A101
Zinc	36.730	0	4	5	3.20	25.50	9.110	041M52E301
PAHs (µg/kg)								
2-Methylnaphthalene	N/A	0	1	5	50.0	50.0	59.40	041M52E301
Acenaphthene	N/A	0	1	5	77.0	77.0	39.30	041M52E301
Anthracene	N/A	0	1	5	100.0	100.0	69.40	041M52E301
Benzo(a)anthracene	N/A	0	2	5	26.0	100.0	69.40	041M52E101
Benzo(a)pyrene	N/A	0	1	5	64.0	64.0	61.80	041M52E101
Chrysene	N/A	0	1	5	130.0	130.0	75.0	041M52E101
Fluoranthene	N/A	0	2	5	130.0	140.0	98.20	041M52E101
Fluorene	N/A	0	1	5	94.0	94.0	42.70	041M52E301
Naphthalene	N/A	0	1	5	100.0	100.0	69.40	041M52E301
Phenanthrene	N/A	0	1	5	240.0	240.0	97.40	041M52E301
Pyrene	N/A	0	2	5	82.0	140.0	88.60	041M52E101
Total PAHs	N/A	0	2	5	755.0	995.0	879.0	041M52E301
Pesticides and PCBs (µg/kg)								
Aroclor-1260	N/A	0	2	5	3.30	3.70	3.30	041M52D101
Total PCBs	N/A	0	2	5	18.70	19.050	22.80	041M52E201
Aldrin	N/A	0	1	5	2.80	2.80	0.628	041M52A101
Dieldrin	N/A	0	1	5	9.50	9.50	2.040	041M52A101
Endosulfan I	N/A	0	2	5	0.390	5.70	1.270	041M52A101
Endosulfan sulfate	N/A	0	1	5	1.20	1.20	0.494	041M52E301
alpha-Chlordane	N/A	0	1	5	0.340	0.340	0.183	041M52E201
gamma-Chlordane	N/A	0	1	5	0.910	0.910	0.250	041M52A101
Total Chlordane	N/A	0	2	5	0.450	1.255	0.433	041M52A101
Endrin	N/A	0	2	5	1.70	2.40	1.010	041M52D101
Total Endrin	N/A	0	2	5	2.150	2.830	1.570	041M52D101
alpha-BHC	N/A	0	1	5	0.140	0.140	0.153	041M52E301
delta-BHC	N/A	0	1	5	0.610	0.610	0.238	041M52D101
gamma-BHC (Lindane)	N/A	0	1	5	0.430	0.430	0.210	041M52E101
Total BHC	N/A	0	3	5	0.320	0.925	0.738	041M52D101
4,4'-DDD	50.0	0	3	5	0.450	6.10	1.580	041M52E101
4,4'-DDE	40.0	0	1	5	7.0	7.0	1.650	041M52E101
4,4'-DDT	20.0	0	1	5	1.30	1.30	0.512	041M52E101
Total DDT	110.0	0	3	5	0.880	14.40	3.740	041M52E101
SVOCs (µg/kg)								
4-Methylphenol (p-Cresol)	N/A	0	2	5	110.0	170.0	458.0	041M52E101
Benzo(b)fluoranthene	N/A	0	1	5	190.0	190.0	87.0	041M52E101
Benzo(g,h,i)perylene	N/A	0	1	5	45.0	45.0	58.0	041M52E101
Benzo(k)fluoranthene	N/A	0	1	5	61.0	61.0	61.20	041M52E101
bis(2-Ethylhexyl)phthalate (BEHP)	N/A	0	5	5	50.0	360.0	192.0	041M52A101
Carbazole	N/A	0	1	5	45.0	45.0	503.0	041M52E301
Dibenzofuran	N/A	0	1	5	72.0	72.0	508.0	041M52E301
Di-n-butylphthalate	N/A	0	3	5	49.0	150.0	185.0	041M52A101
Indeno(1,2,3-cd)pyrene	N/A	0	1	5	51.0	51.0	59.20	041M52E101
VOCs (µg/kg)								
Acetone	N/A	0	1	5	1,300.0	1,300.0	291.0	041M52A101
Toluene	N/A	0	1	5	21.0	21.0	16.0	041M52E201

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

Table 14-1-4
Wetland 52 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	1	2	2	116.0	2,580.0	1,350.0	041W52E301
Barium	3.68	2	2	2	4.9	6.6	5.75	041W52A101
Calcium	7,675.0	1	2	2	808.0	10,800.0	5,800.0	041W52E301
Copper	4.0	1	1	2	6.4	6.4	6.4	041W52A101
Iron	2,360.0	0	1	2	1,220.0	1,220.0	1,220.0	041W52E301
Magnesium	20,260.0	0	2	2	854.0	912.0	883.0	041W52A101
Manganese	13.2	0	2	2	8.2	10.5	9.35	041W52A101
Potassium	6,995.0	0	2	2	349.0	589.0	469.0	041W52A101
Sodium	182,200.0	0	2	2	2,670.0	5,260.0	3,970.0	041W52A101
Vanadium	4.7	0	1	2	2.7	2.7	2.7	041W52E301
Zinc	5.53	1	1	2	12.4	12.4	12.4	041W52E301

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

Table 14-1-5
Wetland 52 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	5	5			667	6,230	041M52A101	6,230			N/A		Yes	No SV
Antimony	0	5	0.075	2.1			ND	2.1	UJ	12	2	0.18	No	Max SQL< SV
Arsenic	1	5	0.09	0.43	0.31	0.31	041M52E301	0.31	J	7.24	1, 2	0.04	No	Max Detect < SV
Barium	5	5			2.2	43.3	041M52A101	43.3	J		N/A		Yes	No SV
Beryllium	1	5	0.035	0.21	0.68	0.68	041M52A101	0.68	J		N/A		Yes	No SV
Cadmium	0	5	0.075	0.43			ND	0.43	U	0.676	1	0.64	No	Max SQL< SV
Calcium	5	5			526	3,670	041M52E201	3,670			N/A		Yes	No SV
Chromium	5	5			1.2	6.7	041M52E201	6.7		52.3	1, 2	0.13	No	Max Detect < SV
Cobalt	3	5	0.11	0.42	0.21	1.4	041M52A101	1.4	J		N/A		Yes	No SV
Copper	5	5			0.92	6.4	041M52E201	6.4	J	18.7	1, 2	0.34	No	Max Detect < SV
Cyanide (CN)	0	5	0.35	2.1			ND	2.1	U		N/A		Yes	No SV
Iron	5	5			361	2,300	041M52E201	2,300			N/A		Yes	No SV
Lead	5	5			2.6	17.7	041M52E201	17.7		30.2	1, 2	0.59	No	Max Detect < SV
Magnesium	5	5			110	1,280	041M52A101	1,280	J		N/A		Yes	No SV
Manganese	5	5			2	15.8	041M52A101	15.8			N/A		Yes	No SV
Mercury	0	5	0.03	0.19			ND	0.19	U	0.13	1, 2	1.46	Yes	Max SQL > SV
Nickel	4	5	1.95	1.95	0.99	5.2	041M52E201	5.2	J	15.9	1, 2	0.33	No	Max Detect < SV
Potassium	5	5			22.2	160	041M52E201	160	J		N/A		Yes	No SV
Selenium	4	5	0.185	0.185	0.73	10.2	041M52A101	10.2	J		N/A		Yes	No SV
Silver	0	5	0.185	1.1			ND	1.1	U	0.733	1	1.5	Yes	Max SQL > SV
Sodium	3	5	7.3	11.6	61.1	169	041M52E201	169	J		N/A		Yes	No SV
Thallium	0	5	0.15	0.85			ND	0.85	U		N/A		Yes	No SV
Vanadium	5	5			1.1	6.6	041M52A101	6.6	J		N/A		Yes	No SV
Zinc	4	5	0.85	0.85	3.2	25.5	041M52E301	25.5		124	1, 2	0.21	No	Max Detect < SV
PAHs (µg/kg)														
2-Methylnaphthalene	**1**	**5**	**26**	**135**	**50**	**50**	**041M52E301**	**50**		**20.2**	**1**	**2.48**	No	TOC Normalized PAHs<TEC
Acenaphthene	**1**	**5**	**12.5**	**65**	**77**	**77**	**041M52E301**	**77**		**6.71**	**1**	**11.5**	No	TOC Normalized PAHs<TEC
Acenaphthylene	0	5	24	135			ND	135	U	5.87	1	23	No	TOC Normalized PAHs<TEC
Anthracene	**1**	**5**	**26**	**135**	**100**	**100**	**041M52E301**	**100**		**46.9**	**1**	**2.13**	No	TOC Normalized PAHs<TEC
Benzo(a)anthracene	**2**	**5**	**42**	**135**	**26**	**100**	**041M52E101**	**100**		**74.8**	**1**	**1.34**	No	TOC Normalized PAHs<TEC
Benzo(a)pyrene	1	5	24	135	64	64	041M52E101	64		88.8	1	0.72	No	TOC Normalized PAHs<TEC
Chrysene	**1**	**5**	**24**	**135**	**130**	**130**	**041M52E101**	**130**		**108**	**1**	**1.2**	No	TOC Normalized PAHs<TEC
Dibenz(a,h)anthracene	0	5	24	135			ND	135	U	6.22	1	21.7	No	TOC Normalized PAHs<TEC
Fluoranthene	**2**	**5**	**42**	**135**	**130**	**140**	**041M52E101**	**140**		**113**	**1**	**1.24**	No	TOC Normalized PAHs<TEC
Fluorene	**1**	**5**	**12.5**	**65**	**94**	**94**	**041M52E301**	**94**		**21.2**	**1**	**4.43**	No	TOC Normalized PAHs<TEC
Naphthalene	**1**	**5**	**26**	**135**	**100**	**100**	**041M52E301**	**100**		**34.6**	**1**	**2.89**	No	TOC Normalized PAHs<TEC
Phenanthrene	**1**	**5**	**26**	**135**	**240**	**240**	**041M52E301**	**240**		**86.7**	**1**	**2.77**	No	TOC Normalized PAHs<TEC
Pyrene	2	5	42	135	82	140	041M52E101	140		153	1	0.92	No	TOC Normalized PAHs<TEC
Total PAHs	2	5	503	1,620	755	995	041M52E301	995		1,684	1, 2	0.59	No	TOC Normalized PAHs<TEC
TOC Normalized PAHs	2	5	2.38	9.58	33.11	146.32	041M52E301	146.32		290	3	0.51	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	5	1.2	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1221	0	5	2.45	14			ND	14	U	67	2	0.21	No	Max SQL< SV
Aroclor-1232	0	5	1.2	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1242	0	5	1.2	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1248	0	5	1.2	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1254	0	5	1.2	7			ND	7	U	21.6	N/A	0.32	No	Max SQL< SV
Aroclor-1260	2	5	1.2	7	3.3	3.7	041M52E201	3.7	J	21.6	N/A	0.17	No	Max Detect < SV
Total PCBs	2	5	9.65	56	18.7	19.1	041M52E201	19.1		21.6	1	0.88	No	Max Detect < SV
Pesticides (µg/kg)														
Aldrin	1	5	0.06	0.11	2.8	2.8	041M52A101	2.8	J		N/A		Yes	No SV
Dieldrin	**1**	**5**	**0.12**	**0.225**	**9.5**	**9.5**	**041M52A101**	**9.5**	**J**	**0.716**	**1**	**13.3**	**Yes**	**Max Detect > SV**
Endosulfan I	2	5	0.065	0.11	0.39	5.7	041M52A101	5.7	J		N/A		Yes	No SV
Endosulfan II	0	5	0.12	0.7			ND	0.7	U		N/A		Yes	No SV
Endosulfan sulfate	1	5	0.13	0.7	1.2	1.2	041M52E301	1.2	J		N/A		Yes	No SV
Heptachlor	0	5	0.06	0.345			ND	0.345	U		N/A		Yes	No SV
Heptachlor epoxide	0	5	0.06	0.345			ND	0.345	U		N/A		Yes	No SV
Methoxychlor	0	5	0.6	3.45			ND	3.45	U		N/A		Yes	No SV
Toxaphene	0	5	12.5	70			ND	70	U		N/A		Yes	No SV
alpha-Chlordane	1	5	0.06	0.345	0.34	0.34	041M52E201	0.34	J	1.7	1	0.2	No	Max Detect < SV

Table 14-1-5
Wetland 52 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	1	5	0.06	0.11	0.91	0.91	041M52A101	0.91	J	1.7	1	0.54	No	Max Detect < SV
Total Chlordane	2	5	0.12	0.21	0.45	1.26	041M52A101	1.26		1.7	1	0.74	No	Max Detect < SV
Endrin	2	5	0.12	0.7	1.7	2.4	041M52D101	2.4	J	3.3	2	0.73	No	Max Detect < SV
Endrin aldehyde	0	5	0.12	0.7			ND	0.7	U	3.3	2	0.21	No	Max SQL< SV
Endrin ketone	0	5	0.12	0.7			ND	0.7	U	3.3	2	0.21	No	Max SQL< SV
Total Endrin	2	5	0.36	2.1	2.15	2.83	041M52D101	2.83		3.3	2	0.86	No	Max Detect < SV
alpha-BHC	1	5	0.065	0.345	0.14	0.14	041M52E301	0.14	J		N/A		Yes	No SV
beta-BHC	0	5	0.06	0.345			ND	0.345	U	0.32	N/A	1.08	Yes	Max SQL > SV
delta-BHC	**1**	**5**	**0.06**	**0.345**	**0.61**	**0.61**	**041M52D101**	**0.61**	**J**	**0.32**	**N/A**	**1.91**	**Yes**	**Max Detect > SV**
gamma-BHC (Lindane)	**1**	**5**	**0.06**	**0.345**	**0.43**	**0.43**	**041M52E101**	**0.43**	**J**	**0.32**	**1**	**1.34**	**Yes**	**Max Detect > SV**
Total BHC	**3**	**5**	**0.44**	**1.38**	**0.32**	**0.925**	**041M52E301**	**0.925**		**0.32**	**2**	**2.89**	**Yes**	**Max Detect > SV**
4,4'-DDD	**3**	**5**	**0.12**	**0.7**	**0.45**	**6.1**	**041M52E101**	**6.1**	**DJ**	**1.22**	**1**	**5**	**Yes**	**Max Detect > SV**
4,4'-DDE	**1**	**5**	**0.12**	**0.7**	**7**	**7**	**041M52E101**	**7**	**D**	**2.07**	**1**	**3.38**	**Yes**	**Max Detect > SV**
4,4'-DDT	**1**	**5**	**0.12**	**0.7**	**1.3**	**1.3**	**041M52E101**	**1.3**		**1.19**	**1**	**1.09**	**Yes**	**Max Detect > SV**
Total DDT	**3**	**5**	**0.36**	**2.1**	**0.88**	**14.4**	**041M52E101**	**14.4**		**3.3**	**2**	**4.36**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	5	240	1,350			ND	1,350	UJ		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2-Chloronaphthalene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2-Chlorophenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2-Nitroaniline	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
2-Nitrophenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
3-Nitroaniline	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
4-Chloroaniline	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	2	5	240	1,350	110	170	041M52E101	170	J		N/A		Yes	No SV
4-Nitroaniline	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
4-Nitrophenol	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
Benzo(b)fluoranthene	1	5	24	135	190	190	041M52E101	190			N/A		No	TOC Normalized PAHs<TEC
Benzo(g,h,i)perylene	1	5	24	135	45	45	041M52E101	45	J		N/A		No	TOC Normalized PAHs<TEC
Benzo(k)fluoranthene	1	5	24	135	61	61	041M52E101	61			N/A		No	TOC Normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	5	24	135			ND	135	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**5**	**5**			**50**	**360**	**041M52A101**	**360**	**J**	**182**	**1, 2**	**1.98**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	5	240	1,350			ND	1,350	U	182	1, 2	7.42	Yes	Max SQL > SV
Carbazole	1	5	260	1,350	45	45	041M52E301	45	J		N/A		Yes	No SV
Dibenzofuran	1	5	260	1,350	72	72	041M52E301	72	J		N/A		Yes	No SV
Diethylphthalate	0	5	240	1,350			ND	1,350	U	182	1, 2	7.42	Yes	Max SQL > SV
Dimethylphthalate	0	5	240	1,350			ND	1,350	U	182	1, 2	7.42	Yes	Max SQL > SV
Di-n-butylphthalate	3	5	240	420	49	150	041M52A101	150	J	182	1, 2	0.82	No	Max Detect < SV
Di-n-octylphthalate	0	5	240	1,350			ND	1,350	U	182	1, 2	7.42	Yes	Max SQL > SV
Hexachlorobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
Hexachlorobutadiene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV

Table 14-1-5
Wetland 52 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.														
Hexachloroethane	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	1	5	24	135	51	51	041M52E101	51	J		N/A		No	TOC Normalized PAHs<TEC
Isophorone	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
Nitrobenzene	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	5	24	135			ND	135	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
Pentachlorophenol	0	5	600	3,350			ND	3,350	U		N/A		Yes	No SV
Phenol	0	5	240	1,350			ND	1,350	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
1,1,2-Trichloroethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,1-Dichloroethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,1-Dichloroethene	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,2-Dichloroethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
1,2-Dichloropropane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
2-Hexanone	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Acetone	1	5	14.5	100	1,300	1,300	041M52A101	1,300			N/A		Yes	No SV
Benzene	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Bromodichloromethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Bromoform	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Bromomethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Carbon disulfide	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Chlorobenzene	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
Chloroethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Chloroform	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Chloromethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Dibromochloromethane	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Ethylbenzene	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
Methylene chloride	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Styrene	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
Tetrachloroethene	0	5	7	35.5			ND	35.5	UJ		N/A		Yes	No SV
Toluene	1	5	7	35.5	21	21	041M52E201	21	J		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Trichloroethene	0	5	7	35.5			ND	35.5	U		N/A		Yes	No SV
Vinyl chloride	0	5	2	10.5			ND	10.5	U		N/A		Yes	No SV
Xylene (Total)	0	5	7	35.5			ND	35.5	UJ		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 14-1-6
Wetland 52 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	bis(2-Ethylhexyl)phthalate (BEHP)	Toluene
Beryllium	4,4'-DDT	Carbazole	
Calcium	Aldrin	Dibenzofuran	
Cobalt	alpha-BHC		
Iron	delta-BHC		
Magnesium	Dieldrin		
Manganese	Endosulfan I		
Potassium	Endosulfan sulfate		
Selenium	gamma-BHC (Lindane)		
Sodium	Total BHC		
Vanadium	Total DDT		
		Not Detected Parameters	
Cyanide (CN)	beta-BHC	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Mercury	Endosulfan II	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Silver	Heptachlor	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Thallium	Heptachlor epoxide	1,4-Dichlorobenzene	1,1-Dichloroethane
	Methoxychlor	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Toxaphene	2,4,5-Trichlorophenol	1,2-Dichloroethane
		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-Methylphenol (o-Cresol)	Carbon disulfide
		2-Nitroaniline	Carbon tetrachloride
		2-Nitrophenol	Chlorobenzene
		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-Nitroaniline	Methylene chloride
		4-Nitrophenol	Styrene
		bis(2-Chloroethoxy)methane	Tetrachloroethene
		bis(2-Chloroethyl)ether	trans-1,3-Dichloropropene
		Butylbenzylphthalate	Trichloroethene
		Diethylphthalate	Vinyl chloride
		Dimethylphthalate	Xylene (Total)
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 14-1-7
Wetland 52 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	Number Analyzed	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																								
Aluminum	5	5				3,060	667	6,230	6,230		041M52A101			NA					0	13,610	0	5	No	EPC < RC
Barium	5	5				15	2.2	43.3	43.3	J	041M52A101			NA					0	14	2	5	Yes	EPC > RC and no RV
Beryllium	1	5	0.0863	0.035	0.21	0.205	0.68	0.68	0.68	J	041M52A101			NA					0	0.84	0	5	No	EPC < RC
Calcium	5	5				1,900	526	3,670	3,670		041M52E201			NA					0	10,756.67	0	5	No	EPC < RC
Cobalt	3	5	0.265	0.11	0.42	0.478	0.21	1.4	1.4	J	041M52A101			NA					0	2.8	0	5	No	EPC < RC
Cyanide (CN)	0	5	1.1	0.35	2.1	1.1			2.1	U	ND			NA					0	5.22	0	5	No	Parameter Not Detected
Iron	5	5				1,160	361	2,300	2,300		041M52E201			NA					0	11,911.67	0	5	No	EPC < RC
Magnesium	5	5				613	110	1,280	1,280	J	041M52A101			NA					0	7,513.33	0	5	No	EPC < RC
Manganese	5	5				9.08	2	15.8	15.8		041M52A101			NA					0	37.97	0	5	No	EPC < RC
Mercury	0	5	0.099	0.03	0.19	0.099			0.19	U	ND	0.13	0.696	PEL	1.46	0.76	0.27	0.14	0	0.55	0	5	No	Parameter Not Detected
Potassium	5	5				80.5	22.2	160	160	J	041M52E201			NA					0	1,628.67	0	5	No	EPC < RC
Selenium	4	5	0.185	0.185	0.185	2.99	0.73	10.2	10.2	J	041M52A101			NA					0	3.45	0	5	Yes	EPC > RC and no RV
Silver	0	5	0.568	0.185	1.1	0.568			1.1	U	ND	0.73	2	PEL	1.51	0.78	0.55	0.28	0	2.1	0	5	No	Parameter Not Detected
Sodium	3	5	9.45	7.3	11.6	78.4	61.1	169	169	J	041M52E201			NA					0	18,993.33	0	5	No	EPC < RC
Thallium	0	5	0.451	0.15	0.85	0.451			0.85	U	ND			NA					0	1.57	0	5	No	Parameter Not Detected
Vanadium	5	5				4.1	1.1	6.6	6.6	J	041M52A101			NA					0	28.67	0	5	No	EPC < RC
PCBs (µg/kg)																								
Aroclor-1016	0	5	2.78	1.2	7	2.78			7	U	ND	21.6	189	PEL	0.32	0.13	0.04	0.01	0		0	5	No	Parameter Not Detected
Aroclor-1221	0	5	5.57	2.45	14	5.57			14	U	ND	67	189	PEL	0.21	0.08	0.07	0.03	0		0	5	No	Parameter Not Detected
Aroclor-1232	0	5	2.78	1.2	7	2.78			7	U	ND	21.6	189	PEL	0.32	0.13	0.04	0.01	0		0	5	No	Parameter Not Detected
Aroclor-1242	0	5	2.78	1.2	7	2.78			7	U	ND	21.6	189	PEL	0.32	0.13	0.04	0.01	0		0	5	No	Parameter Not Detected
Aroclor-1248	0	5	2.78	1.2	7	2.78			7	U	ND	21.6	189	PEL	0.32	0.13	0.04	0.01	0		0	5	No	Parameter Not Detected
Aroclor-1254	0	5	2.78	1.2	7	2.78			7	U	ND	21.6	189	PEL	0.32	0.13	0.04	0.01	0		0	5	No	Parameter Not Detected
Aroclor-1260	2	5	3.17	1.2	7	3.3	3.3	3.7	3.7	J	041M52E201	21.6	189	PEL	0.17	0.15	0.02	0.02	0		0	5	No	RV HQ <1 and no RC
Total PCBs	2	5	25.4	9.65	56	22.8	18.7	19.1	19.1		041M52E201	21.6	189	PEL	0.88	1.05	0.10	0.12	0		0	**5**	No	RV HQ <1 and no RC
Pesticides (µg/kg)																								
Aldrin	1	5	0.085	0.06	0.11	0.628	2.8	2.8	2.8	J	041M52A101			NA					0		0	5	Yes	No SV, no RV, and no RC
Dieldrin	**1**	**5**	**0.172**	**0.12**	**0.225**	**2.04**	**9.5**	**9.5**	**9.5**	**J**	**041M52A101**	**0.72**	**4.3**	**PEL**	**13.3**	**2.85**	**2.21**	**0.47**	**1**		**0**	5	**Yes**	**RV HQ > 1 and no RC**
Endosulfan I	2	5	0.0933	0.065	0.11	1.27	0.39	5.7	5.7	J	041M52A101			NA					0		0	5	Yes	No SV, no RV, and no RC
Endosulfan II	0	5	0.278	0.12	0.7	0.278			0.7	U	ND			NA					0		0	5	No	Parameter Not Detected
Endosulfan sulfate	1	5	0.318	0.13	0.7	0.494	1.2	1.2	1.2	J	041M52E301			NA					0		0	5	Yes	No SV, no RV, and no RC
Heptachlor	0	5	0.137	0.06	0.345	0.137			0.345	U	ND			NA					0		0	5	No	Parameter Not Detected
Heptachlor epoxide	0	5	0.137	0.06	0.345	0.137			0.345	U	ND			NA					0		0	5	No	Parameter Not Detected
Methoxychlor	0	5	1.37	0.6	3.45	1.37			3.45	U	ND			NA					0		0	5	No	Parameter Not Detected
Toxaphene	0	5	28.1	12.5	70	28.1			70	U	ND			NA					0		0	5	No	Parameter Not Detected
alpha-BHC	1	5	0.156	0.065	0.345	0.153	0.14	0.14	0.14	J	041M52E301		0.99	PEL			0.14	0.16	0		0	5	No	RV HQ <1 and no RC
beta-BHC	0	5	0.137	0.06	0.345	0.137			0.345	U	ND	0.32	0.99	PEL	1.08	0.43	0.35	0.14	0		0	5	No	Parameter Not Detected
delta-BHC	1	5	0.145	0.06	0.345	0.238	0.61	0.61	0.61	J	041M52D101	0.32	0.99	PEL	1.91	0.74	0.62	0.24	0		0	5	No	RV HQ <1 and no RC
gamma-BHC (Lindane)	1	5	0.155	0.06	0.345	0.21	0.43	0.43	0.43	J	041M52E101	0.32	0.99	PEL	1.34	0.66	0.43	0.21	0		0	5	No	RV HQ <1 and no RC
Total BHC	3	5	0.91	0.44	1.38	0.738	0.32	0.925	0.925		041M52E301	0.32	0.99	PEL	2.89	2.31	0.93	0.75	0		0	**5**	No	RV HQ <1 and no RC
4,4'-DDD	3	5	0.41	0.12	0.7	1.58	0.45	6.1	6.1	DJ	041M52E101	1.22	7.81	PEL	5	1.29	0.78	0.20	0	50	0	5	No	EPC < RC and RV
4,4'-DDE	1	5	0.315	0.12	0.7	1.65	7	7	7	D	041M52E101	2.07	374	PEL	3.38	0.80	0.02	0.00	0	40	0	5	No	EPC < RC and RV
4,4'-DDT	1	5	0.315	0.12	0.7	0.512	1.3	1.3	1.3		041M52E101	1.19	4.77	PEL	1.09	0.43	0.27	0.11	0	20	0	5	No	EPC < RC and RV
Total DDT	3	5	1.23	0.36	2.1	3.74	0.88	14.4	14.4		041M52E101	3.3	51.7	PEL	4.36	1.13	0.28	0.07	0	110	0	**5**	No	EPC < RC and RV
SVOCs (µg/kg)																								
1,2,4-Trichlorobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
1,2-Dichlorobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
1,3-Dichlorobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
1,4-Dichlorobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	5	542	240	1,350	542			1,350	UJ	ND			NA					0		0	5	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,4-Dichlorophenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,4-Dimethylphenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,4-Dinitrophenol	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,4-Dinitrotoluene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2,6-Dinitrotoluene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Chloronaphthalene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Chlorophenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Nitroaniline	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Nitrophenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
3-Nitroaniline	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Chloroaniline	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	2	5	670	240	1,350	458	110	170	170	J	041M52E101			NA					0		0	5	Yes	No SV, no RV, and no RC
4-Nitroaniline	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
4-Nitrophenol	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	5	54	24	135	54			135	U	ND			NA					0		0	5	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	5	5				192	50	360	360	J	041M52A101	182	2,647	PEL	1.98	1.05	0.14	0.07	0		0	5	No	RV HQ <1 and no RC
Butylbenzylphthalate	0	5	542	240	1,350	542			1,350	U	ND	182	2,647	PEL	7.42	2.98	0.51	0.21	0		0	5	No	Parameter Not Detected
Carbazole	1	5	618	260	1,350	503	45	45	45	J	041M52E301			NA					0		0	5	Yes	No SV, no RV, and no RC
Dibenzofuran	1	5	618	260	1,350	508	72	72	72	J	041M52E301			NA					0		0	5	Yes	No SV, no RV, and no RC
Diethylphthalate	0	5	542	240	1,350	542			1,350	U	ND	182	2,647	PEL	7.42	2.98	0.51	0.21	0		0	5	No	Parameter Not Detected
Dimethylphthalate	0	5	542	240	1,350	542			1,350	U	ND	182	2,647	PEL	7.42	2.98	0.51	0.21	0		0	5	No	Parameter Not Detected
Di-n-octylphthalate	0	5	542	240	1,350	542			1,350	U	ND	182	2,647	PEL	7.42	2.98	0.51	0.21	0		0	5	No	Parameter Not Detected
Hexachlorobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected

Table 14-1-7
Wetland 52 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	Number Analyzed	COPC Retained (Y/N)	Rationale
SVOCs (µg/kg) - cont.																								
Hexachlorobutadiene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Hexachloroethane	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Isophorone	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Nitrobenzene	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	5	54.2	24	135	54.2			135	U	ND			NA					0		0	5	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Pentachlorophenol	0	5	1,330	600	3,350	1,330			3,350	U	ND			NA					0		0	5	No	Parameter Not Detected
Phenol	0	5	542	240	1,350	542			1,350	U	ND			NA					0		0	5	No	Parameter Not Detected
VOCs (µg/kg)																								
1,1,1-Trichloroethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
1,1,2-Trichloroethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,1-Dichloroethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,1-Dichloroethene	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,2-Dichloroethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
1,2-Dichloropropane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Butanone (MEK)	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
2-Hexanone	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Acetone	1	5	39	14.5	100	291	1,300	1,300	1,300		041M52A101			NA					0		0	5	Yes	No SV, no RV, and no RC
Benzene	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Bromodichloromethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Bromoform	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Bromomethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Carbon disulfide	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Carbon tetrachloride	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Chlorobenzene	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
Chloroethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Chloroform	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Chloromethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Dibromochloromethane	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Ethylbenzene	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
Methylene chloride	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Styrene	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
Tetrachloroethene	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected
Toluene	1	5	14.8	7	35.5	16	21	21	21	J	041M52E201			NA					0		0	5	Yes	No SV, no RV, and no RC
trans-1,3-Dichloropropene	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Trichloroethene	0	5	16.3	7	35.5	16.3			35.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Vinyl chloride	0	5	4.9	2	10.5	4.9			10.5	U	ND			NA					0		0	5	No	Parameter Not Detected
Xylene (Total)	0	5	16.3	7	35.5	16.3			35.5	UJ	ND			NA					0		0	5	No	Parameter Not Detected

Notes:

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

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
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 base wide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT.

Table 14-1-8
Wetland 52 Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Aldrin	4-Methylphenol (p-Cresol)	None
Selenium	Dieldrin	Carbazole	
	Endosulfan I	Dibenzofuran	
	Endosulfan sulfate		

Table 14-1-9
Wetland 52 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M52A101	1/23/1996	mg/kg	0.43	U	Arsenic	8.2	70	0.01
041M52A101	1/23/1996	mg/kg	0.43	U	Cadmium	1.2	9.6	0.04
041M52A101	1/23/1996	mg/kg	4.2	J	Chromium	81	370	0.01
041M52A101	1/23/1996	mg/kg	3.9	J	Copper	34	270	0.01
041M52A101	1/23/1996	mg/kg	7.1		Lead	46.7	218	0.03
041M52A101	1/23/1996	mg/kg	0.19	U	Mercury	0.15	0.71	0.27
041M52A101	1/23/1996	mg/kg	1.95	U	Nickel	20.9	51.6	0.04
041M52A101	1/23/1996	mg/kg	1.1	U	Silver	1	3.7	0.30
041M52A101	1/23/1996	mg/kg	0.85	U	Zinc	150	410	0.00
041M52A101	1/23/1996	µg/kg	0.7	U	4,4'-DDE	2.2	27	0.03
041M52A101	1/23/1996	µg/kg	0.7	U	4,4'-DDT	1.58	46.1	0.02
041M52A101	1/23/1996	µg/kg	56	U	Total PCBs	22.7	180	0.31
041M52A101	1/23/1996	µg/kg	135	U	2-Methylnaphthalene	70	670	0.20
041M52A101	1/23/1996	µg/kg	65	U	Acenaphthene	16	500	0.13
041M52A101	1/23/1996	µg/kg	135	U	Acenaphthylene	44	640	0.21
041M52A101	1/23/1996	µg/kg	135	U	Anthracene	85.3	1,100	0.12
041M52A101	1/23/1996	µg/kg	135	U	Benzo(a)anthracene	261	1,600	0.08
041M52A101	1/23/1996	µg/kg	135	U	Benzo(a)pyrene	430	1,600	0.08
041M52A101	1/23/1996	µg/kg	135	U	Chrysene	384	2,800	0.05
041M52A101	1/23/1996	µg/kg	135	U	Dibenz(a,h)anthracene	63.4	260	0.52
041M52A101	1/23/1996	µg/kg	135	U	Fluoranthene	600	5,100	0.03
041M52A101	1/23/1996	µg/kg	65	U	Fluorene	19	540	0.12
041M52A101	1/23/1996	µg/kg	135	U	Naphthalene	160	2,100	0.06
041M52A101	1/23/1996	µg/kg	135	U	Phenanthrene	240	1,500	0.09
041M52A101	1/23/1996	µg/kg	135	U	Pyrene	665	2,600	0.05
041M52A101	1/23/1996				ERM Quotient Sum			2.82
041M52A101	1/23/1996				Mean ERM Quotient			0.11
041M52A101	1/23/1996				Mean ERM Quotient without ND			0.00
041M52A101	1/23/1996				Mean ERM Quotient Category			1
041M52D101	1/23/1996	mg/kg	0.11	U	Arsenic	8.2	70	0.00
041M52D101	1/23/1996	mg/kg	0.11	U	Cadmium	1.2	9.6	0.01
041M52D101	1/23/1996	mg/kg	1.2		Chromium	81	370	0.00
041M52D101	1/23/1996	mg/kg	0.92	J	Copper	34	270	0.00
041M52D101	1/23/1996	mg/kg	3.7		Lead	46.7	218	0.02
041M52D101	1/23/1996	mg/kg	0.05	U	Mercury	0.15	0.71	0.07
041M52D101	1/23/1996	mg/kg	1.6	J	Nickel	20.9	51.6	0.03
041M52D101	1/23/1996	mg/kg	0.275	U	Silver	1	3.7	0.07
041M52D101	1/23/1996	mg/kg	3.2		Zinc	150	410	0.01
041M52D101	1/23/1996	µg/kg	0.215	U	4,4'-DDE	2.2	27	0.01
041M52D101	1/23/1996	µg/kg	0.215	U	4,4'-DDT	1.58	46.1	0.00
041M52D101	1/23/1996	µg/kg	18.7		Total PCBs	22.7	180	0.10
041M52D101	1/23/1996	µg/kg	42	U	2-Methylnaphthalene	70	670	0.06
041M52D101	1/23/1996	µg/kg	20.5	U	Acenaphthene	16	500	0.04
041M52D101	1/23/1996	µg/kg	42	U	Acenaphthylene	44	640	0.07
041M52D101	1/23/1996	µg/kg	42	U	Anthracene	85.3	1,100	0.04
041M52D101	1/23/1996	µg/kg	42	U	Benzo(a)anthracene	261	1,600	0.03
041M52D101	1/23/1996	µg/kg	42	U	Benzo(a)pyrene	430	1,600	0.03
041M52D101	1/23/1996	µg/kg	42	U	Chrysene	384	2,800	0.02
041M52D101	1/23/1996	µg/kg	42	U	Dibenz(a,h)anthracene	63.4	260	0.16
041M52D101	1/23/1996	µg/kg	42	U	Fluoranthene	600	5,100	0.01
041M52D101	1/23/1996	µg/kg	20.5	U	Fluorene	19	540	0.04
041M52D101	1/23/1996	µg/kg	42	U	Naphthalene	160	2,100	0.02
041M52D101	1/23/1996	µg/kg	42	U	Phenanthrene	240	1,500	0.03
041M52D101	1/23/1996	µg/kg	42	U	Pyrene	665	2,600	0.02
041M52D101	1/23/1996				ERM Quotient Sum			0.88
041M52D101	1/23/1996				Mean ERM Quotient			0.04
041M52D101	1/23/1996				Mean ERM Quotient without ND			0.01
041M52D101	1/23/1996				Mean ERM Quotient Category			1
041M52E101	1/23/1996	mg/kg	0.09	U	Arsenic	8.2	70	0.00
041M52E101	1/23/1996	mg/kg	0.09	U	Cadmium	1.2	9.6	0.01
041M52E101	1/23/1996	mg/kg	1.6		Chromium	81	370	0.00
041M52E101	1/23/1996	mg/kg	2	J	Copper	34	270	0.01
041M52E101	1/23/1996	mg/kg	5.7		Lead	46.7	218	0.03
041M52E101	1/23/1996	mg/kg	0.04	U	Mercury	0.15	0.71	0.06
041M52E101	1/23/1996	mg/kg	0.99	J	Nickel	20.9	51.6	0.02
041M52E101	1/23/1996	mg/kg	0.23	U	Silver	1	3.7	0.06
041M52E101	1/23/1996	mg/kg	5.3		Zinc	150	410	0.01
041M52E101	1/23/1996	µg/kg	7	D	4,4'-DDE	2.2	27	0.26
041M52E101	1/23/1996	µg/kg	1.3		4,4'-DDT	1.58	46.1	0.03
041M52E101	1/23/1996	µg/kg	10.45	U	Total PCBs	22.7	180	0.06
041M52E101	1/23/1996	µg/kg	26	U	2-Methylnaphthalene	70	670	0.04
041M52E101	1/23/1996	µg/kg	12.5	U	Acenaphthene	16	500	0.03
041M52E101	1/23/1996	µg/kg	26	U	Acenaphthylene	44	640	0.04
041M52E101	1/23/1996	µg/kg	26	U	Anthracene	85.3	1,100	0.02
041M52E101	1/23/1996	µg/kg	100		Benzo(a)anthracene	261	1,600	0.06
041M52E101	1/23/1996	µg/kg	64		Benzo(a)pyrene	430	1,600	0.04
041M52E101	1/23/1996	µg/kg	130		Chrysene	384	2,800	0.05
041M52E101	1/23/1996	µg/kg	26	U	Dibenz(a,h)anthracene	63.4	260	0.10
041M52E101	1/23/1996	µg/kg	140		Fluoranthene	600	5,100	0.03
041M52E101	1/23/1996	µg/kg	12.5	U	Fluorene	19	540	0.02
041M52E101	1/23/1996	µg/kg	26	U	Naphthalene	160	2,100	0.01
041M52E101	1/23/1996	µg/kg	26	U	Phenanthrene	240	1,500	0.02
041M52E101	1/23/1996	µg/kg	140		Pyrene	665	2,600	0.05
041M52E101	1/23/1996				ERM Quotient Sum			1.06
041M52E101	1/23/1996				Mean ERM Quotient			0.04
041M52E101	1/23/1996				Mean ERM Quotient without ND			0.02
041M52E101	1/23/1996				Mean ERM Quotient Category			2
041M52E201	1/23/1996	mg/kg	0.42	U	Arsenic	8.2	70	0.01
041M52E201	1/23/1996	mg/kg	0.42	U	Cadmium	1.2	9.6	0.04
041M52E201	1/23/1996	mg/kg	6.7		Chromium	81	370	0.02
041M52E201	1/23/1996	mg/kg	6.4	J	Copper	34	270	0.02
041M52E201	1/23/1996	mg/kg	17.7		Lead	46.7	218	0.08
041M52E201	1/23/1996	mg/kg	0.185	U	Mercury	0.15	0.71	0.26
041M52E201	1/23/1996	mg/kg	5.2	J	Nickel	20.9	51.6	0.10
041M52E201	1/23/1996	mg/kg	1.05	U	Silver	1	3.7	0.28
041M52E201	1/23/1996	mg/kg	10.7		Zinc	150	410	0.03
041M52E201	1/23/1996	µg/kg	0.225	U	4,4'-DDE	2.2	27	0.01

Table 14-1-9
Wetland 52 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M52E201	1/23/1996	µg/kg	0.225	U	4,4'-DDT	1.58	46.1	0.00
041M52E201	1/23/1996	µg/kg	19.05		Total PCBs	22.7	180	0.11
041M52E201	1/23/1996	µg/kg	44	U	2-Methylnaphthalene	70	670	0.07
041M52E201	1/23/1996	µg/kg	21.5	U	Acenaphthene	16	500	0.04
041M52E201	1/23/1996	µg/kg	44	U	Acenaphthylene	44	640	0.07
041M52E201	1/23/1996	µg/kg	44	U	Anthracene	85.3	1,100	0.04
041M52E201	1/23/1996	µg/kg	44	U	Benzo(a)anthracene	261	1,600	0.03
041M52E201	1/23/1996	µg/kg	44	U	Benzo(a)pyrene	430	1,600	0.03
041M52E201	1/23/1996	µg/kg	44	U	Chrysene	384	2,800	0.02
041M52E201	1/23/1996	µg/kg	44	U	Dibenz(a,h)anthracene	63.4	260	0.17
041M52E201	1/23/1996	µg/kg	44	U	Fluoranthene	600	5,100	0.01
041M52E201	1/23/1996	µg/kg	21.5	U	Fluorene	19	540	0.04
041M52E201	1/23/1996	µg/kg	44	U	Naphthalene	160	2,100	0.02
041M52E201	1/23/1996	µg/kg	44	U	Phenanthrene	240	1,500	0.03
041M52E201	1/23/1996	µg/kg	44	U	Pyrene	665	2,600	0.02
041M52E201	1/23/1996				ERM Quotient Sum			1.54
041M52E201	1/23/1996				Mean ERM Quotient			0.06
041M52E201	1/23/1996				Mean ERM Quotient without ND			0.01
041M52E201	1/23/1996				Mean ERM Quotient Category			1
041M52E301	1/24/1996	mg/kg	0.31	J	Arsenic	8.2	70	0.00
041M52E301	1/24/1996	mg/kg	0.075	U	Cadmium	1.2	9.6	0.01
041M52E301	1/24/1996	mg/kg	2.9		Chromium	81	370	0.01
041M52E301	1/24/1996	mg/kg	1.7	J	Copper	34	270	0.01
041M52E301	1/24/1996	mg/kg	2.6		Lead	46.7	218	0.01
041M52E301	1/24/1996	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M52E301	1/24/1996	mg/kg	1.6	J	Nickel	20.9	51.6	0.03
041M52E301	1/24/1996	mg/kg	0.185	U	Silver	1	3.7	0.05
041M52E301	1/24/1996	mg/kg	25.5		Zinc	150	410	0.06
041M52E301	1/24/1996	µg/kg	0.12	U	4,4'-DDE	2.2	27	0.00
041M52E301	1/24/1996	µg/kg	0.12	U	4,4'-DDT	1.58	46.1	0.00
041M52E301	1/24/1996	µg/kg	9.65	U	Total PCBs	22.7	180	0.05
041M52E301	1/24/1996	µg/kg	50		2-Methylnaphthalene	70	670	0.07
041M52E301	1/24/1996	µg/kg	77		Acenaphthene	16	500	0.15
041M52E301	1/24/1996	µg/kg	24	U	Acenaphthylene	44	640	0.04
041M52E301	1/24/1996	µg/kg	100		Anthracene	85.3	1,100	0.09
041M52E301	1/24/1996	µg/kg	26	J	Benzo(a)anthracene	261	1,600	0.02
041M52E301	1/24/1996	µg/kg	24	U	Benzo(a)pyrene	430	1,600	0.02
041M52E301	1/24/1996	µg/kg	24	U	Chrysene	384	2,800	0.01
041M52E301	1/24/1996	µg/kg	24	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M52E301	1/24/1996	µg/kg	130		Fluoranthene	600	5,100	0.03
041M52E301	1/24/1996	µg/kg	94		Fluorene	19	540	0.17
041M52E301	1/24/1996	µg/kg	100		Naphthalene	160	2,100	0.05
041M52E301	1/24/1996	µg/kg	240		Phenanthrene	240	1,500	0.16
041M52E301	1/24/1996	µg/kg	82		Pyrene	665	2,600	0.03
041M52E301	1/24/1996				ERM Quotient Sum			1.21
041M52E301	1/24/1996				Mean ERM Quotient			0.05
041M52E301	1/24/1996				Mean ERM Quotient without ND			0.04
041M52E301	1/24/1996				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 14-1-10
Wetland 52 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**	**2**				**1,350**	**116**	**2,580**	**041W52E301**	**2,580**		**13**	**FDEP**	**198**	**Yes**	**Max Detect > SV**
Antimony	0	2	3	1	5	3			ND	5	UJ	160	EPA	0.03	No	Max SQL< SV
Arsenic	0	2	1	1	1	1			ND	1	U	50	FDEP	0.02	No	Max SQL< SV
Barium	2	2				5.75	4.9	6.6	041W52A101	6.6	J		NA		Yes	No SV
Beryllium	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	3.85	Yes	Max SQL > SV
Cadmium	0	2	1	1	1	1			ND	1	UJ	0.66	EPA	1.52	Yes	Max SQL > SV
Calcium	2	2				5,800	808	10,800	041W52E301	10,800			NA		Yes	No SV
Chromium	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	11	EPA	0.23	No	Max SQL< SV
Cobalt	0	2	1	1	1	1			ND	1	U		NA		Yes	No SV
Copper	1	2	2	2	2	4.2	6.4	6.4	041W52A101	6.4	J	6.54	EPA	0.98	No	Max Detect < SV
Cyanide (CN)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	5.2	EPA	0.48	No	Max SQL< SV
Iron	1	2	43.1	43.1	43.1	632	1,220	1,220	041W52E301	1,220			NA		Yes	No SV
Lead	0	2	1	1	1	1			ND	1	U	1.32	EPA	0.76	No	Max SQL< SV
Magnesium	2	2				883	854	912	041W52A101	912	J		NA		Yes	No SV
Manganese	2	2				9.35	8.2	10.5	041W52A101	10.5	J		NA		Yes	No SV
Mercury	0	2	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	Yes	Max SQL > SV
Nickel	0	2	4.5	4.5	4.5	4.5			ND	4.5	U	87.71	EPA	0.05	No	Max SQL< SV
Potassium	2	2				469	349	589	041W52A101	589	J		NA		Yes	No SV
Selenium	0	2	2	2	2	2			ND	2	U	5	EPA	0.4	No	Max SQL< SV
Silver	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	0.012	EPA	208	Yes	Max SQL > SV
Sodium	2	2				3,970	2,670	5,260	041W52A101	5,260			NA		Yes	No SV
Thallium	0	2	2	2	2	2			ND	2	U	4	EPA	0.5	No	Max SQL< SV
Vanadium	1	2	1	1	1	1.85	2.7	2.7	041W52E301	2.7	J		NA		Yes	No SV
Zinc	1	2	2	2	2	7.2	12.4	12.4	041W52E301	12.4	J	58.91	EPA	0.21	No	Max Detect < SV
Pesticides (µg/L)																
Aldrin	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA		Yes	No SV
Dieldrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA		Yes	No SV
Endosulfan I	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.056	EPA	0.45	No	Max SQL< SV
Endosulfan II	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA		Yes	No SV
Endosulfan sulfate	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA		Yes	No SV
Heptachlor	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.0038	EPA	6.58	Yes	Max SQL > SV
Heptachlor epoxide	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.00004	FDEP	625	Yes	Max SQL > SV
Methoxychlor	0	2	0.25	0.25	0.25	0.25			ND	0.25	UJ		NA		Yes	No SV
Toxaphene	0	2	2.5	2.5	2.5	2.5			ND	2.5	UJ		NA		Yes	No SV
alpha-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA		Yes	No SV
gamma-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA		Yes	No SV
Total Chlordane	0	2	0.05	0.05	0.05	0.05			ND	0.05	U	0.0043	EPA	11.6	Yes	Max SQL > SV
Endrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA		Yes	No SV
Endrin aldehyde	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA		Yes	No SV
Endrin ketone	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	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	UJ		NA		Yes	No SV
beta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA		Yes	No SV
delta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA		Yes	No SV
gamma-BHC (Lindane)	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.08	EPA	0.31	No	Max SQL< SV
Total BHC	0	2	0.1	0.1	0.1	0.1			ND	0.1	U		NA		Yes	No SV
4,4'-DDD	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.0003	FDEP	167	Yes	Max SQL > SV
4,4'-DDE	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.0002	FDEP	250	Yes	Max SQL > SV
4,4'-DDT	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	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	UJ		NA		Yes	No SV
Aroclor-1221	0	2	1	1	1	1			ND	1	UJ		NA		Yes	No SV
Aroclor-1232	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA		Yes	No SV
Aroclor-1242	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA		Yes	No SV
Aroclor-1248	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA		Yes	No SV
Aroclor-1254	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA		Yes	No SV
Aroclor-1260	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ	0.014	EPA	35.7	Yes	Max SQL > SV
Total PCB	0	2	4	4	4	4			ND	4	U		NA		Yes	No SV

Table 14-1-10
Wetland 52 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	2	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	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
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	43.8	EPA	0.06	No	Max SQL< 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	2.5	2.5	2.5	2.5			ND	2.5	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	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-Methylphenol (p-Cresol)	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	0.3	EPA	8.33	Yes	Max SQL > SV
Butylbenzylphthalate	0	2	2.5	2.5	2.5	2.5			ND	2.5	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	9.4	EPA	0.27	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	0.5	0.5	0.5	0.5			ND	0.5	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	0.5	0.5	0.5	0.5			ND	0.5	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	2.5	2.5	2.5	2.5			ND	2.5	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Acenaphthylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Benzo(a)pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Chrysene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Dibenz(a,h)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Fluorene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Naphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	No	Max SQL< SV

Table 14-1-10
Wetland 52 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	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Total PAH	0	2	6.5	6.5	6.5	6.5			ND	6.5	U		NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	2	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	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	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		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-Dibromo-3-Chloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dibromoethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,2-Dichlorobenzene	0	2	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	2	0.5	0.5	0.5	0.5			ND	0.5	U		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
1,3-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	3	FDEP	0.17	No	Max SQL< SV
2-Hexanone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
Benzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	53	EPA	0.01	No	Max SQL< SV
Bromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No 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	289	EPA	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-1,2-Dichloroethene	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	453	EPA	0.00	No	Max SQL< SV
Methylene chloride	0	2	1.5	1.5	1.5	1.5			ND	1.5	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	0	2	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	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
trans-1,3-Dichloropropene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Trichloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		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	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 availabl
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 detectio
Parameters in bold were detected and exceeded the screening value.

Table 14-1-11
Wetland 52 Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	None	None
Barium			
Calcium			
Iron			
Magnesium			
Manganese			
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	1,1-Dichloroethane
Mercury	Endosulfan sulfate	2,4,6-Trichlorophenol	1,2-Dibromo-3-Chloropropane
Silver	Heptachlor	2,4-Dichlorophenol	1,2-Dibromoethane
	Heptachlor epoxide	2,4-Dimethylphenol	1,2-Dichloroethane
	Methoxychlor	2,4-Dinitrophenol	1,2-Dichloropropane
	Toxaphene	2,4-Dinitrotoluene	1,3-Dichlorobenzene
	alpha-Chlordane	2,6-Dinitrotoluene	2-Hexanone
	gamma-Chlordane	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	Total Chlordane	2-Methyl-4,6-Dinitrophenol	Bromochloromethane
	Endrin	2-Methylphenol (o-Cresol)	Bromodichloromethane
	Endrin aldehyde	2-Nitroaniline	Bromoform
	Endrin ketone	2-Nitrophenol	Bromomethane
	Total Endrin	3,3'-Dichlorobenzidine	Carbon disulfide
	alpha-BHC	3-Nitroaniline	Carbon tetrachloride
	beta-BHC	4-Bromophenyl-phenylether	Chloroethane
	delta-BHC	4-Chloro-3-methylphenol	Chloromethane
	Total BHC	4-Chloroaniline	cis-1,2-Dichloroethene
	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	Trichloroethene
	Aroclor-1242	bis(2-Chloroethoxy)methane	Vinyl chloride
	Aroclor-1248	bis(2-Chloroethyl)ether	Xylene (Total)
	Aroclor-1254	bis(2-Ethylhexyl)phthalate (BEHP)	
	Aroclor-1260	Butylbenzylphthalate	
	Total PCBs	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 14-1-12
Wetland 52 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**	**2**				**1,350**	**116**	**2,580**	**041W52E301**	**2,580**		**13**	**FDEP**	**198.46**	**104**	**1,090.25**	**1**	**Yes**	**Max Result > Ref. Conc.**
Barium	2	2				5.75	4.9	6.6	041W52A101	6.6	J		NA			3.68	2	Yes	Max Result > Ref. Conc.
Beryllium	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	4	3.85	1	0	No	Max SQL < Ref. Conc.
Cadmium	0	2	1	1	1	1			ND	1	UJ	0.66	EPA	2	1.52	3	0	No	Max SQL < Ref. Conc.
Calcium	2	2				5,800	808	10,800	041W52E301	10,800			NA			7,675	1	No	Essential Nutrient
Cobalt	0	2	1	1	1	1			ND	1	U		NA			3	0	No	Max SQL < Ref. Conc.
Iron	1	2	43.1	43.1	43.1	632	1,220	1,220	041W52E301	1,220			NA			2,360	0	No	Max Result < Ref. Conc.
Magnesium	2	2				883	854	912	041W52A101	912	J		NA			20,260	0	No	Max Result < Ref. Conc.
Manganese	2	2				9.35	8.2	10.5	041W52A101	10.5	J		NA			13.2	0	No	Max Result < Ref. Conc.
Mercury	0	2	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	5.42	0.13	0	No	Max SQL < Ref. Conc.
Potassium	2	2				469	349	589	041W52A101	589	J		NA			6,995	0	No	Max Result < Ref. Conc.
Silver	0	2	2.5	2.5	2.5	2.5			ND	2.5	U	0.012	EPA	208.33	208	4	0	No	Max SQL < Ref. Conc.
Sodium	2	2				3,970	2,670	5,260	041W52A101	5,260			NA			182,200	0	No	Max Result < Ref. Conc.
Vanadium	1	2	1	1	1	1.85	2.7	2.7	041W52E301	2.7	J		NA			4.7	0	No	Max Result < Ref. Conc.
Pesticides (µg/L)																			
Aldrin	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA				0	No	Parameter Not Detected
Dieldrin	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA				0	No	Parameter Not Detected
Endosulfan II	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA				0	No	Parameter Not Detected
Endosulfan sulfate	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA				0	No	Parameter Not Detected
Heptachlor	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.0038	EPA	7	6.58		0	No	Parameter Not Detected
Heptachlor epoxide	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.00004	FDEP	625	625		0	No	Parameter Not Detected
Methoxychlor	0	2	0.25	0.25	0.25	0.25			ND	0.25	UJ		NA				0	No	Parameter Not Detected
Toxaphene	0	2	2.5	2.5	2.5	2.5			ND	2.5	UJ		NA				0	No	Parameter Not Detected
alpha-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA				0	No	Parameter Not Detected
gamma-Chlordane	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA				0	No	Parameter Not Detected
Total Chlordane	0	2	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	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA				0	No	Parameter Not Detected
Endrin aldehyde	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ		NA				0	No	Parameter Not Detected
Endrin ketone	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.0023	EPA	22	21.7		0	No	Parameter Not Detected
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	UJ		NA				0	No	Parameter Not Detected
beta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA				0	No	Parameter Not Detected
delta-BHC	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ		NA				0	No	Parameter Not Detected
gamma-BHC (Lindane)	0	2	0.025	0.025	0.025	0.025			ND	0.025	UJ	0.08	EPA	0.31	0.31		0	No	Parameter Not Detected
Total BHC	0	2	0.1	0.1	0.1	0.1			ND	0.1	U		NA				0	No	Parameter Not Detected
4,4'-DDD	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.0003	FDEP	167	167		0	No	Parameter Not Detected
4,4'-DDE	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.0002	FDEP	250	250		0	No	Parameter Not Detected
4,4'-DDT	0	2	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.00059	FDEP	85	84.7		0	No	Parameter Not Detected
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	UJ		NA				0	No	Parameter Not Detected
Aroclor-1221	0	2	1	1	1	1			ND	1	UJ		NA				0	No	Parameter Not Detected
Aroclor-1232	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA				0	No	Parameter Not Detected
Aroclor-1242	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA				0	No	Parameter Not Detected
Aroclor-1248	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA				0	No	Parameter Not Detected
Aroclor-1254	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ		NA				0	No	Parameter Not Detected
Aroclor-1260	0	2	0.5	0.5	0.5	0.5			ND	0.5	UJ	0.014	EPA	36	35.7		0	No	Parameter Not Detected
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	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-chlo	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-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

Table 14-1-12
Wetland 52 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
SVOCs (µg/L) - cont.																			
2-Nitroaniline	0	2	2.5	2.5	2.5	2.5			ND	2.5	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
3,3'-Dichlorobenzidine	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-Methylphenol (p-Cresol)	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(g,h,i)perylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(k)fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	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	0.5	0.5	0.5	0.5			ND	0.5	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	0.3	EPA	8.33	8.33		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
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	0.5	0.5	0.5	0.5			ND	0.5	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	0.5	0.5	0.5	0.5			ND	0.5	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	2.5	2.5	2.5	2.5			ND	2.5	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	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Acenaphthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Acenaphthylene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(a)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Benzo(a)pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Chrysene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Dibenz(a,h)anthracene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Fluoranthene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Fluorene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Naphthalene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	0.02		0	No	Parameter Not Detected
Phenanthrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Pyrene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Total PAH	0	2	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	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	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dibromo-3-Chloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,2-Dibromoethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
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-Dichloropropane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
2-Hexanone	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	2	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	No	Parameter Not Detected
Bromochloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
Bromodichloromethane	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected

Table 14-1-12
Wetland 52 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
VOCs (µg/L) - cont.																			
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-1,2-Dichloroethene	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
Tetrachloroethene	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
trans-1,2-Dichloroethene	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	0	2	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	No	Parameter Not Detected
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	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 14-1-13
Wetland 52 Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum Barium	None	None	None

Table 14-1-14
Wetland 52 Phase II
Sediment Dermal Exposure Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration	Min. Qual.	Maximum Concentration	Max. Qual.	Units	Location of Max. Conc.	Detection Frequency	Range of Detection Limits	Mean	ABS_d	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	6.7E+02	=	6.2E+03	=	MG/KG	041M52A101	5 / 5	NAV	3.1E+03	1.0E-03	3	N/A	6.23E-07	N/A	1.32E-05
7440393	Barium	N	2.2E+00	J	4.3E+01	J	MG/KG	041M52A101	5 / 5	NAV	1.5E+01	1.0E-03	3	N/A	4.33E-09	N/A	9.17E-08
7440417	Beryllium	N	N/A	N/A	6.8E-01	J	MG/KG	041M52A101	1 / 5	7.0E-02 / 4.2E-01	2.1E-01	1.0E-03	3	N/A	6.80E-11	N/A	1.44E-09
7440484	Cobalt	C	2.1E-01	J	1.4E+00	J	MG/KG	041M52A101	3 / 5	2.2E-01 / 8.4E-01	4.8E-01	1.0E-03	3	N/A	1.40E-10	N/A	1.06E-09
7439896	Iron	N	3.6E+02	=	2.3E+03	=	MG/KG	041M52E201	5 / 5	NAV	1.2E+03	1.0E-03	3	N/A	2.30E-07	N/A	4.87E-06
7439965	Manganese	N	2.0E+00	=	1.6E+01	=	MG/KG	041M52A101	5 / 5	NAV	9.1E+00	1.0E-03	3	N/A	1.58E-09	N/A	3.34E-08
7782492	Selenium	N	7.3E-01	J	1.0E+01	J	MG/KG	041M52A101	4 / 5	N/A / 3.7E-01	3.0E+00	1.0E-03	3	N/A	1.02E-09	N/A	2.16E-08
7440622	Vanadium	N	1.1E+00	J	6.6E+00	J	MG/KG	041M52A101	5 / 5	NAV	4.1E+00	1.0E-03	3	N/A	6.60E-10	N/A	1.40E-08
72548	4,4'-DDD	C	4.5E-04	J	6.1E-03	DJ	MG/KG	041M52E101	3 / 5	2.4E-04 / 1.4E-03	1.6E-03	3.0E-02	1	N/A	1.83E-11	N/A	1.38E-10
72559	4,4'-DDE	C	N/A	N/A	7.0E-03	D	MG/KG	041M52E101	1 / 5	2.4E-04 / 1.4E-03	1.7E-03	3.0E-02	1	N/A	2.10E-11	N/A	1.59E-10
50293	4,4'-DDT	C	N/A	N/A	1.3E-03	=	MG/KG	041M52E101	1 / 5	2.4E-04 / 1.4E-03	5.1E-04	3.0E-02	1	N/A	3.90E-12	N/A	2.95E-11
309002	Aldrin	C	N/A	N/A	2.8E-03	J	MG/KG	041M52A101	1 / 5	1.2E-04 / 2.2E-04	6.3E-04	1.0E-01	2	N/A	2.80E-11	N/A	2.12E-10
319846	alpha-BHC	C	N/A	N/A	1.4E-04	J	MG/KG	041M52E301	1 / 5	1.3E-04 / 6.9E-04	1.5E-04	4.0E-02	2	N/A	5.60E-13	N/A	4.23E-12
5103719	alpha-Chlordane	C	N/A	N/A	3.4E-04	J	MG/KG	041M52E201	1 / 5	1.2E-04 / 6.9E-04	1.8E-04	4.0E-02	2	N/A	1.36E-12	N/A	1.03E-11
11096825	Aroclor-1260	C	3.3E-03	J	3.7E-03	J	MG/KG	041M52D101	2 / 5	2.4E-03 / 1.4E-02	3.3E-03	1.4E-02	3	N/A	5.11E-12	N/A	3.86E-11
319868	delta-BHC	C	N/A	N/A	6.1E-04	J	MG/KG	041M52D101	1 / 5	1.2E-04 / 6.9E-04	2.4E-04	4.0E-02	2	N/A	2.44E-12	N/A	1.84E-11
60571	Dieldrin	C	N/A	N/A	9.5E-03	J	MG/KG	041M52A101	1 / 5	2.4E-04 / 4.5E-04	2.0E-03	1.0E-01	2	N/A	9.50E-11	N/A	7.18E-10
115297	Endosulfan I	N	3.9E-04	J	5.7E-03	J	MG/KG	041M52A101	2 / 5	1.3E-04 / 2.2E-04	1.3E-03	1.0E-01	2	N/A	5.70E-11	N/A	1.21E-09
1031078	Endosulfan sulfate	N	N/A	N/A	1.2E-03	J	MG/KG	041M52E301	1 / 5	2.6E-04 / 1.4E-03	4.9E-04	1.0E-01	2	N/A	1.20E-11	N/A	2.54E-10
72208	Endrin	N	1.7E-03	J	2.4E-03	J	MG/KG	041M52D101	2 / 5	2.4E-04 / 1.4E-03	1.0E-03	1.0E-01	2	N/A	2.40E-11	N/A	5.08E-10
58899	gamma-BHC (Lindane)	C	N/A	N/A	4.3E-04	J	MG/KG	041M52E101	1 / 5	1.2E-04 / 6.9E-04	2.1E-04	4.0E-02	2	N/A	1.72E-12	N/A	1.30E-11
57749	gamma-Chlordane	C	N/A	N/A	9.1E-04	J	MG/KG	041M52A101	1 / 5	1.2E-04 / 2.2E-04	2.5E-04	4.0E-02	2	N/A	3.64E-12	N/A	2.75E-11
91576	2-Methylnaphthalene	N	N/A	N/A	5.0E-02	=	MG/KG	041M52E301	1 / 5	5.2E-02 / 2.7E-01	5.9E-02	1.0E-02	3	N/A	5.00E-11	N/A	1.06E-09
106445	4-Methylphenol (p-Cresol)	N	1.1E-01	J	1.7E-01	J	MG/KG	041M52E101	2 / 5	4.8E-01 / 2.7E+00	4.6E-01	1.0E-01	2	N/A	1.70E-09	N/A	3.60E-08
83329	Acenaphthene	N	N/A	N/A	7.7E-02	=	MG/KG	041M52E301	1 / 5	2.5E-02 / 1.3E-01	3.9E-02	1.0E-02	3	N/A	7.70E-11	N/A	1.63E-09
120127	Anthracene	N	N/A	N/A	1.0E-01	=	MG/KG	041M52E301	1 / 5	5.2E-02 / 2.7E-01	6.9E-02	1.0E-02	3	N/A	1.00E-10	N/A	2.12E-09
56553	Benzo(a)anthracene	C	2.6E-02	J	1.0E-01	=	MG/KG	041M52E101	2 / 5	8.4E-02 / 2.7E-01	6.9E-02	1.3E-01	2	N/A	1.30E-09	N/A	9.83E-09
50328	Benzo(a)pyrene	C	N/A	N/A	6.4E-02	=	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	6.2E-02	1.3E-01	2	N/A	8.32E-10	N/A	6.29E-09
205992	Benzo(b)fluoranthene	C	N/A	N/A	1.9E-01	=	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	8.7E-02	1.3E-01	2	N/A	2.47E-09	N/A	1.87E-08
191242	Benzo(g,h,i)perylene	C	N/A	N/A	4.5E-02	J	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	5.8E-02	1.3E-01	2	N/A	5.85E-10	N/A	4.42E-09
207089	Benzo(k)fluoranthene	C	N/A	N/A	6.1E-02	=	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	6.1E-02	1.3E-01	2	N/A	7.93E-10	N/A	5.99E-09
117817	bis(2-Ethylhexyl)phthalate (BEHP)	C	5.0E-02	J	3.6E-01	J	MG/KG	041M52A101	5 / 5	NAV	1.9E-01	1.0E-01	1	N/A	3.60E-09	N/A	2.72E-08
86748	Carbazole	C	N/A	N/A	4.5E-02	J	MG/KG	041M52E301	1 / 5	5.2E-01 / 2.7E+00	5.0E-01	1.0E-01	2	N/A	4.50E-10	N/A	3.40E-09
218019	Chrysene	C	N/A	N/A	1.3E-01	=	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	7.5E-02	1.3E-01	2	N/A	1.69E-09	N/A	1.28E-08
132649	Dibenzofuran	N	N/A	N/A	7.2E-02	J	MG/KG	041M52E301	1 / 5	5.2E-01 / 2.7E+00	5.1E-01	1.0E-02	3	N/A	7.20E-11	N/A	1.52E-09
84742	Di-n-butylphthalate	N	4.9E-02	J	1.5E-01	J	MG/KG	041M52A101	3 / 5	4.8E-01 / 8.4E-01	1.9E-01	1.0E-01	2	N/A	1.50E-09	N/A	3.17E-08
206440	Fluoranthene	N	1.3E-01	=	1.4E-01	=	MG/KG	041M52E101	2 / 5	8.4E-02 / 2.7E-01	9.8E-02	1.3E-01	2	N/A	1.82E-09	N/A	3.85E-08
86737	Fluorene	N	N/A	N/A	9.4E-02	=	MG/KG	041M52E301	1 / 5	2.5E-02 / 1.3E-01	4.3E-02	1.0E-02	3	N/A	9.40E-11	N/A	1.99E-09
193395	Indeno(1,2,3-cd)pyrene	C	N/A	N/A	5.1E-02	J	MG/KG	041M52E101	1 / 5	4.8E-02 / 2.7E-01	5.9E-02	1.3E-01	2	N/A	6.63E-10	N/A	5.01E-09
91203	Naphthalene	N	N/A	N/A	1.0E-01	=	MG/KG	041M52E301	1 / 5	5.2E-02 / 2.7E-01	6.9E-02	1.0E-02	3	N/A	1.00E-10	N/A	2.12E-09
85018	Phenanthrene	N	N/A	N/A	2.4E-01	=	MG/KG	041M52E301	1 / 5	5.2E-02 / 2.7E-01	9.7E-02	1.0E-02	3	N/A	2.40E-10	N/A	5.08E-09
129000	Pyrene	N	8.2E-02	=	1.4E-01	=	MG/KG	041M52E101	2 / 5	8.4E-02 / 2.7E-01	8.9E-02	1.0E-02	3	N/A	1.40E-10	N/A	2.96E-09
67641	Acetone	N	N/A	N/A	1.3E+00	=	MG/KG	041M52A101	1 / 5	2.9E-02 / 2.0E-01	2.9E-01	1.0E-02	3	N/A	1.30E-09	N/A	2.75E-08
108883	Toluene	N	N/A	N/A	2.1E-02	J	MG/KG	041M52E201	1 / 5	1.4E-02 / 7.1E-02	1.6E-02	1.0E-02	3	N/A	2.10E-11	N/A	4.44E-10

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 14-1-15
Wetland 52 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: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	6.2E+03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	N/A	N/A	1.3E-04	N/A
	Barium	N	4.3E+01	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	N/A	N/A	1.9E-05	N/A
	Beryllium	N	6.8E-01	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	N/A	N/A	1.0E-04	N/A
	Cobalt	C	1.4E+00	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	N/A	N/A	6.6E-08	N/A
	Iron	N	2.3E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	N/A	N/A	1.1E-04	N/A
	Manganese	N	1.6E+01	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	N/A	N/A	3.5E-05	N/A
	Selenium	N	1.0E+01	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	N/A	N/A	7.9E-06	N/A
	Vanadium	N	6.6E+00	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	N/A	N/A	7.7E-05	N/A
	4,4'-DDD	C	6.1E-03	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	N/A	N/A	1.1E-09
	4,4'-DDE	C	7.0E-03	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	N/A	N/A	1.8E-09
	4,4'-DDT	C	1.3E-03	5.0E-04	3.4E-01	3.0E-02	2	1.5E-05	1.1E+01	N/A	N/A	2.0E-06	3.3E-10
	Aldrin	C	2.8E-03	3.0E-05	1.7E+01	1.3E-02	3	4.0E-07	1.3E+03	N/A	N/A	5.3E-04	2.7E-07
	alpha-BHC	C	1.4E-04	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	N/A	N/A	6.0E-07	1.9E-09
	alpha-Chlordane	C	3.4E-04	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	N/A	N/A	2.6E-08	4.5E-12
	Aroclor-1260	C	3.7E-03	N/A	2.0E+00	1.4E-01	2	N/A	1.4E+01	N/A	N/A	N/A	5.5E-10
	delta-BHC	C	6.1E-04	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	N/A	N/A	2.6E-06	8.2E-09
	Dieldrin	C	9.5E-03	5.0E-05	1.6E+01	5.0E-01	3	2.5E-05	3.2E+01	N/A	N/A	2.9E-05	2.3E-08
	Endosulfan I	N	5.7E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	N/A	N/A	4.0E-07	N/A
	Endosulfan sulfate	N	1.2E-03	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	N/A	N/A	8.5E-08	N/A
	Endrin	N	2.4E-03	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	N/A	N/A	1.4E-04	N/A
	gamma-BHC (Lindane)	C	4.3E-04	3.0E-04	1.3E+00	9.7E-01	3	2.9E-04	1.3E+00	N/A	N/A	4.5E-08	1.7E-11
	gamma-Chlordane	C	9.1E-04	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	N/A	N/A	6.9E-08	1.2E-11
	2-Methylnaphthalene	N	5.0E-02	8.0E-02	N/A	5.0E-01	3	4.0E-02	N/A	N/A	N/A	2.6E-08	N/A
	4-Methylphenol (p-Cresol)	N	1.7E-01	5.0E-03	N/A	7.4E-02	3	3.7E-04	N/A	N/A	N/A	9.7E-05	N/A
	Acenaphthene	N	7.7E-02	6.0E-02	N/A	4.2E-02	3	2.5E-03	N/A	N/A	N/A	6.5E-07	N/A
	Anthracene	N	1.0E-01	3.0E-01	N/A	7.6E-01	3	2.3E-01	N/A	N/A	N/A	9.3E-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	N/A	N/A	2.3E-08
	Benzo(a)pyrene	C	6.4E-02	N/A	7.3E+00	3.1E-01	3	N/A	2.4E+01	N/A	N/A	N/A	1.5E-07
	Benzo(b)fluoranthene	C	1.9E-01	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	N/A	N/A	4.4E-08
	Benzo(g,h,i)perylene	C	4.5E-02	N/A	7.3E-01	3.1E-01	3	N/A	2.4E+00	N/A	N/A	N/A	1.0E-08
	Benzo(k)fluoranthene	C	6.1E-02	N/A	7.3E-02	3.1E-01	3	N/A	2.4E-01	N/A	N/A	N/A	1.4E-09
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.6E-01	2.0E-02	1.4E-02	1.0E-01	2	2.0E-03	1.4E-01	N/A	N/A	1.4E-05	3.8E-09
	Carbazole	C	4.5E-02	N/A	2.0E-02	7.0E-01	3	N/A	2.9E-02	N/A	N/A	N/A	9.7E-11
	Chrysene	C	1.3E-01	7.3E-03	N/A	3.1E-01	3	2.3E-03	N/A	N/A	N/A	5.6E-06	N/A
	Dibenzofuran	N	7.2E-02	4.0E-03	N/A	8.0E-01	3	3.2E-03	N/A	N/A	N/A	4.8E-07	N/A
	Di-n-butylphthalate	N	1.5E-01	1.0E-01	N/A	3.1E-01	3	3.1E-02	N/A	N/A	N/A	1.0E-06	N/A
	Fluoranthene	N	1.4E-01	N/A	4.0E-02	3.1E-01	3	N/A	1.3E-01	N/A	N/A	N/A	5.0E-09
	Fluorene	N	9.4E-02	4.0E-02	N/A	3.1E-01	3	1.2E-02	N/A	N/A	N/A	1.6E-07	N/A
	Indeno(1,2,3-cd)pyrene	C	5.1E-02	7.3E-01	N/A	3.1E-01	3	2.3E-01	N/A	N/A	N/A	2.2E-08	N/A
	Naphthalene	N	1.0E-01	2.0E-02	N/A	5.9E-02	3	1.2E-03	N/A	N/A	N/A	1.8E-06	N/A
	Phenanthrene	N	2.4E-01	N/A	3.0E-02	7.3E-01	3	N/A	4.1E-02	N/A	N/A	N/A	2.1E-10
	Pyrene	N	1.4E-01	N/A	3.0E-02	3.1E-01	3	N/A	9.7E-02	N/A	N/A	N/A	2.9E-10
	Acetone	N	1.3E+00	1.0E-01	N/A	1.0E-01	2	1.0E-02	N/A	N/A	N/A	2.8E-06	N/A
	Toluene	N	2.1E-02	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	N/A	N/A	7.2E-09	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.
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 14-1-16
Wetland 52 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
Sediment Incidental Ingestion	Aluminum	N	6.2E+03	1.0E+00	N/A	N/A	N/A	1.27E-03	N/A
	Barium	N	4.3E+01	7.0E-02	N/A	N/A	N/A	1.26E-04	N/A
	Beryllium	N	6.8E-01	2.0E-03	N/A	N/A	N/A	6.92E-05	N/A
	Cobalt	C	1.4E+00	2.0E-02	N/A	N/A	N/A	5.09E-06	N/A
	Iron	N	2.3E+03	3.0E-01	N/A	N/A	N/A	1.56E-03	N/A
	Manganese	N	1.6E+01	2.4E-02	N/A	N/A	N/A	1.34E-04	N/A
	Selenium	N	1.0E+01	5.0E-03	N/A	N/A	N/A	4.15E-04	N/A
	Vanadium	N	6.6E+00	7.0E-03	N/A	N/A	N/A	1.92E-04	N/A
	4,4'-DDD	C	6.1E-03	N/A	2.4E-01	N/A	N/A	N/A	1.06E-10
	4,4'-DDE	C	7.0E-03	N/A	3.4E-01	N/A	N/A	N/A	1.73E-10
	4,4'-DDT	C	1.3E-03	5.0E-04	3.4E-01	N/A	N/A	1.89E-07	3.21E-11
	Aldrin	C	2.8E-03	3.0E-05	1.7E+01	N/A	N/A	6.78E-06	3.46E-09
	alpha-BHC	C	1.4E-04	5.0E-04	6.3E+00	N/A	N/A	2.04E-08	6.41E-11
	alpha-Chlordane	C	3.4E-04	5.0E-04	3.5E-01	N/A	N/A	4.94E-08	8.65E-12
	Aroclor-1260	C	3.7E-03	N/A	2.0E+00	N/A	N/A	N/A	5.38E-10
	delta-BHC	C	6.1E-04	5.0E-04	6.3E+00	N/A	N/A	8.87E-08	2.79E-10
	Dieldrin	C	9.5E-03	5.0E-05	1.6E+01	N/A	N/A	1.38E-05	1.10E-08
	Endosulfan I	N	5.7E-03	6.0E-03	N/A	N/A	N/A	1.93E-07	N/A
	Endosulfan sulfate	N	1.2E-03	6.0E-03	N/A	N/A	N/A	4.07E-08	N/A
	Endrin	N	2.4E-03	3.0E-04	N/A	N/A	N/A	1.63E-06	N/A
	gamma-BHC (Lindane)	C	4.3E-04	3.0E-04	1.3E+00	N/A	N/A	1.04E-07	4.06E-11
	gamma-Chlordane	C	9.1E-04	5.0E-04	3.5E-01	N/A	N/A	1.32E-07	2.32E-11
	2-Methylnaphthalene	N	5.0E-02	8.0E-02	N/A	N/A	N/A	1.27E-07	N/A
	4-Methylphenol (p-Cresol)	N	1.7E-01	5.0E-03	N/A	N/A	N/A	6.92E-06	N/A
	Acenaphthene	N	7.7E-02	6.0E-02	N/A	N/A	N/A	2.61E-07	N/A
	Anthracene	N	1.0E-01	3.0E-01	N/A	N/A	N/A	6.78E-08	N/A
	Benzo(a)anthracene	C	1.0E-01	N/A	7.3E-01	N/A	N/A	N/A	5.31E-09
	Benzo(a)pyrene	C	6.4E-02	N/A	7.3E+00	N/A	N/A	N/A	3.40E-08
	Benzo(b)fluoranthene	C	1.9E-01	N/A	7.3E-01	N/A	N/A	N/A	1.01E-08
	Benzo(g,h,i)perylene	C	4.5E-02	N/A	7.3E-01	N/A	N/A	N/A	2.39E-09
	Benzo(k)fluoranthene	C	6.1E-02	N/A	7.3E-02	N/A	N/A	N/A	3.24E-10
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.6E-01	2.0E-02	1.4E-02	N/A	N/A	1.31E-06	3.66E-10
	Carbazole	C	4.5E-02	N/A	2.0E-02	N/A	N/A	N/A	6.54E-11
	Chrysene	C	1.3E-01	7.3E-03	N/A	N/A	N/A	1.29E-06	N/A
	Dibenzofuran	N	7.2E-02	4.0E-03	N/A	N/A	N/A	3.66E-06	N/A
	Di-n-butylphthalate	N	1.5E-01	1.0E-01	N/A	N/A	N/A	3.05E-07	N/A
	Fluoranthene	N	1.4E-01	N/A	4.0E-02	N/A	N/A	N/A	1.14E-09
	Fluorene	N	9.4E-02	4.0E-02	N/A	N/A	N/A	4.78E-07	N/A
	Indeno(1,2,3-cd)pyrene	C	5.1E-02	7.3E-01	N/A	N/A	N/A	5.08E-09	N/A
	Naphthalene	N	1.0E-01	2.0E-02	N/A	N/A	N/A	1.02E-06	N/A
	Phenanthrene	N	2.4E-01	N/A	3.0E-02	N/A	N/A	N/A	1.47E-09
	Pyrene	N	1.4E-01	N/A	3.0E-02	N/A	N/A	N/A	8.55E-10
	Acetone	N	1.3E+00	1.0E-01	N/A	N/A	N/A	2.65E-06	N/A
	Toluene	N	2.1E-02	2.0E-01	N/A	N/A	N/A	2.14E-08	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 = 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 14-1-16
Wetland 52 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
Sediment Incidental Ingestion	Aluminum	N	6.2E+03	1.0E+00	N/A	N/A	N/A	1.27E-03	N/A
	Barium	N	4.3E+01	7.0E-02	N/A	N/A	N/A	1.26E-04	N/A
	Beryllium	N	6.8E-01	2.0E-03	N/A	N/A	N/A	6.92E-05	N/A
	Cobalt	C	1.4E+00	2.0E-02	N/A	N/A	N/A	5.09E-06	N/A
	Iron	N	2.3E+03	3.0E-01	N/A	N/A	N/A	1.56E-03	N/A
	Manganese	N	1.6E+01	2.4E-02	N/A	N/A	N/A	1.34E-04	N/A
	Selenium	N	1.0E+01	5.0E-03	N/A	N/A	N/A	4.15E-04	N/A
	Vanadium	N	6.6E+00	7.0E-03	N/A	N/A	N/A	1.92E-04	N/A
	4,4'-DDD	C	6.1E-03	N/A	2.4E-01	N/A	N/A	N/A	1.06E-10
	4,4'-DDE	C	7.0E-03	N/A	3.4E-01	N/A	N/A	N/A	1.73E-10
	4,4'-DDT	C	1.3E-03	5.0E-04	3.4E-01	N/A	N/A	1.89E-07	3.21E-11
	Aldrin	C	2.8E-03	3.0E-05	1.7E+01	N/A	N/A	6.78E-06	3.46E-09
	alpha-BHC	C	1.4E-04	5.0E-04	6.3E+00	N/A	N/A	2.04E-08	6.41E-11
	alpha-Chlordane	C	3.4E-04	5.0E-04	3.5E-01	N/A	N/A	4.94E-08	8.65E-12
	Aroclor-1260	C	3.7E-03	N/A	2.0E+00	N/A	N/A	N/A	5.38E-10
	delta-BHC	C	6.1E-04	5.0E-04	6.3E+00	N/A	N/A	8.87E-08	2.79E-10
	Dieldrin	C	9.5E-03	5.0E-05	1.6E+01	N/A	N/A	1.38E-05	1.10E-08
	Endosulfan I	N	5.7E-03	6.0E-03	N/A	N/A	N/A	1.93E-07	N/A
	Endosulfan sulfate	N	1.2E-03	6.0E-03	N/A	N/A	N/A	4.07E-08	N/A
	Endrin	N	2.4E-03	3.0E-04	N/A	N/A	N/A	1.63E-06	N/A
	gamma-BHC (Lindane)	C	4.3E-04	3.0E-04	1.3E+00	N/A	N/A	1.04E-07	4.06E-11
	gamma-Chlordane	C	9.1E-04	5.0E-04	3.5E-01	N/A	N/A	1.32E-07	2.32E-11
	2-Methylnaphthalene	N	5.0E-02	8.0E-02	N/A	N/A	N/A	1.27E-07	N/A
	4-Methylphenol (p-Cresol)	N	1.7E-01	5.0E-03	N/A	N/A	N/A	6.92E-06	N/A
	Acenaphthene	N	7.7E-02	6.0E-02	N/A	N/A	N/A	2.61E-07	N/A
	Anthracene	N	1.0E-01	3.0E-01	N/A	N/A	N/A	6.78E-08	N/A
	Benzo(a)anthracene	C	1.0E-01	N/A	7.3E-01	N/A	N/A	N/A	5.31E-09
	Benzo(a)pyrene	C	6.4E-02	N/A	7.3E+00	N/A	N/A	N/A	3.40E-08
	Benzo(b)fluoranthene	C	1.9E-01	N/A	7.3E-01	N/A	N/A	N/A	1.01E-08
	Benzo(g,h,i)perylene	C	4.5E-02	N/A	7.3E-01	N/A	N/A	N/A	2.39E-09
	Benzo(k)fluoranthene	C	6.1E-02	N/A	7.3E-02	N/A	N/A	N/A	3.24E-10
	bis(2-Ethylhexyl)phthalate (BEHP)	C	3.6E-01	2.0E-02	1.4E-02	N/A	N/A	1.31E-06	3.66E-10
	Carbazole	C	4.5E-02	N/A	2.0E-02	N/A	N/A	N/A	6.54E-11
	Chrysene	C	1.3E-01	7.3E-03	N/A	N/A	N/A	1.29E-06	N/A
	Dibenzofuran	N	7.2E-02	4.0E-03	N/A	N/A	N/A	3.66E-06	N/A
	Di-n-butylphthalate	N	1.5E-01	1.0E-01	N/A	N/A	N/A	3.05E-07	N/A
	Fluoranthene	N	1.4E-01	N/A	4.0E-02	N/A	N/A	N/A	1.14E-09
	Fluorene	N	9.4E-02	4.0E-02	N/A	N/A	N/A	4.78E-07	N/A
	Indeno(1,2,3-cd)pyrene	C	5.1E-02	7.3E-01	N/A	N/A	N/A	5.08E-09	N/A
	Naphthalene	N	1.0E-01	2.0E-02	N/A	N/A	N/A	1.02E-06	N/A
	Phenanthrene	N	2.4E-01	N/A	3.0E-02	N/A	N/A	N/A	1.47E-09
	Pyrene	N	1.4E-01	N/A	3.0E-02	N/A	N/A	N/A	8.55E-10
	Acetone	N	1.3E+00	1.0E-01	N/A	N/A	N/A	2.65E-06	N/A
	Toluene	N	2.1E-02	2.0E-01	N/A	N/A	N/A	2.14E-08	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 = 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 14-1-17
Wetland 52 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	1.2E+02	J	2.6E+03	=	UG/L	041W52E301	2 / 2	NAV	1.3E+03	2.6E-03	1.0E-03	6.71E-06	N/A	1.42E-04
7440393	Barium	N	4.9E+00	J	6.6E+00	J	UG/L	041W52A101	2 / 2	NAV	5.8E+00	6.6E-06	1.0E-03	1.72E-08	N/A	3.63E-07
7439896	Iron	N	N/A	N/A	1.2E+03	=	UG/L	041W52E301	1 / 2	N/A / 8.6E+01	6.3E+02	1.2E-03	2.5E-04	7.93E-07	N/A	1.68E-05
7439965	Manganese	N	8.2E+00	J	1.1E+01	J	UG/L	041W52A101	2 / 2	NAV	9.4E+00	1.1E-05	1.0E-03	2.73E-08	N/A	5.78E-07
7440622	Vanadium	N	N/A	N/A	2.7E+00	J	UG/L	041W52E301	1 / 2	N/A / 2.0E+00	1.9E+00	2.7E-06	1.0E-03	7.02E-09	N/A	1.49E-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 14-1-18
Wetland 52 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	2.6E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	N/A	N/A	1.4E-03	N/A
	Barium	N	6.6E-06	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	N/A	N/A	7.4E-05	N/A
	Iron	N	1.2E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	N/A	N/A	1.0E-04	N/A
	Vanadium	N	2.7E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	N/A	N/A	8.2E-04	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 factor 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:
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 14-1-19
Wetland 52 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	2.6E-03	1.0E+00	N/A	N/A	N/A	5.3E-08	N/A
	Barium	N	6.6E-06	7.0E-02	N/A	N/A	N/A	1.9E-09	N/A
	Iron	N	1.2E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.1E-05	1.4E-01	N/A	N/A	N/A	1.5E-09	N/A
	Vanadium	N	2.7E-06	7.0E-03	N/A	N/A	N/A	7.9E-09	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

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

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).

14.2 Wetland 72 — Screening Level Problem Formulation

14.2.1 Site Description and Habitats Present at Wetland 72

Wetland 72 is a surface water drainage pathway that drains storm water and surface water from the northwest side of Forrest Sherman Field and storm water from the northern end of Wetland W1 via a storm sewer. Wetland 72 is located in the northwestern portion of the base, a relatively non-impacted area. The storm sewer system of Wetland W1 drains into Wetland 72. Surface water which passes through Wetland 72, eventually drains into Bayou Grande via Wetland 39. Samples collected from this site were noted to have a foul odor. Wetland 72 is comprised of a long narrow, finger-shaped wetland, which runs north to south. Wetland 72 is less than three feet deep and has a maximum width of 75 feet.

The IR site potentially affecting Wetland 72 is UST 18, formerly Site 3 (Crash Crew Fire Fighting Training Area).

Photograph 1 Wetland 72 — Facing Southeast

UST 18 wetlands include Wetlands 52, 72, and W1. UST 18 occupy approximately 48 acres along the southwestern border of Forrest Sherman Field. The site topography is characterized by a swale paralleling Runway 19 in the east-central portion of the site, bounded on the east and west by higher, generally flat areas. As shown in Figure 14-1, Wetland 52 is located south of the UST 18 area. It receives storm water from the southern end of the UST 18 area and discharges to Pensacola Bay via Sherman's Inlet. Wetland 72 is a drainage ditch, located on the northwest side of Runway 19, and receives storm water from the northern end of UST 18. Wetland W1 occupies the drainage swale located directly east of UST 18, between the site and Runway 19 of Forrest Sherman Field.

UST 18 (previously named IR Site 3) contains at least eight burn pits used to train fire fighters for aircraft crash response since 1955 (NEESA, 1983). Historically, during training exercises, approximately 30 to 50 gallons of fuel (possibly JP-4, JP-5, aviation gas, lube oil, or water-tainted fuel) were poured into unlined pits or on various pieces of equipment and ignited to simulate post-crash aircraft fires. In 1991, the northernmost pit was lined with an impermeable geofabric membrane called Bentomat, a two-layer woven cloth separated by bentonite, and became the only pit used for training exercises. Aircraft fire-fighting foam was used along with water to extinguish the fires. In 1997, crash crew training was moved to environmentally friendly training facilities at the NATTC.

E/A&H prepared a CAR for UST Site 18 in January 1996. Twenty-two permanent shallow and intermediate groundwater monitoring wells were installed and soil, sediment, groundwater, and surface water samples were collected and analyzed for petroleum constituents. BTEX, EDB, naphthalene, and lead were detected (E/A&H, 1996a).

EnSafe prepared a RAP for UST Site 18 on December 19, 1997. The RAP proposed landfarming to remediate the soil contamination and thereby removing the source of groundwater contamination. Groundwater modeling indicated that natural attenuation would remediate the groundwater once the landfarming was complete. A Monitoring Only Plan (MOP) was proposed for groundwater remediation (EnSafe, 1997a).

CH2MHILL performed a remedial action for the impacted soil at UST Site 18 that consisted of the landfarming of petroleum contaminated soil in the four former firefighter training burn pits. Landfarming activities were conducted between September 2000 and September 2001 and consisted of biweekly soil tilling using a farm tractor and disk harrow. Soil samples were collected monthly.

Landfarming operations ceased when soil analytical results indicated that soil cleanup goals had been achieved in September 2001 (CH2MHILL, 2003a).

Groundwater monitoring was performed monthly from December 2000 through August 2001 and quarterly until December 2002 by CH2MHill. BTEX, PAHs, TRPH, and lead were consistently reported to exceed FDEP GCTLs during quarterly sampling (CH2MHILL, 2003a).

TtNUS performed a treatability study to evaluate PermeOx® Plus for remediation of petroleum hydrocarbons. TtNUS performed supplemental site assessment activities in August 2003 to delineate the groundwater contamination and to provide a baseline for the treatability study. Two main areas of contamination were identified during the additional groundwater investigation. A northern plume was identified around the four former pits. A southern plume was found to exist south of the four former pits. Both plumes were migrating southeast (with the groundwater flow direction) from their source areas. (TtNUS, 2003a). Extent of groundwater contamination was delineated during this investigation.

The PermeOx® Plus injection event was conducted from December 3 to December 17, 2003. This pilot-scale treatability study consisted of the installation of 219 injection borings (143 in the northern plume and 76 in the southern plume) into which a PermeOx® Plus enriched slurry was injected. Select groundwater monitoring wells were then monitored for site contaminants of concern (COCs) and natural attenuation parameters for four quarters to evaluate the effectiveness of enhanced bioremediation (TtNUS, 2005).

The Enhanced Natural Attenuation Study (PermeOx® Plus injection) concluded that there was no clear evidence of a reduction in site COCs after one year of monitoring. While COC concentrations had decreased temporarily in several wells, there was a rebound and no evidence that conditions favorable to enhanced biodegradation were occurring. Free product was detected in a shallow monitoring well (NASP18-GS26) on the northern portion of the site. The presence of free product indicated there was a continuing source of contamination and that previous soil remediation (landfarming) efforts may have not effectively removed all the contaminated soil (TtNUS, 2005). It was reasoned that contaminated soil exists around the smear zone (underneath the landfarming effort) and continually contributes to the groundwater contamination. Additional characterization has been recommended for the site (TtNUS, 2006).

Parsons and Pruitt described Wetland 72 as a palustrine forested system with plant species *Pinus*, *Quercus*, and *Cliftonia monophylla* found throughout this site. Wetland 72 is always wet and of

the 3.2 acres that encompass this area, standing water can be observed in at least half. Some maintenance does occur at this location, because beaver dams have been observed one day and were no longer present on following days.

14.2.2 Wetland 72 — Sample Location Description

Phase II Sediment Sample Location Description

Two sampling stations along the southern end of Wetland 72 were sampled in November 1995 (Figure 14-4). These locations are adjacent to a cement head wall, which houses the storm water and storm sewer outfalls. Table 14-2-1 (tables are located at the end of each section) provides a physical description of the sediments collected at Wetland 72. Sediments at Wetland 72 were composed of brown poorly graded sand with trace of silt and organics (041M720101) with 0.29% TOC to brown poorly graded medium to fine sand (041M720102) with 0.16% TOC.

Phase II Surface Water Sample Location Description

One surface water sample (041W720101) was collected at Wetland 72 and was collocated with sediment station 041M720101 (Figure 14-4). Table 14-2-2 provides a physical description of the surface water sample collected at Wetland 72. Surface water from Wetland 72 was found to be relatively soft ($CaCO_3$ levels were < 33 mg/L) and slightly acidic.

Phase IV Surface Water Sample Location Description

One surface water sample (041W720102) was collected at Wetland 72 in 2004 and was collocated with the sediment station 041M720101 (Figure 14-4). Due to sampling errors, surface water physical parameters were not collected during the Phase IV sampling event.

14.2.3 Nature and Extent of Contamination

Phase II Sediment

Figure 14-4 presents the Phase II sediment sampling locations for Wetland 72. Table 14-2-3 presents a summary of the analytical results of the two Phase II sediment samples.

Metals — Seventeen metals were detected during Phase II sediment sampling at Wetland 72. Of these detections only copper exceeded its reference value at location 041M720101, which is located at the southern tip of the wetland. Location 041M720101 exhibited all 17 metals, as well as reported the highest concentrations.

Pesticides and PCBs — Three pesticide compounds were detected during Phase II sediment sampling at Wetland 72. 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.

Location 041M720101 exhibited detections for 4,4′-DDD and 4,4′-DDT, both below reference values.

Location 041M720201 exhibited a detection for 4,4′-DDE, also below its reference value.

SVOCs — Twelve SVOCs were detected in sediment samples collected during Phase II sampling at Wetland 72. All compounds were detected at location 041M720101; however, location 041M720201 only had two detections.

VOCs — Acetone and methylene chloride were detected in sediments collected during Phase II sampling. Acetone was detected at location 041M720201, and methylene chloride was detected at location 041M720101.

Phase II Surface Water

Figure 14-4 presents the Phase II surface sampling locations for Wetland 72. Table 14-2-4 presents a summary of the analytical results of the one Phase II surface water sample.

Metals — Thirteen metals were detected in Phase II surface water sampling collected from Wetland 72. Location 041W720101 exhibited six detections, exceeding reference values for barium, calcium, copper, silver, thallium, and zinc.

Organics — There were no organic constituents detected in surface water samples collected from Wetland 72 during the Phase II investigation.

Phase IV Surface Water

Figure 14-4 presents the Phase IV surface sampling locations for Wetland 72. Table 14-2-5 presents a summary of the analytical results of the one Phase IV surface water sample.

Metals — Twelve metals were detected in the Phase IV surface water sampling effort collected from Wetland 72. Location 041W720101 exhibited two detections, exceeding reference values for barium and calcium.

14.2.4 Ecological Risk Assessment

14.2.4.1 Phase II Investigation Summary — Wetland 72

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 14-2-6, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-2-7.

Baseline Problem Formulation — Wetland 72 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
- Interpretative 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 in the Site 41 ERA process is detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 14-2-8. A list of COPCs retained after refinement are presented in Table 14-2-9. Additionally, the tables compare: (1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and (2) Wetland 72 concentrations to reference concentrations.

As shown on Figure 14-5, total DDT and its daughter products were detected below basewide levels and were not carried forward as COPCs. Copper exceeded its Site 41 freshwater sediment reference concentrations (Table 14-2-8); however, the detection did not exceed the maximum and average RV HQ. The interpretive tool was not applied.

Four SVOCs were detected and retained as COPCs for Wetland 72: benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene. Two VOCs, acetone and methylene chloride, were also detected and retained as COPCs. When normalized to detected TOC concentrations, both VOCs and PAHs (Figure 14-6) do not appear to be risk drivers for Wetland 72.

Table 14-2-10 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, the two sample locations (041M720102 and 041M720201) were determined to be Category 1, which identified these sediments to be considered nontoxic. Figure 14-7 shows the Mean ERM category for each sediment sample location at Wetland 72.

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

As presented in Table 14-2-11, the surface water sample was compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-2-12.

Baseline Problem Formulation — Wetland 72 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 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 14-2-13. COPCs retained after refinement are presented in Table 14-2-14. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 72, barium, calcium, silver, and thallium exceeded their Site 41 freshwater reference surface water values (Table 14-2-13) and were retained as COPCs.

During the Wetland 72 Phase II investigation, none of the constituents detected and retained occurred in both sediment and surface water samples. Sediments had an assortment of PAHs, which were likely remnants from routine grass maintenance and storm water runoff.

14.2.4.2 Phase IV/2004 Investigation Summary — Wetland 72

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

As presented in Table 14-2-15, the surface water sample was compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-2-16.

Baseline Problem Formulation — Phase IV Wetland 72 Surface Water COPC Refinement

The same methods used to evaluation the Phase II surface water (Section 14.2.4.1) were applied to the Phase IV surface water sample.

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 14-2-17. COPCs retained after refinement are presented in Table 14-2-18. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

For Wetland 72, barium and calcium exceeded its Site 41 freshwater reference surface water values (Table 14-2-17) and were retained as COPCs.

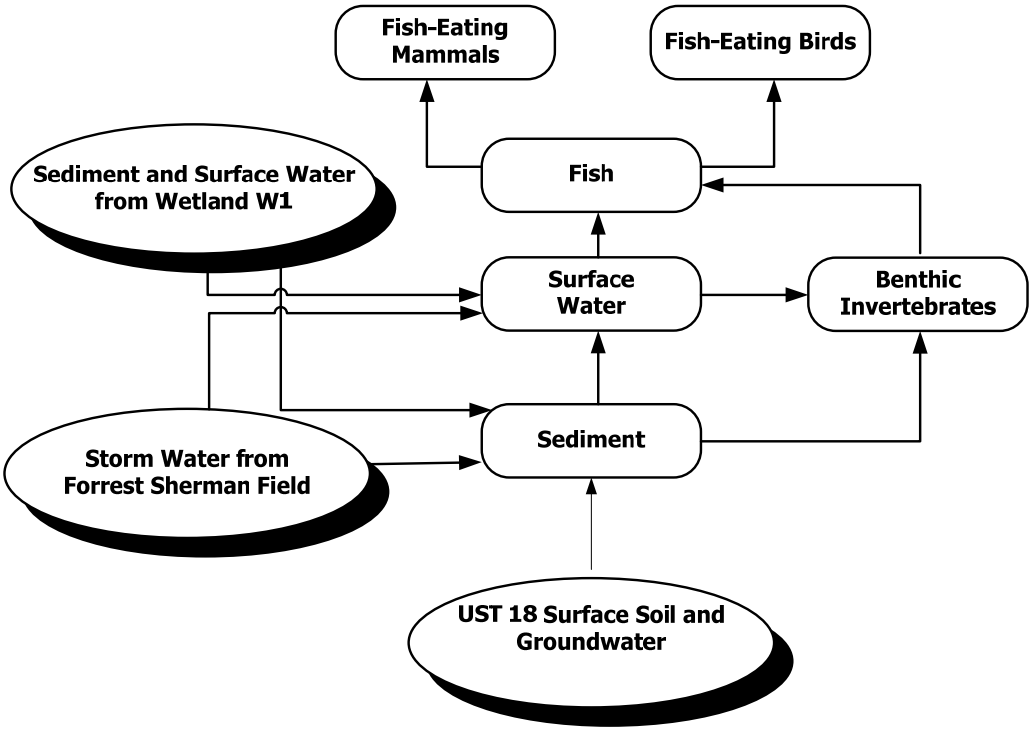
In Wetland 72, two inorganic constituents (barium and calcium) were retained in both the Phase II (1995 investigation) and the Phase IV investigation. Neither of these constituents was perceived to pose any negative environmental impacts at this wetland.

PAHs detected in sediments during the Phase II investigation were detected at these sampling locations because of the nature of the base storm water routing system.

Based on the Phase II results described above, Wetland 72 was identified as a Blue-Coded Wetland in the approved *Final RI/FS SAP Addendum* (E/A&H, 1997d), indicating that contaminants were present generally below screening values, and contaminants did not appear to be site related. Blue-Coded Wetlands were not assessed further in Phase III.

The conceptual model below symbolizes which environmental habitats may be impacted by Wetland 72 Phase II and Phase IV constituents retained during the ERA process.

Wetland 72
Conceptual Site Model



14.2.5 Wetland 72 — Human Health Risk Assessment

Wetland 72 is described in Section 14.2.1, and the HHRA is summarized below.

14.2.5.1 Site Data

Section 14.2.2 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland 72 during Phases II and IV of the RI. Surface water and sediment data for Wetland 72 are summarized in Tables 14-2-3 through 14-2-5.

14.2.5.2 Conceptual Site Model

As described in Section 14.2.1, Wetland 72 is located in the northwestern portion of the base, a relatively non-impacted area of the base. Because Wetland 72 is located in a restricted area of the base, the wetland is only accessible to Navy personnel. Trespassing is limited by homeland security restrictions.

Wetland 72 is continually inundated, so surface water contact was assessed for maintenance worker scenario. Sediment locations are inundated all year, preventing significant sediment exposure. Therefore, in accordance with USEPA Region IV Supplemental Guidance to RAGS Bulletins (2000) described in Section 9, sediment exposure was not assessed in this HHRA, because it was assumed to be an insignificant exposure pathway. Although habitat for freshwater game fish species could be present, enforcement of homeland security restrictions prevents fishing by trespassers. Consequently, fish tissue ingestion pathways were excluded, and maintenance worker contact with surface water while wading would be the likely exposure scenario.

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

Scenario	Medium	Ingestion	Dermal
Maintenance	Surface water	√	√

14.2.5.3 Risk Characterization

The adult maintenance worker scenario for surface water and sediment were assessed for this wetland as described in Section 9.

Maintenance Worker

Phase II Data

As shown in Tables 14-2-19 through 14-2-21, surface water ingestion and dermal contact risk estimates for maintenance workers were below the FDEP risk threshold. Hazard indices were below 1.0.

Phase IV Data

As shown in Tables 14-2-22 through 14-2-24, 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 72 Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	2.38E-02	N/A

Based on Phase II data, no COCs for Wetland 72 were identified.

Summary of Wetland 72 Phase IV Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Surface water	4.85E-03	N/A

Based on Phase IV data, no COCs for Wetland 72 were identified.

Wetland 72 HHRA COC Summary

No COCs were identified in the HHRA for Wetland 72.

14.2.6 Wetland 72 — Fate and Transport Analysis

This wetland occupies an area north of the southwest end of the Southwest-Northeast trending Forrest Sherman runway. Three samples (two sediment samples and one surface water sample) were collected from this wetland and used to evaluate the transport pathways. Wetland 72 flows north into Wetland 39, eventually empting into the upper reaches of Bayou Grande (see Figure 14-1).

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Tables 14-2-9 (sediment, Phase II), 14-2-14 (surface water, Phase II), and 14-2-18 (surface water, Phase IV). Also provided are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis. These monitoring wells and borings are associated with the northern end of UST Site 18.

Monitoring Wells Associated with Wetland 72: 033GGR07, 003GGI02, 003GGS02, 003GGR06, 003GGM25, 003GGS07, 003GGR19, 003GGR05, 003GGM21, 003GGR04, 003GGS01, 003GG101, 003GGR03, 003GGR01, 003GGR02, 003GGS10, 003GGS11

Borings Associated with Wetland 72: 003S0006, 003S0007, 003S0033, 003S0019, 003S0031, 003S0034, 003S0032, 003S0004, 003S0003, 003S0001, 003S0005, 003S0002

Note: These wells and borings are the same as those associated with the northern half of Wetland W1.

Surface Water/Sediment Transport into the Wetlands Media:

Surface Water — There were no direct comparable storm water data from the area proximal to this wetland. 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 water drainage to this wetland is from the northern area of Forrest Sherman Field, and in

particularly the northernmost portion of the north-south runway (including drainage from UST Site 18; borings and wells from this site were evaluated as to potential impacts to the wetland).

Sediment — No detected parameters were retained after refinement within sediment.

Groundwater Discharge into the Wetland Media:

Surface Water — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway was validated and significant for the following parameters:

Phase II
Barium
Thallium

Phase IV
Barium

Surface Water/Sediment Transport within the Wetlands:

Surface Water — Since only one surface water sample was collected, the surface water transport pathway could not be evaluated.

Sediment — To evaluate the sediment transport pathway, upgradient sample location 041M7201 (sampled in Phase II) was compared to downgradient sample location 041M7202 (sampled during Phase II). Evaluation of upgradient location 041M7201 with downgradient location 041M7202 indicated a decrease in detected parameters (17 metals and 15 organics upgradient versus 14 metals and four organics downgradient). TOC exhibited a slight decrease downgradient. For the metals, all 14 parameters detected downgradient exhibited a marked decrease. For the organics, two compounds were present at the downgradient locations that were not detected at the upgradient location. Of the two organics detected at both locations, both exhibited a marked decrease. Detected organics at both locations consisted of pesticides and SVOCs (primarily BAP equivalents); indicative of storm water runoff, routine application residuals, and/or incomplete combustion byproducts. Location 041M7201 was collected directly at a storm water outfall, and the data indicated parameters were quickly being fixed within the sediment, little downgradient transport.

Temporal Evaluation of Surface Water:

Surface water samples were collected from location 041W7201 during Phases II and IV. Evaluation of these two samples indicated fewer metals detected in Phase IV (13 in Phase II versus 11 in Phase IV). Changes in concentrations between the two samples were only slight; two constituents were present in Phase IV that were not detected in Phase II, six parameters increased, and three constituents decreased.

Table 14-2-1
Wetland 72 Phase II
Sediment Physical Parameters

Parameter	041M720101	041M720201
TOC (%)	0.294	0.164
Percent Solids (%)	73.8	78.5
Grain Size Analysis (percent of composition[1])		
Fine Gravel	0	0
Coarse Sand	1	0
Medium Sand	23	34
Fine Sand	73	66
Silt and Clay	3	0
Description	Brown Poorly Graded Sand with trace of silt, organics	Brown Poorly Graded Sand, Medium to Fine

Note:
[1] = Derived from sieve analyses.

Table 14-2-2
Wetland 72 Phase II
Surface Water Physical Parameters

Parameter	041W720101
Hardness as CaCO3 (mg/L)	32.1
pH	6.21
Specific Conductivity (mS/cm)	0.476
Turbidity (NTU)	9
Salinity (%)	0.01

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

Table 14-2-3
Wetland 72 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	13,610.0	0	2	2	736.0	2,450.0	1,590.0	041M720101
Arsenic	6.620	0	2	2	0.280	0.860	0.570	041M720101
Barium	14.0	0	2	2	1.30	2.30	1.80	041M720101
Cadmium	1.80	0	1	2	0.270	0.270	0.183	041M720101
Calcium	10,756.670	0	2	2	23.20	43.10	33.10	041M720101
Chromium	39.370	0	2	2	0.850	3.20	2.020	041M720101
Copper	19.50	1	2	2	1.20	38.90	20.10	041M720101
Iron	11,911.670	0	2	2	397.0	1,510.0	954.0	041M720101
Lead	82.470	0	2	2	1.80	17.50	9.650	041M720101
Magnesium	7,513.330	0	2	2	20.30	50.0	35.10	041M720101
Manganese	37.970	0	2	2	1.30	10.70	6.0	041M720101
Nickel	9.280	0	1	2	1.40	1.40	0.890	041M720101
Potassium	1,628.670	0	2	2	8.40	29.70	19.10	041M720101
Selenium	3.450	0	1	2	0.260	0.260	0.177	041M720101
Sodium	18,993.330	0	2	2	3.0	8.70	5.850	041M720101
Vanadium	28.670	0	2	2	1.20	3.80	2.50	041M720101
Zinc	36.730	0	2	2	3.30	10.70	7.0	041M720101
PAHs (µg/kg)								
Anthracene	N/A	0	1	2	41.0	41.0	30.80	041M720101
Benzo(a)anthracene	N/A	0	1	2	47.0	47.0	33.80	041M720101
Benzo(a)pyrene	N/A	0	1	2	43.0	43.0	31.80	041M720101
Chrysene	N/A	0	1	2	47.0	47.0	33.80	041M720101
Fluoranthene	N/A	0	2	2	30.0	120.0	75.0	041M720101
Phenanthrene	N/A	0	1	2	49.0	49.0	34.80	041M720101
Pyrene	N/A	0	2	2	38.0	98.0	68.0	041M720101
Total PAHs	N/A	0	2	2	272.50	557.0	415.0	041M720101
Pesticides and PCBs (µg/kg)								
4,4'-DDD	50.0	0	1	2	0.20	0.20	0.158	041M720201
4,4'-DDE	40.0	0	1	2	0.240	0.240	0.172	041M720101
4,4'-DDT	20.0	0	1	2	0.260	0.260	0.183	041M720101
Total DDT	110.0	0	2	2	0.410	0.615	0.512	041M720101
SVOCs (µg/kg)								
Benzo(b)fluoranthene	N/A	0	1	2	90.0	90.0	55.30	041M720101
Benzo(g,h,i)perylene	N/A	0	1	2	58.0	58.0	39.30	041M720101
Benzo(k)fluoranthene	N/A	0	1	2	27.0	27.0	23.80	041M720101
Di-n-butylphthalate	N/A	0	1	2	43.0	43.0	124.0	041M720101
Indeno(1,2,3-cd)pyrene	N/A	0	1	2	47.0	47.0	33.80	041M720101
VOCs (µg/kg)								
Acetone	N/A	0	1	2	32.0	32.0	416.0	041M720201
Methylene chloride	N/A	0	1	2	740.0	740.0	373.0	041M720101

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

Table 14-2-4
Wetland 72 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	1	1	895.0	895.0	895.0	041W720101
Barium	3.68	1	1	1	8.8	8.8	8.8	041W720101
Calcium	7,675.0	1	1	1	11,000.0	11,000.0	11,000.0	041W720101
Copper	4.0	1	1	1	5.2	5.2	5.2	041W720101
Iron	2,360.0	0	1	1	559.0	559.0	559.0	041W720101
Magnesium	20,260.0	0	1	1	1,140.0	1,140.0	1,140.0	041W720101
Manganese	13.2	0	1	1	6.1	6.1	6.1	041W720101
Potassium	6,995.0	0	1	1	597.0	597.0	597.0	041W720101
Silver	4.0	1	1	1	4.4	4.4	4.4	041W720101
Sodium	182,200.0	0	1	1	3,870.0	3,870.0	3,870.0	041W720101
Thallium	4.2	1	1	1	5.3	5.3	5.3	041W720101
Vanadium	4.7	0	1	1	3.0	3.0	3.0	041W720101
Zinc	5.53	1	1	1	9.0	9.0	9.0	041W720101

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

Table 14-2-5
Wetland 72 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	Range of Detections: Average Detection	Maximum Detection Location
Metals (µg/L)								
Aluminum	1,090.25	0	1	1	830.0	830.0	830.0	041W720102
Barium	3.68	1	1	1	12.0	12.0	12.0	041W720102
Beryllium	1.0	0	1	1	0.78	0.78	0.78	041W720102
Calcium	7,675.0	1	1	1	9,700.0	9,700.0	9,700.0	041W720102
Iron	2,360.0	0	1	1	1,200.0	1,200.0	1,200.0	041W720102
Lead	3.2	0	1	1	2.3	2.3	2.3	041W720102
Magnesium	20,260.0	0	1	1	1,400.0	1,400.0	1,400.0	041W720102
Manganese	13.2	0	1	1	7.7	7.7	7.7	041W720102
Potassium	6,995.0	0	1	1	990.0	990.0	990.0	041W720102
Sodium	182,200.0	0	1	1	5,400.0	5,400.0	5,400.0	041W720102
Vanadium	4.7	0	1	1	3.7	3.7	3.7	041W720102
Zinc	5.53	0	1	1	1.7	1.7	1.7	041W720102

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

Table 14-2-6
Wetland 72 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			736	2,450	041M720101	2,450			N/A		Yes	No SV
Arsenic	2	2			0.28	0.86	041M720101	0.86		7.24	1, 2	0.12	No	Max Detect < SV
Barium	2	2			1.3	2.3	041M720101	2.3	J		N/A		Yes	No SV
Beryllium	0	2	0.03	0.035			ND	0.04	U		N/A		Yes	No SV
Cadmium	1	2	0.095	0.095	0.27	0.27	041M720101	0.27	J	0.676	1	0.40	No	Max Detect < SV
Calcium	2	2			23.2	43.1	041M720101	43.1	J		N/A		Yes	No SV
Chromium	2	2			0.85	3.2	041M720101	3.2	J	52.3	1, 2	0.06	No	Max Detect < SV
Cobalt	0	2	0.095	0.1			ND	0.1	U		N/A		Yes	No SV
Copper	**2**	**2**			**1.2**	**38.9**	**041M720101**	**38.9**		**18.7**	**1, 2**	**2.08**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	2	0.31	0.32			ND	0.32	U		N/A		Yes	No SV
Iron	2	2			397	1,510	041M720101	1,510			N/A		Yes	No SV
Lead	2	2			1.8	17.5	041M720101	17.5		30.2	1, 2	0.58	No	Max Detect < SV
Magnesium	2	2			20.3	50	041M720101	50	J		N/A		Yes	No SV
Manganese	2	2			1.3	10.7	041M720101	10.7			N/A		Yes	No SV
Mercury	0	2	0.025	0.03			ND	0.03	U	0.13	1, 2	0.23	No	Max SQL< SV
Nickel	1	2	0.38	0.38	1.4	1.4	041M720101	1.4	J	15.9	1, 2	0.09	No	Max Detect < SV
Potassium	2	2			8.4	29.7	041M720101	29.7	J		N/A		Yes	No SV
Selenium	1	2	0.095	0.095	0.26	0.26	041M720101	0.26	J		N/A		Yes	No SV
Silver	0	2	0.125	0.13			ND	0.13	U	0.733	1	0.18	No	Max SQL< SV
Sodium	2	2			3	8.7	041M720101	8.7	J		N/A		Yes	No SV
Thallium	0	2	0.095	0.1			ND	0.1	UJ		N/A		Yes	No SV
Vanadium	2	2			1.2	3.8	041M720101	3.8			N/A		Yes	No SV
Zinc	2	2			3.3	10.7	041M720101	10.7		124	1, 2	0.09	No	Max Detect < SV
PAHs (µg/kg)														
2-Methylnaphthalene	0	2	20.5	22.5			ND	22.5	U	20.2	1	1.11	No	TOC Normalized PAHs<TEC
Acenaphthene	0	2	10	11			ND	11	U	6.71	1	1.64	No	TOC Normalized PAHs<TEC
Acenaphthylene	0	2	20.5	22.5			ND	22.5	U	5.87	1	3.83	No	TOC Normalized PAHs<TEC
Anthracene	1	2	20.5	20.5	41	41	041M720101	41	J	46.9	1	0.87	No	TOC Normalized PAHs<TEC
Benzo(a)anthracene	1	2	20.5	20.5	47	47	041M720101	47		74.8	1	0.63	No	TOC Normalized PAHs<TEC
Benzo(a)pyrene	1	2	20.5	20.5	43	43	041M720101	43	J	88.8	1	0.48	No	TOC Normalized PAHs<TEC
Chrysene	1	2	20.5	20.5	47	47	041M720101	47		108	1	0.44	No	TOC Normalized PAHs<TEC
Dibenz(a,h)anthracene	0	2	20.5	22.5			ND	22.5	U	6.22	1	3.62	No	TOC Normalized PAHs<TEC
Fluoranthene	**2**	**2**			**30**	**120**	**041M720101**	**120**		**113**	**1**	**1.06**	No	TOC Normalized PAHs<TEC
Fluorene	0	2	10	11			ND	11	U	21.2	1	0.52	No	TOC Normalized PAHs<TEC
Naphthalene	0	2	20.5	22.5			ND	22.5	U	34.6	1	0.65	No	TOC Normalized PAHs<TEC
Phenanthrene	1	2	20.5	20.5	49	49	041M720101	49		86.7	1	0.57	No	TOC Normalized PAHs<TEC
Pyrene	2	2			38	98	041M720101	98		153	1	0.64	No	TOC Normalized PAHs<TEC
Total PAHs	2	2			273	557	041M720101	557		1,684	1, 2	0.33	No	TOC Normalized PAHs<TEC
TOC Normalized PAHs	2	2			166.16	189.46	041M720101	189		290	3	0.65	No	Max Detect < SV
PCBs (µg/kg)														
Aroclor-1016	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1221	0	2	2.05	2.25			ND	2.25	U	67	2	0.03	No	Max SQL< SV
Aroclor-1232	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1242	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1248	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1254	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Aroclor-1260	0	2	1.05	1.15			ND	1.15	U	21.6	N/A	0.05	No	Max SQL< SV
Total PCBs	0	2	8.35	9.15			ND	9.15	U	21.6	1	0.42	No	Max SQL< SV
Pesticides (µg/kg)														
Aldrin	0	2	0.05	0.055			ND	0.06	U		N/A		Yes	No SV
Dieldrin	0	2	0.105	0.115			ND	0.12	U	0.716	1	0.16	No	Max SQL< SV
Endosulfan I	0	2	0.105	0.115			ND	0.12	U		N/A		Yes	No SV
Endosulfan II	0	2	0.105	0.115			ND	0.12	U		N/A		Yes	No SV
Endosulfan sulfate	0	2	0.105	0.115			ND	0.12	U		N/A		Yes	No SV
Heptachlor	0	2	0.05	0.055			ND	0.06	U		N/A		Yes	No SV
Heptachlor epoxide	0	2	0.05	0.055			ND	0.06	U		N/A		Yes	No SV
Methoxychlor	0	2	0.5	0.55			ND	0.55	UJ		N/A		Yes	No SV
Toxaphene	0	2	5	5.5			ND	5.5	U		N/A		Yes	No SV
alpha-Chlordane	0	2	0.05	0.055			ND	0.06	U	1.7	1	0.03	No	Max SQL< SV
gamma-Chlordane	0	2	0.05	0.055			ND	0.06	U	1.7	1	0.03	No	Max SQL< SV
Total Chlordane	0	2	0.1	0.11			ND	0.11	U	1.7	1	0.06	No	Max SQL< SV
Endrin	0	2	0.105	0.115			ND	0.12	U	3.3	2	0.03	No	Max SQL< SV
Endrin aldehyde	0	2	0.105	0.115			ND	0.12	U	3.3	2	0.03	No	Max SQL< SV
Endrin ketone	0	2	0.105	0.115			ND	0.12	U	3.3	2	0.03	No	Max SQL< SV
Total Endrin	0	2	0.315	0.345			ND	0.35	U	3.3	2	0.11	No	Max SQL< SV
alpha-BHC	0	2	0.05	0.055			ND	0.06	U		N/A		Yes	No SV
beta-BHC	0	2	0.05	0.055			ND	0.06	U	0.32	N/A	0.17	No	Max SQL< SV
delta-BHC	0	2	0.05	0.055			ND	0.06	U	0.32	N/A	0.17	No	Max SQL< SV
gamma-BHC (Lindane)	0	2	0.05	0.055			ND	0.06	U	0.32	1	0.17	No	Max SQL< SV
Total BHC	0	2	0.2	0.22			ND	0.22	U	0.32	2	0.69	No	Max SQL< SV
4,4'-DDD	1	2	0.115	0.115	0.2	0.2	041M720201	0.2	J	1.22	1	0.16	No	Max Detect < SV
4,4'-DDE	1	2	0.105	0.105	0.24	0.24	041M720101	0.24		2.07	1	0.12	No	Max Detect < SV
4,4'-DDT	1	2	0.105	0.105	0.26	0.26	041M720101	0.26	J	1.19	1	0.22	No	Max Detect < SV
Total DDT	2	2			0.41	0.615	041M720101	0.62		3.3	2	0.19	No	Max Detect < SV
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	2	495	550			ND	550	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	2	495	550			ND	550	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	2	205	225			ND	225	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	2	205	225			ND	225	U		N/A		Yes	No SV
2-Chloronaphthalene	0	2	205	225			ND	225	U		N/A		Yes	No SV
2-Chlorophenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	2	495	550			ND	550	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	2	205	225			ND	225	U		N/A		Yes	No SV
2-Nitroaniline	0	2	205	225			ND	225	U		N/A		Yes	No SV
2-Nitrophenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	2	205	225			ND	225	U		N/A		Yes	No SV
3-Nitroaniline	0	2	495	550			ND	550	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	2	205	225			ND	225	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
4-Chloroaniline	0	2	205	225			ND	225	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	2	205	225			ND	225	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	2	205	225			ND	225	U		N/A		Yes	No SV
4-Nitroaniline	0	2	495	550			ND	550	U		N/A		Yes	No SV
4-Nitrophenol	0	2	495	550			ND	550	U		N/A		Yes	No SV
Benzo(b)fluoranthene	1	2	20.5	20.5	90	90	041M720101	90			N/A		No	TOC Normalized PAHs<TEC
Benzo(g,h,i)perylene	1	2	20.5	20.5	58	58	041M720101	58			N/A		No	TOC Normalized PAHs<TEC
Benzo(k)fluoranthene	1	2	20.5	20.5	27	27	041M720101	27	J		N/A		No	TOC Normalized PAHs<TEC
bis(2-Chloroethoxy)methane	0	2	205	225			ND	225	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	2	20.5	22.5			ND	22.5	U		N/A		Yes	No SV
Bis(2-Ethylhexyl)phthalate (BEHP)	0	2	225	250			ND	250	U	182	1, 2	1.37	Yes	Max SQL > SV
Butylbenzylphthalate	0	2	205	225			ND	225	U	182	1, 2	1.24	Yes	Max SQL > SV

Table 14-2-6
Wetland 72 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.														
Carbazole	0	2	205	225			ND	225	U		N/A		Yes	No SV
Dibenzofuran	0	2	205	225			ND	225	U		N/A		Yes	No SV
Diethylphthalate	0	2	205	225			ND	225	U	182	1, 2	1.24	Yes	Max SQL > SV
Dimethylphthalate	0	2	205	225			ND	225	U	182	1, 2	1.24	Yes	Max SQL > SV
Di-n-butylphthalate	1	2	205	205	43	43	041M720101	43	J	182	1, 2	0.24	No	Max Detect < SV
Di-n-octylphthalate	0	2	205	225			ND	225	U	182	1, 2	1.24	Yes	Max SQL > SV
Hexachlorobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
Hexachlorobutadiene	0	2	205	225			ND	225	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	2	205	225			ND	225	U		N/A		Yes	No SV
Hexachloroethane	0	2	205	225			ND	225	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	1	2	20.5	20.5	47	47	041M720101	47			N/A		No	TOC Normalized PAHs<TEC
Isophorone	0	2	205	225			ND	225	U		N/A		Yes	No SV
Nitrobenzene	0	2	205	225			ND	225	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	2	20.5	22.5			ND	22.5	U		N/A		Yes	No SV
N-Nitrosodiphenylamine	0	2	205	225			ND	225	U		N/A		Yes	No SV
Pentachlorophenol	0	2	495	550			ND	550	U		N/A		Yes	No SV
Phenol	0	2	205	225			ND	225	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,1-Dichloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,1-Dichloroethene	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,2-Dichloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	0	2	6	800			ND	800	U		N/A		Yes	No SV
1,2-Dichloropropane	0	2	6	800			ND	800	U		N/A		Yes	No SV
2-Butanone (MEK)	0	2	6	800			ND	800	U		N/A		Yes	No SV
2-Hexanone	0	2	6	800			ND	800	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	2	6	800			ND	800	U		N/A		Yes	No SV
Acetone	1	2	800	800	32	32	041M720201	32			N/A		Yes	No SV
Benzene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Bromodichloromethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
Bromoform	0	2	6	800			ND	800	U		N/A		Yes	No SV
Bromomethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
Carbon disulfide	0	2	6	800			ND	800	U		N/A		Yes	No SV
Carbon tetrachloride	0	2	6	800			ND	800	U		N/A		Yes	No SV
Chlorobenzene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Chloroethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
Chloroform	0	2	6	800			ND	800	U		N/A		Yes	No SV
Chloromethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Dibromochloromethane	0	2	6	800			ND	800	U		N/A		Yes	No SV
Ethylbenzene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Methylene chloride	1	2	6	6	740	740	041M720101	740	J		N/A		Yes	No SV
Styrene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Tetrachloroethene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Toluene	0	2	6	800			ND	800	U		N/A		Yes	No SV
trans-1,3-Dichloropropene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Trichloroethene	0	2	6	800			ND	800	U		N/A		Yes	No SV
Vinyl chloride	0	2	2	235			ND	235	U		N/A		Yes	No SV
Xylene (Total)	0	2	6	800			ND	800	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 14-2-7
Wetland 72 Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	None	Acetone
Barium			Methylene chloride
Calcium			
Copper			
Iron			
Magnesium			
Manganese			
Potassium			
Selenium			
Sodium			
Vanadium			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Cobalt	alpha-BHC	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Cyanide (CN)	Endosulfan I	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Thallium	Endosulfan II	1,4-Dichlorobenzene	1,1-Dichloroethane
	Endosulfan sulfate	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
	Heptachlor	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Heptachlor epoxide	2,4,6-Trichlorophenol	1,2-Dichloroethene (total)
	Methoxychlor	2,4-Dichlorophenol	1,2-Dichloropropane
	Toxaphene	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-Methylphenol (o-Cresol)	Carbon disulfide
		2-Nitroaniline	Carbon tetrachloride
		2-Nitrophenol	Chlorobenzene
		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
		bis(2-Ethylhexyl)phthalate (BEHP)	Vinyl chloride
		Butylbenzylphthalate	Xylene (Total)
		Carbazole	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-octylphthalate	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenol	

Table 14-2-8
Wetland 72 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	Number Analyzed	Reference Concentration	Number Detected > Reference Concentration	Number Analyzed	COPC Retained (Y/N)	Rationale
Metals (mg/kg)																									
Aluminum	2	2				1,590	736	2,450	2,450		041M720101			NA					0	2	13,610	0	2	No	EPC < RC
Barium	2	2				1.8	1.3	2.3	2.3	J	041M720101			NA					0	2	14	0	2	No	EPC < RC
Beryllium	0	2	0.0325	0.03	0.035	0.0325			0.035	U	ND			NA					0	2	0.84	0	2	No	Parameter Not Detected
Calcium	2	2				33.1	23.2	43.1	43.1	J	041M720101			NA					0	2	10,756.67	0	2	No	EPC < RC
Cobalt	0	2	0.0975	0.095	0.1	0.0975			0.1	U	ND			NA					0	2	2.8	0	2	No	Parameter Not Detected
Copper	2	2				20.1	1.2	38.9	38.9		041M720101	18.7	108	PEL	2.08	1.07	0.36	0.19	0	2	19.5	1	2	No	EPC > RC, but < RV
Cyanide (CN)	0	2	0.315	0.31	0.32	0.315			0.32	U	ND			NA					0	2	5.22	0	2	No	Parameter Not Detected
Iron	2	2				954	397	1,510	1,510		041M720101			NA					0	2	11,911.67	0	2	No	EPC < RC
Magnesium	2	2				35.1	20.3	50	50	J	041M720101			NA					0	2	7,513.33	0	2	No	EPC < RC
Manganese	2	2				6	1.3	10.7	10.7		041M720101			NA					0	2	37.97	0	2	No	EPC < RC
Potassium	2	2				19.1	8.4	29.7	29.7	J	041M720101			NA					0	2	1,628.67	0	2	No	EPC < RC
Selenium	1	2	0.095	0.095	0.095	0.177	0.26	0.26	0.26	J	041M720101			NA					0	2	3.45	0	2	No	EPC < RC
Sodium	2	2				5.85	3	8.7	8.7	J	041M720101			NA					0	2	18,993.33	0	2	No	EPC < RC
Thallium	0	2	0.0975	0.095	0.1	0.0975			0.1	UJ	ND			NA					0	2	1.57	0	2	No	Parameter Not Detected
Vanadium	2	2				2.5	1.2	3.8	3.8		041M720101			NA					0	2	28.67	0	2	No	EPC < RC
Pesticides (µg/kg)																									
Aldrin	0	2	0.0525	0.05	0.055	0.0525			0.055	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Endosulfan I	0	2	0.11	0.105	0.115	0.11			0.115	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Endosulfan II	0	2	0.11	0.105	0.115	0.11			0.115	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Endosulfan sulfate	0	2	0.11	0.105	0.115	0.11			0.115	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Heptachlor	0	2	0.0525	0.05	0.055	0.0525			0.055	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Heptachlor epoxide	0	2	0.0525	0.05	0.055	0.0525			0.055	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Methoxychlor	0	2	0.525	0.5	0.55	0.525			0.55	UJ	ND			NA					0	2		0	2	No	Parameter Not Detected
Toxaphene	0	2	5.25	5	5.5	5.25			5.5	U	ND			NA					0	2		0	2	No	Parameter Not Detected
alpha-BHC	0	2	0.0525	0.05	0.055	0.0525			0.055	U	ND		0.99	PEL			0.06	0.05	0	2		0	2	No	Parameter Not Detected
SVOCs (µg/kg)																									
1,2,4-Trichlorobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,2-Dichlorobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,3-Dichlorobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,4-Dichlorobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4-Dichlorophenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4-Dimethylphenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4-Dinitrophenol	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,4-Dinitrotoluene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2,6-Dinitrotoluene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Chloronaphthalene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Chlorophenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Nitroaniline	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Nitrophenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
3-Nitroaniline	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Chloroaniline	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Nitroaniline	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Nitrophenol	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	2	21.5	20.5	22.5	21.5			22.5	U	ND			NA					0	2		0	2	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	2	238	225	250	238			250	U	ND	182	2,647	PEL	1.37	1.3	0.09	0.09	0	2		0	2	No	Parameter Not Detected
Butylbenzylphthalate	0	2	215	205	225	215			225	U	ND	182	2,647	PEL	1.24	1.18	0.09	0.08	0	2		0	2	No	Parameter Not Detected
Carbazole	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Dibenzofuran	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Diethylphthalate	0	2	215	205	225	215			225	U	ND	182	2,647	PEL	1.24	1.18	0.09	0.08	0	2		0	2	No	Parameter Not Detected
Dimethylphthalate	0	2	215	205	225	215			225	U	ND	182	2,647	PEL	1.24	1.18	0.09	0.08	0	2		0	2	No	Parameter Not Detected
Di-n-octylphthalate	0	2	215	205	225	215			225	U	ND	182	2,647	PEL	1.24	1.18	0.09	0.08	0	2		0	2	No	Parameter Not Detected
Hexachlorobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Hexachlorobutadiene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Hexachloroethane	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Isophorone	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Nitrobenzene	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	2	21.5	20.5	22.5	21.5			22.5	U	ND			NA					0	2		0	2	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Pentachlorophenol	0	2	523	495	550	523			550	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Phenol	0	2	215	205	225	215			225	U	ND			NA					0	2		0	2	No	Parameter Not Detected

Table 14-2-8
Wetland 72 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	Number Analyzed	Reference Concentration	Number Detected > Reference Concentration	Number Analyzed	COPC Retained (Y/N)	Rationale
VOCs (µg/kg)																									
1,1,1-Trichloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,1,2-Trichloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,1-Dichloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,1-Dichloroethene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,2-Dichloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,2-Dichloroethene (total)	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
1,2-Dichloropropane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Butanone (MEK)	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
2-Hexanone	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Acetone	1	2	800	800	800	416	32	32	32		041M720201			NA					0	2		0	2	Yes	No SV, no RV, and no RC
Benzene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Bromodichloromethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Bromoform	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Bromomethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Carbon disulfide	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Carbon tetrachloride	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Chlorobenzene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Chloroethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Chloroform	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Chloromethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Dibromochloromethane	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Ethylbenzene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Methylene chloride	1	2	6	6	6	373	740	740	740	J	041M720101			NA					0	2		0	2	Yes	No SV, no RV, and no RC
Styrene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Tetrachloroethene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Toluene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Trichloroethene	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Vinyl chloride	0	2	119	2	235	119			235	U	ND			NA					0	2		0	2	No	Parameter Not Detected
Xylene (Total)	0	2	403	6	800	403			800	U	ND			NA					0	2		0	2	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 14-2-9
Wetland 72 Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
None	None	None	None

Table 14-2-10
Wetland 72 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
041M720101	11/29/1995	mg/kg	0.86		Arsenic	8.2	70	0.01
041M720101	11/29/1995	mg/kg	0.27	J	Cadmium	1.2	9.6	0.03
041M720101	11/29/1995	mg/kg	3.2	J	Chromium	81	370	0.01
041M720101	11/29/1995	mg/kg	38.9		Copper	34	270	0.14
041M720101	11/29/1995	mg/kg	17.5		Lead	46.7	218	0.08
041M720101	11/29/1995	mg/kg	0.03	U	Mercury	0.15	0.71	0.04
041M720101	11/29/1995	mg/kg	1.4	J	Nickel	20.9	51.6	0.03
041M720101	11/29/1995	mg/kg	0.13	U	Silver	1	3.7	0.04
041M720101	11/29/1995	mg/kg	10.7		Zinc	150	410	0.03
041M720101	11/29/1995	µg/kg	0.24		4,4'-DDE	2.2	27	0.01
041M720101	11/29/1995	µg/kg	0.26	J	4,4'-DDT	1.58	46.1	0.01
041M720101	11/29/1995	µg/kg	9.15	U	Total PCBs	22.7	180	0.05
041M720101	11/29/1995	µg/kg	22.5	U	2-Methylnaphthalene	70	670	0.03
041M720101	11/29/1995	µg/kg	11	U	Acenaphthene	16	500	0.02
041M720101	11/29/1995	µg/kg	22.5	U	Acenaphthylene	44	640	0.04
041M720101	11/29/1995	µg/kg	41	J	Anthracene	85.3	1,100	0.04
041M720101	11/29/1995	µg/kg	47		Benzo(a)anthracene	261	1,600	0.03
041M720101	11/29/1995	µg/kg	43	J	Benzo(a)pyrene	430	1,600	0.03
041M720101	11/29/1995	µg/kg	47		Chrysene	384	2,800	0.02
041M720101	11/29/1995	µg/kg	22.5	U	Dibenz(a,h)anthracene	63.4	260	0.09
041M720101	11/29/1995	µg/kg	120		Fluoranthene	600	5,100	0.02
041M720101	11/29/1995	µg/kg	11	U	Fluorene	19	540	0.02
041M720101	11/29/1995	µg/kg	22.5	U	Naphthalene	160	2,100	0.01
041M720101	11/29/1995	µg/kg	49		Phenanthrene	240	1,500	0.03
041M720101	11/29/1995	µg/kg	98		Pyrene	665	2,600	0.04
041M720101	11/29/1995				ERM Quotient Sum			0.88
041M720101	11/29/1995				Mean ERM Quotient			0.04
041M720101	11/29/1995				Mean ERM Quotient without ND			0.02
041M720101	11/29/1995				Mean ERM Quotient Category			2
041M720201	11/29/1995	mg/kg	0.28	J	Arsenic	8.2	70	0.00
041M720201	11/29/1995	mg/kg	0.095	U	Cadmium	1.2	9.6	0.01
041M720201	11/29/1995	mg/kg	0.85	J	Chromium	81	370	0.00
041M720201	11/29/1995	mg/kg	1.2	J	Copper	34	270	0.00
041M720201	11/29/1995	mg/kg	1.8		Lead	46.7	218	0.01
041M720201	11/29/1995	mg/kg	0.025	U	Mercury	0.15	0.71	0.04
041M720201	11/29/1995	mg/kg	0.38	U	Nickel	20.9	51.6	0.01
041M720201	11/29/1995	mg/kg	0.125	U	Silver	1	3.7	0.03
041M720201	11/29/1995	mg/kg	3.3		Zinc	150	410	0.01
041M720201	11/29/1995	µg/kg	0.105	U	4,4'-DDE	2.2	27	0.00
041M720201	11/29/1995	µg/kg	0.105	UJ	4,4'-DDT	1.58	46.1	0.00
041M720201	11/29/1995	µg/kg	8.35	U	Total PCBs	22.7	180	0.05
041M720201	11/29/1995	µg/kg	20.5	U	2-Methylnaphthalene	70	670	0.03
041M720201	11/29/1995	µg/kg	10	U	Acenaphthene	16	500	0.02
041M720201	11/29/1995	µg/kg	20.5	U	Acenaphthylene	44	640	0.03
041M720201	11/29/1995	µg/kg	20.5	U	Anthracene	85.3	1,100	0.02
041M720201	11/29/1995	µg/kg	20.5	U	Benzo(a)anthracene	261	1,600	0.01
041M720201	11/29/1995	µg/kg	20.5	U	Benzo(a)pyrene	430	1,600	0.01
041M720201	11/29/1995	µg/kg	20.5	U	Chrysene	384	2,800	0.01
041M720201	11/29/1995	µg/kg	20.5	U	Dibenz(a,h)anthracene	63.4	260	0.08
041M720201	11/29/1995	µg/kg	30	J	Fluoranthene	600	5,100	0.01
041M720201	11/29/1995	µg/kg	10	U	Fluorene	19	540	0.02
041M720201	11/29/1995	µg/kg	20.5	U	Naphthalene	160	2,100	0.01
041M720201	11/29/1995	µg/kg	20.5	U	Phenanthrene	240	1,500	0.01
041M720201	11/29/1995	µg/kg	38	J	Pyrene	665	2,600	0.01
041M720201	11/29/1995				ERM Quotient Sum			0.44
041M720201	11/29/1995				Mean ERM Quotient			0.02
041M720201	11/29/1995				Mean ERM Quotient without ND			0.00
041M720201	11/29/1995				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 14-2-11
Wetland 72 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	Screenin g Value	Source	Screening HQ	Retained for Refinement?	Rationale
Metals (µg/L)																
Aluminum	**1**	**1**				**895**	**895**	**895**	**041W720101**	**895**		**13**	**FDEP**	**68.8**	**Yes**	**Max Detect > SV**
Arsenic	0	1	1	1	1	1			ND	1	U	50	FDEP	0.02	No	Max SQL< SV
Barium	1	1				8.8	8.8	8.8	041W720101	8.8	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	0	1	1.5	1.5	1.5	1.5			ND	1.5	U	0.66	EPA	2.27	Yes	Max SQL > SV
Calcium	1	1				11,000	11,000	11,000	041W720101	11,000			NA		Yes	No SV
Chromium	0	1	4	4	4	4			ND	4	U	11	EPA	0.36	No	Max SQL< SV
Cobalt	0	1	1.5	1.5	1.5	1.5			ND	1.5	U		NA		Yes	No SV
Copper	1	1				5.2	5.2	5.2	041W720101	5.2	J	6.54	EPA	0.80	No	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				559	559	559	041W720101	559			NA		Yes	No SV
Lead	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	1.32	EPA	0.38	No	Max SQL< SV
Magnesium	1	1				1,140	1,140	1,140	041W720101	1,140	J		NA		Yes	No SV
Manganese	1	1				6.1	6.1	6.1	041W720101	6.1	J		NA		Yes	No SV
Mercury	0	1	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	Yes	Max SQL > SV
Nickel	0	1	6	6	6	6			ND	6	U	87.71	EPA	0.07	No	Max SQL< SV
Potassium	1	1				597	597	597	041W720101	597	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	**1**	**1**				**4.4**	**4.4**	**4.4**	**041W720101**	**4.4**	**J**	**0.012**	**EPA**	**367**	**Yes**	**Max Detect > SV**
Sodium	1	1				3,870	3,870	3,870	041W720101	3,870	J		NA		Yes	No SV
Thallium	**1**	**1**				**5.3**	**5.3**	**5.3**	**041W720101**	**5.3**	**J**	**4**	**EPA**	**1.33**	**Yes**	**Max Detect > SV**
Vanadium	1	1				3	3	3	041W720101	3	J		NA		Yes	No SV
Zinc	1	1				9	9	9	041W720101	9	J	58.91	EPA	0.15	No	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	UJ		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	UJ	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 14-2-11
Wetland 72 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	Screenin g 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
1,2-Dichlorobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	15.8	EPA	0.16	No	Max SQL< SV
1,3-Dichlorobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
1,4-Dichlorobenzene	0	1	2.5	2.5	2.5	2.5			ND	2.5	U	3	FDEP	0.83	No	Max SQL< SV
2,2'-oxybis(1-Chloropropane)/bis(2-ch	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	0	1	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	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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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)	0	1	3.5	3.5	3.5	3.5			ND	3.5	U	0.3	EPA	11.7	Yes	Max SQL > 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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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

Table 14-2-11
Wetland 72 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	Screenin g Value	Source	Screening HQ	Retained for Refinement?	Rationale
PAHs (µg/L) - cont.																
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
Pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Total PAH	0	1	6.5	6.5	6.5	6.5			ND	6.5	U		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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		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-Butanone (MEK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA		Yes	No SV
2-Hexanone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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-1,2-Dichloroethene	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	6	6	6	6			ND	6	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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Vinyl chloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		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 14-2-12
Wetland 72 Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	None	None	None
Barium			
Calcium			
Iron			
Magnesium			
Manganese			
Potassium			
Silver			
Sodium			
Thallium			
Vanadium			
		Not Detected Parameters	
Beryllium	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Cadmium	Dieldrin	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Cobalt	Endosulfan II	2,2'-oxybis(1-Chloropropane)/bis(2-chlor	1,1-Dichloroethane
Mercury	Endosulfan sulfate	2,4,5-Trichlorophenol	1,2-Dibromo-3-Chloropropane
	Heptachlor	2,4,6-Trichlorophenol	1,2-Dibromoethane
	Heptachlor epoxide	2,4-Dichlorophenol	1,2-Dichloroethane
	Methoxychlor	2,4-Dimethylphenol	1,2-Dichloropropane
	Toxaphene	2,4-Dinitrophenol	1,3-Dichlorobenzene
	alpha-Chlordane	2,4-Dinitrotoluene	2-Butanone (MEK)
	gamma-Chlordane	2,6-Dinitrotoluene	2-Hexanone
	Total Chlordane	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	Endrin	2-Methyl-4,6-Dinitrophenol	Acetone
	Endrin aldehyde	2-Methylphenol (o-Cresol)	Bromochloromethane
	Endrin ketone	2-Nitroaniline	Bromodichloromethane
	Total Endrin	2-Nitrophenol	Bromoform
	alpha-BHC	3,3'-Dichlorobenzidine	Bromomethane
	beta-BHC	3-Nitroaniline	Carbon disulfide
	delta-BHC	4-Bromophenyl-phenylether	Carbon tetrachloride
	Total BHC	4-Chloro-3-methylphenol	Chloroethane
	4,4'-DDD	4-Chloroaniline	Chloromethane
	4,4'-DDE	4-Chlorophenylphenyl ether	cis-1,2-Dichloroethene
	4,4'-DDT	4-Methylphenol (p-Cresol)	cis-1,3-Dichloropropene
	Total DDT	4-Nitroaniline	Dibromochloromethane
	Aroclor-1016	4-Nitrophenol	Styrene
	Aroclor-1221	Benzo(b)fluoranthene	Tetrachloroethene
	Aroclor-1232	Benzo(g,h,i)perylene	trans-1,2-Dichloroethene
	Aroclor-1242	Benzo(k)fluoranthene	trans-1,3-Dichloropropene
	Aroclor-1248	bis(2-Chloroethoxy)methane	Trichloroethene
	Aroclor-1254	bis(2-Chloroethyl)ether	Vinyl chloride
	Aroclor-1260	bis(2-Ethylhexyl)phthalate (BEHP)	Xylene (Total)
	Total PCBs	Butylbenzylphthalate	
		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 14-2-13
Wetland 72 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**				**895**	**895**	**895**	**041W720101**	**895**		**13**	**FDEP**	**69**	**68.8**	**1,090.25**	**0**	**1**	**No**	**Max Result < Ref. Conc.**
Barium	1	1				8.8	8.8	8.8	041W720101	8.8	J		NA			3.68	1	1	Yes	Max Result > Ref. Conc.
Beryllium	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	0.13	FDEP	4	3.85	1	0	1	No	Max SQL < Ref. Conc.
Cadmium	0	1	1.5	1.5	1.5	1.5			ND	1.5	U	0.66	EPA	2.27	2.27	3	0	1	No	Max SQL < Ref. Conc.
Calcium	1	1				11,000	11,000	11,000	041W720101	11,000			NA			7,675	1	1	No	Essential Nutrient
Cobalt	0	1	1.5	1.5	1.5	1.5			ND	1.5	U		NA			3	0	1	No	Max SQL < Ref. Conc.
Iron	1	1				559	559	559	041W720101	559			NA			2,360	0	1	No	Max Result < Ref. Conc.
Magnesium	1	1				1,140	1,140	1,140	041W720101	1,140	J		NA			20,260	0	1	No	Max Result < Ref. Conc.
Manganese	1	1				6.1	6.1	6.1	041W720101	6.1	J		NA			13.2	0	1	No	Max Result < Ref. Conc.
Mercury	0	1	0.065	0.065	0.065	0.065			ND	0.065	U	0.012	EPA	5.42	5.42	0.13	0	1	No	Max SQL < Ref. Conc.
Potassium	1	1				597	597	597	041W720101	597	J		NA			6,995	0	1	No	Max Result < Ref. Conc.
Silver	**1**	**1**				**4.4**	**4.4**	**4.4**	**041W720101**	**4.4**	**J**	**0.012**	**EPA**	**367**	**367**	**4**	**1**	**1**	**Yes**	**Max Result > Ref. Conc.**
Sodium	1	1				3,870	3,870	3,870	041W720101	3,870	J		NA			182,200	0	1	No	Max Result < Ref. Conc.
Thallium	**1**	**1**				**5.3**	**5.3**	**5.3**	**041W720101**	**5.3**	**J**	**4**	**EPA**	**1.33**	**1.33**	**4.2**	**1**	**1**	**Yes**	**Max Result > Ref. Conc.**
Vanadium	1	1				3	3	3	041W720101	3	J		NA			4.7	0	1	No	Max Result < Ref. Conc.
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	7	6.58		0	1	No	Parameter Not Detected; Max SQL > SV
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; Max SQL > SV
Methoxychlor	0	1	0.25	0.25	0.25	0.25			ND	0.25	UJ		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	12	11.6		0	1	No	Parameter Not Detected; Max SQL > SV
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	22	21.7		0	1	No	Parameter Not Detected; Max SQL > SV
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
gamma-BHC (Lindane)	0	1	0.025	0.025	0.025	0.025			ND	0.025	U	0.08	EPA	0.31	0.31		0	1	No	Max SQL < SV
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; Max SQL > SV
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; Max SQL > SV
4,4'-DDT	0	1	0.05	0.05	0.05	0.05			ND	0.05	UJ	0.00059	FDEP	85	84.7		0	1	No	Parameter Not Detected; Max SQL > SV
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	36	35.7		0	1	No	Parameter Not Detected; Max SQL > SV
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
1,3-Dichlorobenzene	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
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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
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

Table 14-2-13
Wetland 72 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	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)	0	1	3.5	3.5	3.5	3.5			ND	3.5	U	0.3	EPA	12	11.7		0	1	No	Parameter Not Detected; Max SQL > SV
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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
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
Naphthalene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U	26	FDEP	0.02	0.02		0	1	No	Max SQL < SV
Phenanthrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Pyrene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Total PAH	0	1	6.5	6.5	6.5	6.5			ND	6.5	U		NA				0	1	No	Parameter Not Detected
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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
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-Butanone (MEK)	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
2-Hexanone	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		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	0	1	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	1	No	Parameter Not Detected
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
cis-1,2-Dichloroethene	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
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	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Vinyl chloride	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	No	Parameter Not Detected
Xylene (Total)	0	1	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	1	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 14-2-14
Wetland 72 Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Silver	None	None	None
Thallium			
Barium			

Table 14-2-15
Wetland 72 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**				**830**	**830**	**830**	**041W720102**	**830**		**13**	**FDEP**	**63.8**	**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	0	1	1.65	1.65	1.65	1.65			ND	1.65	U	50	FDEP	0.03	No	Max SQL< SV
Barium	1	1				12	12	12	041W720102	12			NA		Yes	No SV
Beryllium	**1**	**1**				**0.78**	**0.78**	**0.78**	**041W720102**	**0.78**	**I**	**0.13**	**FDEP**	**6**	**Yes**	**Max Detect > SV**
Cadmium	0	1	0.3	0.3	0.3	0.3			ND	0.3	U	0.66	EPA	0.46	No	Max SQL< SV
Calcium	1	1				9,700	9,700	9,700	041W720102	9,700			NA		Yes	No SV
Chromium	0	1	0.7	0.7	0.7	0.7			ND	0.7	U	11	EPA	0.06	No	Max SQL< SV
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA		Yes	No SV
Copper	0	1	0.3	0.3	0.3	0.3			ND	0.3	U	6.54	EPA	0.05	No	Max SQL< SV
Iron	1	1				1,200	1,200	1,200	041W720102	1,200			NA		Yes	No SV
Lead	**1**	**1**				**2.3**	**2.3**	**2.3**	**041W720102**	**2.3**	**I**	**1.32**	**EPA**	**1.74**	**Yes**	**Max Detect > SV**
Magnesium	1	1				1,400	1,400	1,400	041W720102	1,400			NA		Yes	No SV
Manganese	1	1				7.7	7.7	7.7	041W720102	7.7	I		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	0	1	0.75	0.75	0.75	0.75			ND	0.75	U	87.71	EPA	0.01	No	Max SQL< SV
Potassium	1	1				990	990	990	041W720102	990	I		NA		Yes	No SV
Selenium	0	1	2.65	2.65	2.65	2.65			ND	2.65	U	5	EPA	0.53	No	Max SQL< 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				5,400	5,400	5,400	041W720102	5,400			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				3.7	3.7	3.7	041W720102	3.7	I		NA		Yes	No SV
Zinc	1	1				1.7	1.7	1.7	041W720102	1.7	I	58.91	EPA	0.03	No	Max Detect < SV

Notes:

Sources for Screening Values (SVs):
EPA = Ambient Water Quality Criteria
FDEP = Surface Water Quality Criteria
N/A = No screening value available

Supporting Information:
SQL = Sample Quanitation Limit
HQ = Hazard Quotient
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 14-2-16
Wetland 72 Phase IV
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Not Analyzed	Not Analyzed	Not Analyzed
Barium			
Beryllium			
Calcium			
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Cobalt	Not Analyzed	Not Analyzed	Not Analyzed
Mercury			
Silver			

Table 14-2-17
Wetland 72 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.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	**1**	**1**				**830**	**830**	**830**	**041W720102**	**830**		**13**	**FDEP**	**64**	**63.8**	**1,090.25**	**0**	**1**	**No**	**Max Result < Ref. Conc.**
Barium	1	1				12	12	12	041W720102	12			NA			3.68	1	1	Yes	Max Result > Ref. Conc.
Beryllium	**1**	**1**				**0.78**	**0.78**	**0.78**	**041W720102**	**0.78**	**I**	**0.13**	**FDEP**	**6**	**6**	**1**	**0**	**1**	**No**	**Max Result < Ref. Conc.**
Calcium	1	1				9,700	9,700	9,700	041W720102	9,700			NA			7,675	1	1	No	Essential Nutrient
Cobalt	0	1	0.6	0.6	0.6	0.6			ND	0.6	U		NA			3	0	1	No	Max SQL < Ref. Conc.
Iron	1	1				1,200	1,200	1,200	041W720102	1,200			NA			2,360	0	1	No	Max Result < Ref. Conc.
Lead	**1**	**1**				**2.3**	**2.3**	**2.3**	**041W720102**	**2.3**	**I**	**1.32**	**EPA**	**1.74**	**1.74**	**3.2**	**0**	**1**	**No**	**Max Result < Ref. Conc.**
Magnesium	1	1				1,400	1,400	1,400	041W720102	1,400			NA			20,260	0	1	No	Max Result < Ref. Conc.
Manganese	1	1				7.7	7.7	7.7	041W720102	7.7	I		NA			13.2	0	1	No	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	1	No	Max SQL < Ref. Conc.
Potassium	1	1				990	990	990	041W720102	990	I		NA			6,995	0	1	No	Max Result < Ref. Conc.
Silver	0	1	0.55	0.55	0.55	0.55			ND	0.55	U	0.012	EPA		45.8	4	0	1	No	Max SQL < Ref. Conc.
Sodium	1	1				5,400	5,400	5,400	041W720102	5,400			NA			182,200	0	1	No	Max Result < Ref. Conc.
Vanadium	1	1				3.7	3.7	3.7	041W720102	3.7	I		NA			4.7	0	1	No	Max Result < Ref. Conc.

Notes:

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

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

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 14-2-18
Wetland 72 Phase IV
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Not Analyzed	Not Analyzed	Not Analyzed

Table 14-2-19
Wetland 72 Phase II
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration	Min. Qual.	Maximum Concentration	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum concentration	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	9.0E+02	=	UG/L	041W720101	1 / 1	NAV	9.0E+02	9.0E-04	1.0E-03	2.33E-06	N/A	4.93E-05
7440393	Barium	N	N/A	N/A	8.8E+00	J	UG/L	041W720101	1 / 1	NAV	8.8E+00	8.8E-06	1.0E-03	2.29E-08	N/A	4.84E-07
7439965	Manganese	N	N/A	N/A	6.1E+00	J	UG/L	041W720101	1 / 1	NAV	6.1E+00	6.1E-06	1.0E-03	1.59E-08	N/A	3.36E-07
7440224	Silver	N	N/A	N/A	4.4E+00	J	UG/L	041W720101	1 / 1	NAV	4.4E+00	4.4E-06	6.0E-04	6.86E-09	N/A	1.45E-07
7440280	Thallium	N	N/A	N/A	5.3E+00	J	UG/L	041W720101	1 / 1	NAV	5.3E+00	5.3E-06	1.0E-03	1.38E-08	N/A	2.92E-07
7440622	Vanadium	N	N/A	N/A	3.0E+00	J	UG/L	041W720101	1 / 1	NAV	3.0E+00	3.0E-06	1.0E-03	7.80E-09	N/A	1.65E-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 14-2-20
Wetland 72 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	9.0E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	N/A	N/A	4.9E-04	N/A
	Barium	N	8.8E-06	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	N/A	N/A	9.9E-05	N/A
	Manganese	N	6.1E-06	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	N/A	N/A	6.0E-05	N/A
	Silver	N	4.4E-06	5.0E-03	N/A	1.8E-01	3	9.0E-04	N/A	N/A	N/A	1.6E-04	N/A
	Thallium	N	5.3E-06	6.6E-05	N/A	2.0E-01	3, 4	1.3E-05	N/A	N/A	N/A	2.2E-02	N/A
	Vanadium	N	3.0E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	N/A	N/A	9.1E-04	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 14-2-21
Wetland 72 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	9.0E-04	1.0E+00	N/A	N/A	N/A	1.8E-08	N/A
	Barium	N	8.8E-06	7.0E-02	N/A	N/A	N/A	2.6E-09	N/A
	Manganese	N	6.1E-06	1.4E-01	N/A	N/A	N/A	8.9E-10	N/A
	Silver	N	4.4E-06	5.0E-03	N/A	N/A	N/A	1.8E-08	N/A
	Thallium	N	5.3E-06	6.6E-05	N/A	N/A	N/A	1.6E-06	N/A
	Vanadium	N	3.0E-06	7.0E-03	N/A	N/A	N/A	8.7E-09	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

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

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 14-2-22
Wetland 72 Phase IV
2004 Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration	Min. Qual.	Maximum Concentration	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum Concentration	K_p	DA_{event}	DAD_{sw} (mg/kg-	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	N/A	N/A	8.3E+02	=	UG/L	041W720102	1 / 1	NAV	8.3E+02	8.3E-04	1.0E-03	2.16E-06	N/A	4.57E-05
7440393	Barium	N	N/A	N/A	1.2E+01	=	UG/L	041W720102	1 / 1	NAV	1.2E+01	1.2E-05	1.0E-03	3.12E-08	N/A	6.60E-07
7440417	Beryllium	N	N/A	N/A	7.8E-01	I	UG/L	041W720102	1 / 1	NAV	7.8E-01	7.8E-07	1.0E-03	2.03E-09	N/A	4.29E-08
7439896	Iron	N	N/A	N/A	1.2E+03	=	UG/L	041W720102	1 / 1	NAV	1.2E+03	1.2E-03	2.5E-04	7.80E-07	N/A	1.65E-05
7439921	Lead	N	N/A	N/A	2.3E+00	I	UG/L	041W720102	1 / 1	NAV	2.3E+00	2.3E-06	3.4E-04	2.03E-09	N/A	4.30E-08
7439965	Manganese	N	N/A	N/A	7.7E+00	I	UG/L	041W720102	1 / 1	NAV	7.7E+00	7.7E-06	1.0E-03	2.00E-08	N/A	4.24E-07
7440622	Vanadium	N	N/A	N/A	3.7E+00	I	UG/L	041W720102	1 / 1	NAV	3.7E+00	3.7E-06	1.0E-03	9.62E-09	N/A	2.04E-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 14-2-23
Wetland 72 Phase IV
2004 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	8.3E-04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	N/A	N/A	4.6E-04	N/A
	Barium	N	1.2E-05	7.0E-02	N/A	7.0E-02	1, 2	4.9E-03	N/A	N/A	N/A	1.3E-04	N/A
	Beryllium	N	7.8E-07	2.0E-03	N/A	7.0E-03	1	1.4E-05	N/A	N/A	N/A	3.1E-03	N/A
	Iron	N	1.2E-03	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	2.3E-06	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	7.7E-06	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	N/A	N/A	7.6E-05	N/A
	Vanadium	N	3.7E-06	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	N/A	N/A	1.1E-03	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 14-2-24
Wetland 72 Phase IV
2004 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	8.3E-04	1.0E+00	N/A	N/A	N/A	1.7E-08	N/A
	Barium	N	1.2E-05	7.0E-02	N/A	N/A	N/A	3.5E-09	N/A
	Beryllium	N	7.8E-07	2.0E-03	N/A	N/A	N/A	7.9E-09	N/A
	Iron	N	1.2E-03	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	2.3E-06	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	7.7E-06	1.4E-01	N/A	N/A	N/A	1.1E-09	N/A
	Vanadium	N	3.7E-06	7.0E-03	N/A	N/A	N/A	1.1E-08	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

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

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).

14.3 Wetland W1 — Screening Level Problem Formulation

14.3.1 Site Description and Habitats Present at Wetland W1

Wetland W1 is on the southwest side of Forrest Sherman Field, paralleling the north/south runway of the airfield. Wetland W1 is a cleared and maintained area, which functions as a buffer zone along the southwest side of Runway 19/01 at NAS Pensacola's Forrest Sherman Field. Wetland W1 is located within Site 3, which was a burn pit where chemical retardants were tested from the 1950s to the early 1980s. Today, Wetland W1 serves as a drainage pathway for the southwestern side of Forrest Sherman Field.

Surface water from the southern end of Wetland W1 drains into wetland 52, and surface water from the northern side of Wetland W1 drains north into wetland 72. Although not described by Parsons and Pruitt, this area can be described as a wet meadow, which includes wax myrtle, hypericum, and other wet loving plants.

Wetland W1 is surrounded by mowed grass, and the runways from Sherman Field are nearby. When it has standing water in it the open water portion of Wetland W1 is no greater than one foot deep and is generally about five to seven feet wide. The transition from open water to upland is very gradual and depends heavily on recent precipitation.

Photograph 1 Wetland W1 — Facing North

The IR site potentially affecting Wetland W1 is UST 18, formerly Site 3 (Crash Crew Fire Fighting Training Area). UST 18/Site 3 (Crash Crew Fire Fighting Training Area) is located on the southwest edge of Forrest Sherman Field and was used for fire-fighting practice by setting fires in unlined pits. Jet fuel, aviation gasoline, and lube oil were typically disposed of at this site.

UST 18 wetlands include Wetlands 52, 72, and W1. UST 18 occupies approximately 48 acres along the southwestern border of Forrest Sherman Field. The site topography is characterized by a swale paralleling Runway 19 in the east-central portion of the site, bounded on the east and west by higher, generally flat areas. The swale constitutes a storm water drainage system, consisting of several catch basins in the swale's axis at the lowest elevations. Wetland W1 is located in the center of this drainage swale.

As shown in Figure 14-1, Wetland 52 is located south of the UST 18 area. It receives storm water from the southern end of the UST 18 area and discharges to Pensacola Bay via Sherman's Inlet. Wetland 72 is a drainage ditch located on the northwest side of Runway 19 and receives storm water from the northern end of UST 18. Wetland W1 occupies the drainage swale located directly east of UST 18, between the site and Runway 19 of Forrest Sherman Field.

UST 18 (previously named IR Site 3) contain at least eight burn pits used to train fire fighters for aircraft crash response since 1955 (NEESA, 1983). Historically, during training exercises, approximately 30 to 50 gallons of fuel (possibly JP-4, JP-5, aviation gas, lube oil, or water-tainted fuel) were poured into unlined pits or on various pieces of equipment and ignited to simulate post-crash aircraft fires. In 1991, the northernmost pit was lined with an impermeable geofabric membrane called Bentomat, a two-layer woven cloth separated by bentonite, and became the only pit used for training exercises. Aircraft fire-fighting foam was used along with water to extinguish the fires. In 1997, crash crew training was moved to environmentally friendly training facilities at the NATTC.

E/A&H prepared a CAR for UST Site 18 in January 1996. Twenty-two permanent shallow and intermediate groundwater monitoring wells were installed and soil, sediment, groundwater, and surface water samples were collected and analyzed for petroleum constituents. BTEX, EDB, naphthalene, and lead were detected (E/A&H, 1996a).

EnSafe prepared a RAP for UST Site 18 on December 19, 1997. The RAP proposed landfarming to remediate the soil contamination and thereby removing the source of groundwater contamination. Groundwater modeling indicated that natural attenuation would remediate the groundwater once the

landfarming was complete. A Monitoring Only Plan (MOP) was proposed for groundwater remediation (EnSafe, 1997a).

CH2MHILL performed a remedial action for the impacted soil at UST Site 18 that consisted of the landfarming of petroleum contaminated soil in the four former firefighter training burn pits. Landfarming activities were conducted between September 2000 and September 2001 and consisted of biweekly soil tilling using a farm tractor and disk harrow. Soil samples were collected monthly. Landfarming operations ceased when soil analytical results indicated that soil cleanup goals had been achieved in September 2001 (CH2MHILL, 2003a).

Groundwater monitoring was performed monthly from December 2000 through August 2001 and quarterly until December 2002 by CH2MHill. BTEX, PAHs, TRPH, and lead were consistently reported to exceed FDEP GCTLs during quarterly sampling (CH2MHILL, 2003a).

TtNUS performed a treatability study to evaluate PermeOx® Plus for remediation of petroleum hydrocarbons. TtNUS performed supplemental site assessment activities in August 2003 to delineate the groundwater contamination and to provide a baseline for the treatability study. Two main areas of contamination were identified during the additional groundwater investigation. A northern plume was identified around the four former pits. A southern plume was found to exist south of the four former pits. Both plumes were migrating southeast (with the groundwater flow direction) from their source areas. (TtNUS, 2003a). Extent of groundwater contamination was delineated during this investigation.

The PermeOx® Plus injection event was conducted from December 3 to December 17, 2003. This pilot-scale treatability study consisted of the installation of 219 injection borings (143 in the northern plume and 76 in the southern plume) into which a PermeOx® Plus enriched slurry was injected. Select groundwater monitoring wells were then monitored for site contaminants of concern (COCs) and natural attenuation parameters for four quarters to evaluate the effectiveness of enhanced bioremediation (TtNUS, 2005).

The Enhanced Natural Attenuation Study (PermeOx® Plus injection) concluded that there was no clear evidence of a reduction in site COCs after one year of monitoring. While COC concentrations had decreased temporarily in several wells, there was a rebound and no evidence that conditions favorable to enhanced biodegradation were occurring. Free product was detected in a shallow monitoring well (NASP18-GS26) on the northern portion of the site. The presence of free product indicated there was a continuing source of contamination and that previous soil remediation (landfarming) efforts may have

not effectively removed all the contaminated soil (TtNUS, 2005). It was reasoned that contaminated soil exists around the smear zone (underneath the landfarming effort) and continually contributes to the groundwater contamination. Additional characterization has been recommended for the site (TtNUS, 2006).

14.3.2 Wetland W1 — Sample Location Description

Phase II Sediment Sample Location Description

Three stations were sampled during the 1995 UST 18 portion of this wetlands investigation. Stations 003M000101 through 003M000301 are located in the northern portion of this wetland and represent low-lying topographic areas, where COPCs could have the potential to congregate (Figure 14-4). Table 14-3-1 (tables are located at the end of each section) provides the TOC analyses results for the three sediment samples collected in 1995. These ranged from 0.55% (003M000201) to 3.94% (003M000101). No other physical description parameters were analyzed from Wetland W1 at this time.

Phase II Surface Water Sample Location Description

Three stations were sampled during the 1995 UST 18 portion of this wetlands investigation. Locations 003W000101 through 003W000301 were sampled for surface water and are collocated with sediment sampling stations (Figure 14-4). Surface water parameters were not collected during the 1995 sampling event.

Three additional stations were sampled in Wetland W1 during the 1996 Site 41 investigation. Stations 041WW10101 through 041WW10301 were collected in 1996 to confirm previous constituent detections. Table 14-3-2 provides a physical description of the surface water collected at W1. Surface water from Wetland W1 was found to be soft and mildly acidic.

14.3.3 Wetland W1 — Nature and Extent of Contamination

Phase II Sediment

Figure 14-4 presents the Phase II sediment sampling locations for Wetland W1. Table 14-3-3 presents a summary of the analytical results of the three Phase II sediment samples.

Metals — Sixteen metals were detected in sediments collected during Phase II sampling. Location 003M000101 exhibited the greatest number of detections and exceeded reference value for barium, cadmium, copper, lead, selenium, and zinc. Locations 003M000201 and 003M000301 exhibited six and nine detections, respectively. However, none of the detections at these locations exceeded reference values.

Pesticides and PCBs — Eighteen pesticides were detected in Phase II sampling. Locations 003M000101 and 003M000301 exhibited the greatest number of detections. Location 003M000201 only exhibited two detections. Reference values were not exceeded for 4,4′-DDT compounds and total DDTs. PCBs were not detected during 1995 sediment sampling.

SVOCs — Two PAHs were detected during Phase II sampling at Wetland W1. 2-Methylnaphthalene and naphthalene were detected at sample location 003M000101.

VOCs — Five VOCs were detected during the Phase II sampling of Wetland W1. 1,2-Dichloroethene (total), benzene, ethylbenzene, toluene, and xylene (total) were detected at location 003M000101.

Phase II Surface Water

Figure 14-4 presents the Phase II surface water sampling locations for Wetland W1. Table 14-3-4 present a summary of the analytical results of the six surface water samples.

Metals — Fourteen metals were detected in the Phase II surface water samples collected from Wetland W1. Of these 14 detections, 11 metals were detected at sample location 003W000101 with six of those exceeding reference concentrations. Locations 003W000301 had seven detections, with only one exceedance (zinc). Eight metals were detected at sample location 003W000201; however, the location did not have any reference value exceedances. Sample locations 041WW10101 and 041WW10201 had nine and 10 detections with five and six reference concentration exceedances, respectively. Of the seven detections at sample location 041WW10301, lead was the only exceedance. Analytes exceeding reference values included aluminum, barium, copper, iron, lead, manganese, vanadium, and zinc.

Pesticides and PCBs — Three pesticides (heptachlor epoxide, alpha-chlordane, and gamma-BHC) were detected at locations 003W000101 and 041WW10201. No pesticide detections occurred at other sample locations for Wetland W1.

SVOCs — Three SVOCs, 2-methylnapthalene, bis(2-ethylhexyl)phthalate, and napthalene, were detected during Phase II surface water sampling. 2-Methylnapthalene and naphthalene were detected at 041WW10101, and bis(2-ethylhexyl)phthalate was detected at 041WW10201. Total petroleum hydrocarbons (TPH) were detected at location 003W000101 and 003W000201 during the Phase II sampling event.

VOCs — Seven VOCs were detected during Phase II surface water sampling at Wetland W1. 1,2-Dichloroethene, benzene, ethylbenzene, toluene, and xylene (total) were detected at sample location 003W000101. VOCs were also detected at sampling locations 041WW10101 and 041WW10201. Location 0041WW10101 exhibited detections for acetone, benzene, ethylbenzene, toluene, and xylene (total), and cis-1,2-dichloroethene. Location 041WW10201 exhibited detections for benzene, ethylbenzene, toluene, and xylene (total) only.

14.3.4 Ecological Risk Assessment

Phase II Investigation Summary — Wetland W1

Sediment Screening — Level Risk-Exposure Estimation and Risk Calculation

As presented in Table 14-3-5, the sediment samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-3-6.

Baseline Problem Formulation — Wetland W1 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
- Interpretative 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 in the Site 41 ERA process is detailed in Section 8. Comparison of maximum detected concentrations with refinement values is presented in Table 14-3-7. A list of retained COPCs is presented in Table 14-3-8. Additionally, the tables compare:

1) average concentrations to screening and refinement values to assess potential exposure across the entire wetland, and 2) Wetland W1 concentrations to reference concentrations.

For Wetland W1, barium, cadmium, copper, lead, and selenium exceeded their Site 41 freshwater sediment reference concentrations. Lead had the highest HQs and was the only inorganic constituent to exceed the RV. Sample location 003M000101 exceeded the reference concentration, screening values, and refinement values. Since barium and selenium do not have a screening criteria and exceeded their reference concentrations (at one location), they were retained along with lead through the ERA process.

At Wetland W1, total DDT and its daughter products (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) were below the basewide levels and were not carried forward as COPCs in the ERA process (Figure 14-5). Several pesticides were detected and retained as COPCs for Wetland W1. Those constituents included aldrin, endosulfan I, endosulfan sulfate, heptachlor, heptachlor epoxide, total endrin, and total BHC. Pesticides were evaluated in the OU-wide food chain models.

Total PAHs, specifically 2-methylnaphthalene and naphthalene, were detected and exceeded SVs in Wetland W1. When normalized for TOC content, PAH concentrations were above the Swartz TEC, suggesting no effects were likely from exposure to PAHs; however, none of the three locations exceeded the Swartz MEC value, suggesting adverse effects from exposure to PAHs were likely (Figure 14-6).

Several VOCs were also detected and retained as COPCs: 1,2-dichloroethene (total), benzene, ethylbenzene, toluene, and xylene (total). When normalized to detected TOC concentrations, VOCs do not appear to be risk drivers for Wetland W1.

Table 14-3-9 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, station 003M000301 and 003M00201 fell into Category 1, which indicated these sediments were considered nontoxic. Sample location 003M000101 was determined to be Category 3, which is a category that included the studies where about 50% of the samples were found to be toxic and average survival was about 60% — 70%. Figure 14-7 shows the Mean ERM category for each sediment sample location at Wetland W1.

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

As presented in Table 14-3-10, the surface water samples were compared with screening values in accordance with the procedures described in Section 8. All parameters with HQs greater than one or with no screening values were carried forward to COPC refinement. A list of all COPCs after screening is included in Table 14-3-11.

Baseline Problem Formulation — Wetland W1 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 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 14-3-12. COPCs retained are presented in Table 14-3-13. Additionally, the tables compare average concentrations to screening and refinement values to assess potential exposure across the entire wetland.

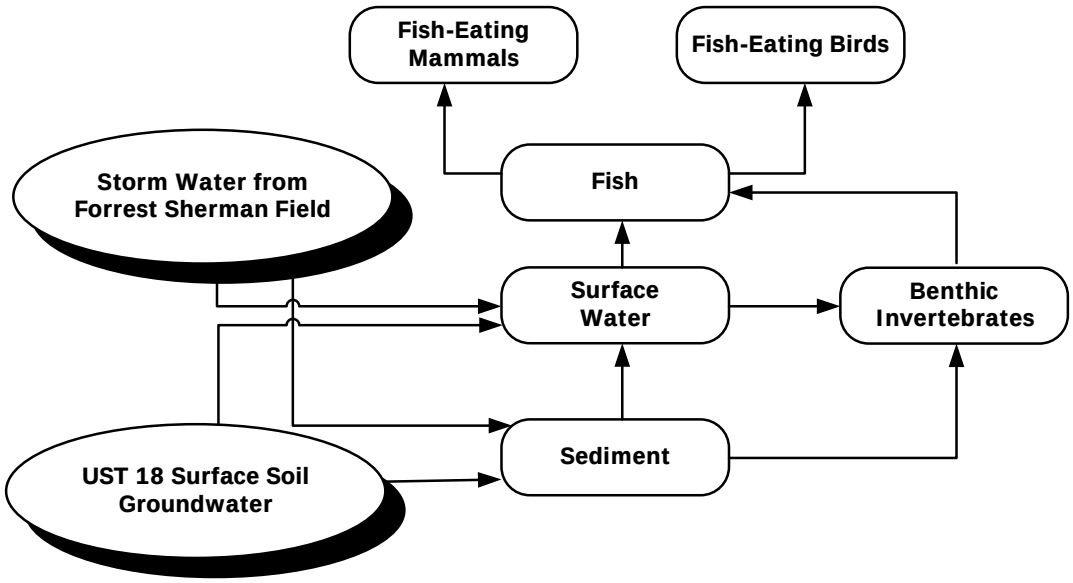
For Wetland W1, aluminum, copper, and lead exceeded both the SV and the reference concentrations and were included as COPCs. In addition, barium, iron, manganese, and vanadium exceeded their Site 41 freshwater reference surface water concentrations (Table 14-3-12) and were retained as COPCs.

Several pesticides were detected and retained as COPCs for surface water at Wetland W1: heptachlor epoxide, total chlordane, and total BHC. Bis(2-ethylhexyl)phthalate was also detected and retained as a COPC for the ERA process, as well as the following VOCs: 1,2-dichloroethene (total), acetone, benzene, cis-1,2-dichloroethene, and xylene (total).

Barium, lead, heptachlor epoxide, and total BHC were the constituents retained in common between sediment and surface water samples collected for Wetland W1.

The conceptual model below symbolizes which environmental habitats may be impacted by Wetland W1 constituents retained during the ERA process.

Wetland W1
Conceptual Site Model



As summarized in the approved *Final RI/FS SAP Addendum* (E/A&H, 1997d), Wetland W1 was identified as a Yellow-Coded Wetland based on the Phase II results, indicating contaminants detected in this wetland were not considered as sources of ecological risk. Wetland W1 was also classified as a Group D wetland. Based on similar contaminants and physical characteristics, the other Group D wetlands included 6, 5B, 1B, and 10. As stated in the approved *Final RI/FS SAP, Site 41* (E/A&H, 1995g), Group D wetlands were not identified for further sampling.

14.3.5 Wetland W1 — Human Health Risk Assessment

Wetland W1 is described in Section 14.3.1, and the HHRA is summarized below.

14.3.5.1 Site Data

Section 14.3.1 summarizes the nature and extent of contamination for this wetland. Surface water and sediment data were collected at Wetland W1 during Phase II of the RI. Sediment and surface water data for W1 are summarized in Tables 14-3-3 through 14-3-4.

Heptachlor epoxide was excluded from dermal exposure estimates, in accordance with USEPA's policy for chlorinated compounds with a molecular weight greater than 250.

14.3.5.2 Conceptual Site Model

As described in Section 14.3.1, Wetland W1 is on the southwest side of Forrest Sherman Field, paralleling the north/south runway of the airfield. Because Wetland W1 is located in a restricted area of the base, the wetland is only accessible to Navy personnel. Enforcement of homeland security restrictions limits the potential for trespassing.

Wetland W1 is intermittently flooded, so surface water contact was assessed for the maintenance scenario. Sediment locations are inundated all year at some locations, preventing significant sediment exposure. However, sediment dries at other locations within this wetland, where exposure could be similar to soil exposure. Contact with sediment was assessed for all sediment locations within this wetland. Water depths at this wetland vary with occasional flooding but would not generally support regular fishing for game fish species. In addition, homeland security restrictions limit the potential for fishing. Fish tissue ingestion pathways were excluded.

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

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

14.3.5.3 Risk Characterization

The adult maintenance worker scenario for surface water and sediment were assessed for this wetland as described in Section 9.

Phase II Data

Maintenance Worker

As shown in Tables 14-3-14 through 14-3-16, 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 14-3-17 through 14-3-19, surface water dermal contact risk estimates for benzene exceeded the FDEP risk threshold of 1E-6. Hazard indices were below 1.0.

Summary of Wetland W1 Phase II Risk Estimates

Scenario	Medium	Hazard Index	Risk
Maintenance	Sediment	1.04E-02	1.71E-07
	Surface water	8.34E-02	1.18E-05

Based on Phase II data, benzene was identified as a COC for Wetland W1.

Wetland W1 HHRA COC Summary

The following parameter was determined to be a COC from the HHRA for Wetland W1:

- Benzene

14.3.6 Wetland W1 — Fate and Transport Analysis

This wetland encompasses a northern and southern portion and is separated by a drainage divide. It is located on the western boundary of the north south runway at Forrest Sherman Field. Seven samples (four surface waters and three sediments) were collected in the northern portion of the wetland, and two samples (both surface waters) were collected in the southern portion of the wetland. A drainage divide near the center of the wetland separates it into the northern and southern portions; the northern portion drains to the north underneath the SW-NE runway at Forrest Sherman Field and into Wetland 72, and the southern portion drains to the south into Wetland 52 (see Figure 14-2).

The sediment and surface water COPCs retained after refinement for this wetland are summarized in Table 14-3-8 and 14-3-13 respectively. Provided below are the associated soil borings and monitoring wells used for comparing data for the fate and transport analysis.

Monitoring Wells Associated with W1 — South: 003GGS03, 003GGR09, 003GGI03, 003GGR10, 003GGS08, 003GGR12, 003GGS04, 003GGI04, 003GGM23, 003GGR10, 003GGR13, 003GGS05, 003GGI05, 003GGR14, 003GGR15, 003GGS09, 003GGS06, 003GGR16, 003GGI06, 003GGR17, 003GGM24, 003GGS16, 003GGM24, 003GGR18, 003GGS15, 003GGS14, 003GGR11, 003GGS13, 003GGS12, 003GGR07

Monitoring Wells Associated with W1 — North: 033GGR07, 003GGI02, 003GGS02, 003GGR06, 003GGM25, 003GGS07, 003GGR19, 003GGR05, 003GGM21, 003GGR04, 003GGS01, 003GG101, 003GGR03, 003GGR01, 003GGR02, 003GGS10, 003GGS11

Borings Associated with W1 — North: 003S0006, 003S0007, 003S0033, 003S0019, 003S0031, 003S0034, 003S0032, 003S0004, 003S0003, 003S0001, 003S0005, 003S0002

Borings Associated with W1 — South: 003S0008, 003S0010, 003S0014, 003S0011, 003S0017, 003S0012, 003S0013, 003S0020, 003S0024, 003S0023, 003S0015, 003S0026, 003S0027, 003S0016, 003S0029, 003S0028

Surface Water/Sediment Transport into Wetland Media:

Surface Water — There was 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 water drainage to this wetland is runoff from the north south runway at Forrest Sherman Field. The wetland may also be affected by storm water runoff and groundwater discharge from UST Site 18 (formerly IR Site 3): borings and wells from this site were evaluated as to potential impacts to the wetland.

Sediment — Based on the data from surface soil in associated borings, the storm water to sediment medialpathway was validated for the following parameters:

W1 (north) — Phase II
Barium
Lead
Total BHC
Total Endrin
2-Methylnaphthalene
Naphthalene
Total PAHs

W1 (south) — Phase II
Barium
Lead
Selenium
Heptachlor
2-Methylnaphthalene
Naphthalene
Total PAHs

Groundwater Discharge into the Wetland Media:

Surface Water — Based on the data from associated monitoring wells, the groundwater to wetland surface water pathway was validated and significant for the following parameters:

W1 (north) — Phase II
Aluminum
Iron
Manganese
Barium
Lead
Vanadium
Total PAHs

W1 (south) — Phase II
Aluminum
Iron
Manganese
Barium
Lead
Vanadium
Total PAHs

Sediment — Based on the data from associated monitoring wells, the groundwater to sediment media pathway was validated and significant for the following parameters:

W1 (north) — Phase II
Barium
Lead
2-Methylnaphthalene
Naphthalene
Total PAHs

W1 (south) — Phase II
Barium
Lead
Selenium
2-Methylnaphthalene
Naphthalene
Total PAHs

Surface Water/Sediment Transport within the Wetlands:

Surface Water — Wetland W1 — North: To evaluate the surface water transport pathway, upgradient sample location 041WW101 (collected at the very beginning of the northern portion) was compared to downgradient sample location 003W0002 (immediately downstream of the Wetland 1 — North proper). Evaluation of these two samples indicated a decrease in the number of detected parameters (nine metals and eight organics in the upgradient versus eight metals and total TPH detected in the downgradient). Analyzed organics in the downgradient location were not speculated. For the metals, one parameter was present in the downgradient location that was not detected in the upgradient location. Of the seven parameters detected in both locations, all seven metals exhibited a marked decrease in concentrations. For the organics, most of those detected in the upgradient location were associated with petroleum contaminations. The TPH detections in the downgradient location indicated transport is occurring. The general decrease in metals indicated partitioning to sediment and/or dispersion is occurring.

Wetland W1 — South: To evaluate the surface water transport pathway, upgradient sample location 041WW102 (collected at the very beginning of the southern portion) was compared to downgradient sample location 041WW103 (collected at the exit of Wetland W1 into the Wetland 52 complex). Evaluation of these two samples indicated a decrease in the number of detected parameters (ten metals and six organics in the upgradient versus seven metals and zero organics detected in the downgradient location). Of the seven metals detected in both locations, all seven parameters exhibited a decrease in concentrations. For the organics, most of those compounds detected in the upgradient location were associated with petroleum contamination. The absence of organic detections in the downgradient location indicated transport was not occurring, either through partitioning to sediment and/or dispersion.

Sediment — Wetland W1 — North: To evaluate the sediment transport pathway, upgradient location 003M0003 (located on the north side of this portion of the wetland) was compared to downgradient location 003M0002 (located immediately downstream of the northern extent of this portion of the wetland). Evaluation of these two locations indicated a decrease in detected parameters (nine metals and 12 organics upgradient versus six metals and three organics at the downgradient location). All six metals detected at both locations exhibited a decrease in concentration. For the organics, one compound was present in the downgradient location that was not detected in the upgradient location. Of the two organics detected at both locations, both decreased in concentration. Notably, petroleum hydrocarbons exhibited a marked decrease, indicating the impacts from UST 18 were being fixed within sediment over a short distance.

Wetland W1 — South: No sediment samples were collected in this portion of Wetland W1; therefore, the pathway was not evaluated.

Table 14-3-1
Wetland W1 Phase II
Sediment Physical Parameters

Parameter	003M000101	003M000201	003M000301
TOC (%)	3.94	0.552	0.891

Table 14-3-2
Wetland W1 Phase II
Surface Water Physical Parameters

Parameter	041WW10101	041WW10201	041WW10301
Hardness as CaCO3 (mg/L)	21.2	15.2	11.2
pH	5.43	5.22	6.09
Specific Conductivity (mS/cm)	0.061	0.042	0.035
Turbidity (NTU)	10	102	5
Salinity (%)	0	0	0

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

Table 14-3-3
Wetland W1 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	3	3	228	13,400	4,850	003M000101
Barium	14	1	2	3	3.3	27.6	10.4	003M000101
Cadmium	1.8	1	1	3	4.1	4.1	1.41	003M000101
Calcium	10,756.67	0	3	3	44.3	2,020	929	003M000101
Chromium	39.37	0	1	3	15.2	15.2	5.3	003M000101
Cobalt	2.8	0	1	3	0.45	0.45	0.2	003M000101
Copper	19.5	1	1	3	105	105	35.6	003M000101
Iron	11,911.67	0	3	3	219	3,670	1,480	003M000101
Lead	82.47	1	3	3	1	525	180	003M000101
Magnesium	7,513.33	0	1	3	529	529	188	003M000101
Manganese	37.97	0	2	3	5.6	12.6	6.18	003M000101
Nickel	9.28	0	1	3	3.3	3.3	1.32	003M000101
Potassium	1,628.67	0	3	3	22.9	324	128	003M000101
Selenium	3.45	1	1	3	4.	4.	1.64	003M000101
Vanadium	28.67	0	3	3	0.32	18.7	6.97	003M000101
Zinc	36.73	1	2	3	11.1	60.5	24.4	003M000101
PAHs (µg/kg)								
2-Methylnaphthalene	N/A	0	1	3	4,800	4,800	1,750	003M000101
Naphthalene	N/A	0	1	3	7,500	7,500	2,650	003M000101
Total PAHs	N/A	0	1	3	20,550	20,550	8,760	003M000101
Pesticides and PCBs (µg/kg)								
Aldrin	N/A	0	2	3	0.08	0.88	0.67	003M000101
Dieldrin	N/A	0	3	3	0.09	0.67	0.4	003M000301
Endosulfan I	N/A	0	2	3	0.8	0.86	0.9	003M000101
Endosulfan sulfate	N/A	0	1	3	0.34	0.34	3.3	003M000301
Heptachlor	N/A	0	2	3	0.04	0.64	0.63	003M000101
Heptachlor epoxide	N/A	0	2	3	1.4	1.5	1.32	003M000101
alpha-Chlordane	N/A	0	2	3	0.1	0.35	0.5	003M000101
gamma-Chlordane	N/A	0	2	3	0.08	1.8	0.98	003M000101
Total Chlordane	N/A	0	2	3	0.18	2.15	1.48	003M000101
Endrin	N/A	0	1	3	0.78	0.78	1.73	003M000101
Endrin aldehyde	N/A	0	2	3	0.23	2.3	1.53	003M000101
Endrin ketone	N/A	0	1	3	0.36	0.36	1.59	003M000101
Total Endrin	N/A	0	2	3	3.44	4.93	4.84	003M000301
alpha-BHC	N/A	0	1	3	0.3	0.3	0.85	003M000101
beta-BHC	N/A	0	2	3	0.25	1.5	0.93	003M000101
delta-BHC	N/A	0	2	3	0.08	0.32	0.48	003M000101
gamma-BHC (Lindane)	N/A	0	1	3	0.22	0.22	0.82	003M000101
Total BHC	N/A	0	2	3	2.34	2.73	3.09	003M000301
4,4'-DDD	50	0	2	3	0.66	2.5	1.74	003M000101
4,4'-DDE	40	0	1	3	0.56	0.56	3.37	003M000301
4,4'-DDT	20	0	1	3	0.36	0.36	1.59	003M000101
Total DDT	110	0	2	3	3.57	10.36	6.69	003M000101
TPH (mg/kg)								
Petroleum Hydrocarbons, TPH	N/A	0	3	3	24.8	9,800	3,440	003M000101
VOCs (µg/kg)								
1,2-Dichloroethene (total)	N/A	0	1	3	9	9	7.5	003M000101
Benzene	N/A	0	1	3	120	120	44.5	003M000101
Ethylbenzene	N/A	0	1	3	290	290	101	003M000101
Toluene	N/A	0	1	3	200	200	71.2	003M000101
Xylene (Total)	N/A	0	1	3	2,000	2,000	671	003M000101

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

Table 14-3-4
Wetland W1 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	3	5	6	664.0	2,270.0	1,470.0	041WW10201
Antimony	4.0	0	1	6	2.0	2.0	2.0	003W000201
Barium	3.68	3	1	6	57.8	57.8	57.8	041WW10201
Cadmium	3.0	0	1	6	0.94	0.94	0.94	003W000101
Calcium	7,675.0	0	6	6	3,260.0	6,790.0	4,810.0	041WW10101
Copper	4.0	3	2	6	6.6	7.8	7.2	041WW10101
Iron	2,360.0	3	6	6	419.0	10,400.0	2,900.0	003W000101
Lead	3.2	4	5	6	2.2	56.4	24.3	041WW10101
Magnesium	20,260.0	0	6	6	649.0	1,200.0	850.0	003W000101
Manganese	13.2	2	6	6	3.7	27.4	12.8	041WW10101
Potassium	6,995.0	0	4	6	361.0	1,970.0	1,120.0	003W000101
Sodium	182,200.0	0	1	6	5,170.0	5,170.0	5,170.0	003W000101
Vanadium	4.7	2	6	6	1.0	10.8	4.2	041WW10201
Zinc	5.53	6	2	6	21.4	29.8	25.6	003W000301
Pesticides (µg/L)								
Heptachlor epoxide	N/A	0	1	6	0.0068	0.0068	0.0068	003W000101
alpha-Chlordane	N/A	0	1	6	0.25	0.25	0.25	041WW10201
Total Chlordane	N/A	0	1	6	0.275	0.275	0.275	041WW10201
gamma-BHC (Lindane)	N/A	0	1	6	0.0061	0.0061	0.0061	003W000101
Total BHC	N/A	0	1	6	0.0811	0.0811	0.0811	003W000101
TPH (mg/L)								
Petroleum Hydrocarbons, TPH	N/A	0	2	3	1.2	1.4	1.3	003W000201
SVOCs (µg/L)								
2-methylnapthalene	N/A	0	1	6	3	3	3.2	041WW10101
bis(2-ethyhlhexyl)phthlate	N/A	0	1	6	5	5	4.2	014WW10201
Naphthalene	N/A	0	1	6	6	6	3.7	041WW10101
VOCs (µg/L)								
1,2-Dichloroethene (total)	N/A	0	1	3	4.0	4.0	4.0	003W000101
Acetone	N/A	0	1	4	13.0	13.0	13.0	041WW10101
Benzene	N/A	0	3	6	16.0	55.0	31.7	003W000101
cis-1,2-Dichloroethene	N/A	0	1	3	3.0	3.0	3.0	041WW10101
Ethylbenzene	N/A	0	3	6	7.0	13.0	10.3	003W000101
Toluene	N/A	0	3	6	3.0	25.0	10.3	003W000101
Xylene (Total)	N/A	0	3	6	46.0	150.0	93.3	041WW10201

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

Table 14-3-5
Wetland W1 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	3	3			228	13,400	003M000101	13,400	J		N/A		Yes	No SV
Antimony	0	3	0.24	0.85			ND	0.85	U	12	2	0.07	No	Max SQL< SV
Arsenic	0	3	0.34	1.2			ND	1.2	U	7.24	1, 2	0.17	No	Max SQL< SV
Barium	2	3	0.315	0.315	3.3	27.6	003M000101	27.6			N/A		Yes	No SV
Beryllium	0	3	0.015	0.115			ND	0.115	U		N/A		Yes	No SV
Cadmium	**1**	**3**	**0.065**	**0.075**	**4.1**	**4.1**	**003M000101**	**4.1**		**0.676**	**1**	**6.07**	**Yes**	**Max Detect > SV**
Calcium	3	3			44.3	2,020	003M000101	2,020			N/A		Yes	No SV
Chromium	1	3	0.185	0.5	15.2	15.2	003M000101	15.2		52.3	1, 2	0.29	No	Max Detect < SV
Cobalt	1	3	0.065	0.075	0.45	0.45	003M000101	0.45			N/A		Yes	No SV
Copper	**1**	**3**	**0.85**	**1**	**105**	**105**	**003M000101**	**105**		**18.7**	**1, 2**	**5.61**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	3	0.315	1.15			ND	1.15	U		N/A		Yes	No SV
Iron	3	3			219	3,670	003M000101	3,670	J		N/A		Yes	No SV
Lead	**3**	**3**			**1**	**525**	**003M000101**	**525**		**30.2**	**1, 2**	**17.4**	**Yes**	**Max Detect > SV**
Magnesium	1	3	6.05	29.7	529	529	003M000101	529			N/A		Yes	No SV
Manganese	2	3	0.345	0.345	5.6	12.6	003M000101	12.6			N/A		Yes	No SV
Mercury	0	3	0.065	0.225			ND	0.225	U	0.13	1, 2	1.73	Yes	Max SQL > SV
Nickel	1	3	0.305	0.35	3.3	3.3	003M000101	3.3		15.9	1, 2	0.21	No	Max Detect < SV
Potassium	3	3			22.9	324	003M000101	324			N/A		Yes	No SV
Selenium	1	3	0.43	0.495	4	4	003M000101	4			N/A		Yes	No SV
Silver	0	3	0.55	2			ND	2	U	0.733	1	2.73	Yes	Max SQL > SV
Sodium	0	3	142	505			ND	505	U		N/A		Yes	No SV
Thallium	0	3	0.455	1.6			ND	1.6	U		N/A		Yes	No SV
Vanadium	3	3			0.32	18.7	003M000101	18.7			N/A		Yes	No SV
Zinc	2	3	1.5	1.5	11.1	60.5	003M000101	60.5		124	1, 2	0.49	No	Max Detect < SV
PAHs (µg/kg)														
2-Methylnaphthalene	**1**	**3**	**205**	**235**	**4,800**	**4,800**	**003M000101**	**4,800**		**20.2**	**1**	**238**	**Yes**	**Max Detect > SV**
Acenaphthene	0	3	205	750			ND	750	U	6.71	1	112	Yes	Max SQL > SV
Acenaphthylene	0	3	205	750			ND	750	U	5.87	1	128	Yes	Max SQL > SV
Anthracene	0	3	205	750			ND	750	U	46.9	1	16	Yes	Max SQL > SV
Benzo(a)anthracene	0	3	205	750			ND	750	U	74.8	1	10	Yes	Max SQL > SV
Benzo(a)pyrene	0	3	205	750			ND	750	U	88.8	1	8.45	Yes	Max SQL > SV
Chrysene	0	3	205	750			ND	750	U	108	1	6.94	Yes	Max SQL > SV
Dibenz(a,h)anthracene	0	3	205	750			ND	750	U	6.22	1	121	Yes	Max SQL > SV
Fluoranthene	0	3	205	750			ND	750	U	113	1	6.64	Yes	Max SQL > SV
Fluorene	0	3	205	750			ND	750	U	21.2	1	35.4	Yes	Max SQL > SV
Naphthalene	**1**	**3**	**205**	**235**	**7,500**	**7,500**	**003M000101**	**7,500**		**34.6**	**1**	**217**	**Yes**	**Max Detect > SV**
Phenanthrene	0	3	205	750			ND	750	U	86.7	1	8.65	Yes	Max SQL > SV
Pyrene	0	3	205	750			ND	750	U	153	1	4.9	Yes	Max SQL > SV
Total PAHs	**1**	**3**	**2,670**	**3,060**	**20,600**	**20,600**	**003M000101**	**20,600**		**1,684**	**1, 2**	**12.2**	**Yes**	**Max Detect > SV**
TOC Normalized PAHs	**1**	**3**	**685.8**	**965.6**	**1,043.15**	**1,043.15**	**003M000101**	**1,043.15**		**290**	**3**	**3.6**	**Yes**	**Max Detect > SV**
PCBs (µg/kg)														
Aroclor-1016	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Aroclor-1221	0	3	42	150			ND	150	U	67	2	2.24	Yes	Max SQL > SV
Aroclor-1232	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Aroclor-1242	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Aroclor-1248	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Aroclor-1254	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Aroclor-1260	0	3	20.5	75			ND	75	U	21.6	N/A	3.47	Yes	Max SQL > SV
Total PCBs	0	3	165	600			ND	600	U	21.6	1	27.8	Yes	Max SQL > SV
Pesticides (µg/kg)														
Aldrin	2	3	1.05	1.05	0.082	0.88	003M000101	0.88	J		N/A		Yes	No SV
Dieldrin	3	3			0.094	0.67	003M000301	0.67	J	0.716	1	0.94	No	Max Detect < SV
Endosulfan I	2	3	1.05	1.05	0.8	0.86	003M000101	0.86	J		N/A		Yes	No SV
Endosulfan II	0	3	2.05	7.5			ND	7.5	U		N/A		Yes	No SV
Endosulfan sulfate	1	3	2.05	7.5	0.34	0.34	003M000301	0.34	J		N/A		Yes	No SV
Heptachlor	2	3	1.2	1.2	0.044	0.64	003M000101	0.64	J		N/A		Yes	No SV
Heptachlor epoxide	2	3	1.05	1.05	1.4	1.5	003M000101	1.5	J		N/A		Yes	No SV
Methoxychlor	0	3	1.3	10.5			ND	10.5	U		N/A		Yes	No SV
Toxaphene	0	3	105	385			ND	385	U		N/A		Yes	No SV
alpha-Chlordane	2	3	1.05	1.05	0.1	0.35	003M000101	0.35	J	1.7	1	0.21	No	Max Detect < SV
gamma-Chlordane	**2**	**3**	**1.05**	**1.05**	**0.084**	**1.8**	**003M000101**	**1.8**	**J**	**1.7**	**1**	**1.06**	**Yes**	**Max Detect > SV**
Total Chlordane	**2**	**3**	**2.1**	**2.1**	**0.184**	**2.15**	**003M000101**	**2.15**		**1.7**	**1**	**1.26**	**Yes**	**Max Detect > SV**
Endrin	1	3	2.05	2.35	0.78	0.78	003M000101	0.78	J	3.3	2	0.24	No	Max Detect < SV
Endrin aldehyde	2	3	2.05	2.05	0.23	2.3	003M000101	2.3	J	3.3	2	0.70	No	Max Detect < SV
Endrin ketone	1	3	2.05	2.35	0.36	0.36	003M000101	0.36	J	3.3	2	0.11	No	Max Detect < SV
Total Endrin	**2**	**3**	**6.15**	**6.15**	**3.44**	**4.93**	**003M000301**	**4.93**		**3.3**	**2**	**1.49**	**Yes**	**Max Detect > SV**
alpha-BHC	1	3	1.05	1.2	0.3	0.3	003M000101	0.3	J		N/A		Yes	No SV
beta-BHC	**2**	**3**	**1.05**	**1.05**	**0.25**	**1.5**	**003M000301**	**1.5**	**J**	**0.32**	**N/A**	**4.69**	**Yes**	**Max Detect > SV**
delta-BHC	**2**	**3**	**1.05**	**1.05**	**0.076**	**0.32**	**003M000301**	**0.32**	**J**	**0.32**	**N/A**	**1**	**Yes**	**Max Detect > SV**
gamma-BHC (Lindane)	1	3	1.05	1.2	0.22	0.22	003M000101	0.22	J	0.32	1	0.69	No	Max Detect < SV
Total BHC	**2**	**3**	**4.2**	**4.2**	**2.34**	**2.73**	**003M000301**	**2.73**		**0.32**	**2**	**8.52**	**Yes**	**Max Detect > SV**
4,4'-DDD	**2**	**3**	**2.05**	**2.05**	**0.66**	**2.5**	**003M000101**	**2.5**	**J**	**1.22**	**1**	**2.05**	**Yes**	**Max Detect > SV**
4,4'-DDE	1	3	2.05	7.5	0.56	0.56	003M000301	0.56	J	2.07	1	0.27	No	Max Detect < SV
4,4'-DDT	1	3	2.05	2.35	0.36	0.36	003M000101	0.36	J	1.19	1	0.30	No	Max Detect < SV
Total DDT	**2**	**3**	**6.15**	**6.15**	**3.57**	**10.4**	**003M000101**	**10.4**		**3.3**	**2**	**3.14**	**Yes**	**Max Detect > SV**
SVOCs (µg/kg)														
1,2,4-Trichlorobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
1,2-Dichlorobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
1,3-Dichlorobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
1,4-Dichlorobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,4,5-Trichlorophenol	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
2,4,6-Trichlorophenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,4-Dichlorophenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,4-Dimethylphenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,4-Dinitrophenol	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
2,4-Dinitrotoluene	0	3	205	750			ND	750	U		N/A		Yes	No SV
2,6-Dinitrotoluene	0	3	205	750			ND	750	U		N/A		Yes	No SV
2-Chloronaphthalene	0	3	205	750			ND	750	U		N/A		Yes	No SV
2-Chlorophenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
2-Methyl-4,6-Dinitrophenol	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
2-Methylphenol (o-Cresol)	0	3	205	750			ND	750	U		N/A		Yes	No SV
2-Nitroaniline	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
2-Nitrophenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
3,3'-Dichlorobenzidine	0	3	205	750			ND	750	U		N/A		Yes	No SV
3-Nitroaniline	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
4-Bromophenyl-phenylether	0	3	205	750			ND	750	U		N/A		Yes	No SV
4-Chloro-3-methylphenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
4-Chloroaniline	0	3	205	750			ND	750	U		N/A		Yes	No SV
4-Chlorophenylphenyl ether	0	3	205	750			ND	750	U		N/A		Yes	No SV
4-Methylphenol (p-Cresol)	0	3	205	750			ND	750	U		N/A		Yes	No SV
4-Nitroaniline	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
4-Nitrophenol	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
Benzo(b)fluoranthene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Benzo(g,h,i)perylene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Benzo(k)fluoranthene	0	3	205	750			ND	750	U		N/A		Yes	No SV
bis(2-Chloroethoxy)methane	0	3	205	750			ND	750	U		N/A		Yes	No SV
bis(2-Chloroethyl)ether	0	3	205	750			ND	750	U		N/A		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV
Butylbenzylphthalate	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV
Carbazole	0	3	205	750			ND	750	U		N/A		Yes	No SV
Dibenzofuran	0	3	205	750			ND	750	U		N/A		Yes	No SV
Diethylphthalate	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV
Dimethylphthalate	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV

Table 14-3-5
Wetland W1 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.														
Di-n-butylphthalate	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV
Di-n-octylphthalate	0	3	205	750			ND	750	U	182	1, 2	4.12	Yes	Max SQL > SV
Hexachlorobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Hexachlorobutadiene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Hexachlorocyclopentadiene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Hexachloroethane	0	3	205	750			ND	750	U		N/A		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	3	205	750			ND	750	U		N/A		Yes	No SV
Isophorone	0	3	205	750			ND	750	U		N/A		Yes	No SV
Nitrobenzene	0	3	205	750			ND	750	U		N/A		Yes	No SV
N-Nitroso-di-n-propylamine	0	3	205	750			ND	750	U		N/A		Yes	No SV
N-Nitrosodiphenylamin+F21e	0	3	205	750			ND	750	U		N/A		Yes	No SV
Pentachlorophenol	0	3	500	1,800			ND	1,800	U		N/A		Yes	No SV
Phenol	0	3	205	750			ND	750	U		N/A		Yes	No SV
VOCs (µg/kg)														
1,1,1-Trichloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,1,2,2-Tetrachloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,1,2-Trichloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,1-Dichloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,1-Dichloroethene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,2-Dichloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
1,2-Dichloroethene (total)	1	3	6.5	7	9	9	003M000101	9	J		N/A		Yes	No SV
1,2-Dichloropropane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
2-Butanone (MEK)	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
2-Hexanone	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Acetone	0	3	6	39			ND	39	U		N/A		Yes	No SV
Benzene	1	3	6.5	7	120	120	003M000101	120			N/A		Yes	No SV
Bromodichloromethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Bromoform	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Bromomethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Carbon disulfide	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Carbon tetrachloride	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Chlorobenzene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Chloroethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Chloroform	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Chloromethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
cis-1,3-Dichloropropene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Dibromochloromethane	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Ethylbenzene	1	3	6.5	7	290	290	003M000101	290			N/A		Yes	No SV
Methylene chloride	0	3	10.5	85			ND	85	U		N/A		Yes	No SV
Styrene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Tetrachloroethene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Toluene	1	3	6.5	7	200	200	003M000101	200			N/A		Yes	No SV
trans-1,3-Dichloropropene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Trichloroethene	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Vinyl chloride	0	3	6.5	22.5			ND	22.5	U		N/A		Yes	No SV
Xylene (Total)	1	3	6.5	7	2,000	2,000	003M000101	2,000			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 14-3-6
Wetland W1 Phase II
Sediment COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	4,4'-DDD	2-Methylnaphthalene	1,2-Dichloroethene (total)
Barium	Aldrin	Naphthalene	Benzene
Cadmium	alpha-BHC	TOC Normalized PAHs	Ethylbenzene
Calcium	beta-BHC	Total PAHs	Toluene
Cobalt	delta-BHC		Xylene (Total)
Copper	Endosulfan I		
Iron	Endosulfan sulfate		
Lead	gamma-Chlordane		
Magnesium	Heptachlor		
Manganese	Heptachlor epoxide		
Potassium	Total BHC		
Selenium	Total Chlordane		
Vanadium	Total DDT		
	Total Endrin		
		Not Detected Parameters	
Beryllium	Endosulfan II	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
Cyanide (CN)	Methoxychlor	1,2-Dichlorobenzene	1,1,2,2-Tetrachloroethane
Mercury	Toxaphene	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Silver	Aroclor-1016	1,4-Dichlorobenzene	1,1-Dichloroethane
Sodium	Aroclor-1221	2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	1,1-Dichloroethene
Thallium	Aroclor-1232	2,4,5-Trichlorophenol	1,2-Dichloroethane
	Aroclor-1242	2,4,6-Trichlorophenol	1,2-Dichloropropane
	Aroclor-1248	2,4-Dichlorophenol	2-Butanone (MEK)
	Aroclor-1254	2,4-Dimethylphenol	2-Hexanone
	Aroclor-1260	2,4-Dinitrophenol	4-Methyl-2-Pentanone (MIBK)
	Total PCBs	2,4-Dinitrotoluene	Acetone
		2,6-Dinitrotoluene	Bromodichloromethane
		2-Chloronaphthalene	Bromoform
		2-Chlorophenol	Bromomethane
		2-Methyl-4,6-Dinitrophenol	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	Methylene chloride
		4-Chlorophenylphenyl ether	Styrene
		4-Methylphenol (p-Cresol)	Tetrachloroethene
		4-Nitroaniline	trans-1,3-Dichloropropene
		4-Nitrophenol	Trichloroethene
		Acenaphthene	Vinyl chloride
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Benzo(b)fluoranthene	
		Benzo(g,h,i)perylene	
		Benzo(k)fluoranthene	
		bis(2-Chloroethoxy)methane	
		bis(2-Chloroethyl)ether	
		bis(2-Ethylhexyl)phthalate (BEHP)	
		Butylbenzylphthalate	
		Carbazole	
		Chrysene	
		Dibenz(a,h)anthracene	
		Dibenzofuran	
		Diethylphthalate	
		Dimethylphthalate	
		Di-n-butylphthalate	
		Di-n-octylphthalate	
		Fluoranthene	
		Fluorene	
		Hexachlorobenzene	
		Hexachlorobutadiene	
		Hexachlorocyclopentadiene	
		Hexachloroethane	
		Indeno(1,2,3-cd)pyrene	
		Isophorone	
		Nitrobenzene	
		N-Nitroso-di-n-propylamine	
		N-Nitrosodiphenylamine	
		Pentachlorophenol	
		Phenanthrene	
		Phenol	
		Pyrene	

Table 14-3-7
Wetland W1 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	3	3				4,850	228	13,400	13,400	J	003M000101			NA					0	13,610	0	No	EPC < RC
Barium	2	3	0.315	0.315	0.315	10.4	3.3	27.6	27.6		003M000101			NA					0	14	1	Yes	EPC > RC and no RV
Beryllium	0	3	0.0483	0.015	0.115	0.0483			0.115	U	ND			NA					0	0.84	0	No	Parameter Not Detected
Cadmium	1	3	0.07	0.065	0.075	1.41	4.1	4.1	4.1		003M000101	0.676	4.21	PEL	6.07	2.09	0.97	0.34	0	1.8	1	No	EPC > RC, but < RV
Calcium	3	3				929	44.3	2,020	2,020		003M000101			NA					0	10,756.67	0	No	EPC < RC
Cobalt	1	3	0.07	0.065	0.075	0.197	0.45	0.45	0.45		003M000101			NA					0	2.8	0	No	EPC < RC
Copper	1	3	0.925	0.85	1	35.6	105	105	105		003M000101	18.7	108	PEL	5.61	1.9	0.97	0.33	0	19.5	1	No	EPC > RC, but < RV
Cyanide (CN)	0	3	0.61	0.315	1.15	0.61			1.15	U	ND			NA					0	5.22	0	No	Parameter Not Detected
Iron	3	3				1,480	219	3,670	3,670	J	003M000101			NA					0	11,911.67	0	No	EPC < RC
Lead	**3**	**3**				**180**	**1**	**525**	**525**		**003M000101**	**30.2**	**112**	**PEL**	**17.4**	**5.96**	**4.69**	**1.61**	**1**	**82.47**	**1**	**Yes**	**EPC > RV and RC**
Magnesium	1	3	17.9	6.05	29.7	188	529	529	529		003M000101			NA					0	7,513.33	0	No	EPC < RC
Manganese	2	3	0.345	0.345	0.345	6.18	5.6	12.6	12.6		003M000101			NA					0	37.97	0	No	EPC < RC
Mercury	0	3	0.12	0.065	0.225	0.12			0.225	U	ND	0.13	0.696	PEL	1.73	0.92	0.32	0.17	0	0.55	0	No	Parameter Not Detected
Potassium	3	3				128	22.9	324	324		003M000101			NA					0	1,628.67	0	No	EPC < RC
Selenium	1	3	0.463	0.43	0.495	1.64	4	4	4		003M000101			NA					0	3.45	1	Yes	EPC > RC and no RV
Silver	0	3	1.07	0.55	2	1.07			2	U	ND	0.73	1.77	PEL	2.74	1.47	1.13	0.60	1	2.1	0	No	Parameter Not Detected
Sodium	0	3	266	142	505	266			505	U	ND			NA					0	18,993.33	0	No	Parameter Not Detected
Thallium	0	3	0.852	0.455	1.6	0.852			1.6	U	ND			NA					0	1.57	1	No	Parameter Not Detected
Vanadium	3	3				6.97	0.32	18.7	18.7		003M000101			NA					0	28.67	0	No	EPC < RC
PAHs (µg/kg)																							
2-Methylnaphthalene	**1**	**3**	**220**	**205**	**235**	**1,750**	**4,800**	**4,800**	**4,800**		**003M000101**	**20.2**	**201**	**PEL**	**238**	**86.5**	**23.9**	**8.69**	**1**		**0**	No	TOC Normalized PAHs<MEC
Acenaphthene	0	3	397	205	750	397			750	U	ND	6.71	88.9	PEL	112	59.1	8.44	4.46	0		0	No	TOC Normalized PAHs<MEC
Acenaphthylene	0	3	397	205	750	397			750	U	ND	5.87	128	PEL	128	67.6	5.86	3.1	0		0	No	TOC Normalized PAHs<MEC
Anthracene	0	3	397	205	750	397			750	U	ND	46.9	245	PEL	16	8.46	3.06	1.62	0		0	No	TOC Normalized PAHs<MEC
Benzo(a)anthracene	0	3	397	205	750	397			750	U	ND	74.8	693	PEL	10	5.3	1.08	0.572	0		0	No	TOC Normalized PAHs<MEC
Benzo(a)pyrene	0	3	397	205	750	397			750	U	ND	88.8	763	PEL	8.45	4.47	0.98	0.52	0		0	No	TOC Normalized PAHs<MEC
Chrysene	0	3	397	205	750	397			750	U	ND	108	846	PEL	6.94	3.67	0.89	0.47	0		0	No	TOC Normalized PAHs<MEC
Dibenz(a,h)anthracene	0	3	397	205	750	397			750	U	ND	6.22	135	PEL	121	63.8	5.56	2.94	0		0	No	TOC Normalized PAHs<MEC
Fluoranthene	0	3	397	205	750	397			750	U	ND	113	1494	PEL	6.64	3.51	0.50	0.27	0		0	No	TOC Normalized PAHs<MEC
Fluorene	0	3	397	205	750	397			750	U	ND	21.2	144	PEL	35.4	18.7	5.21	2.75	0		0	No	TOC Normalized PAHs<MEC
Naphthalene	**1**	**3**	**220**	**205**	**235**	**2,650**	**7,500**	**7,500**	**7,500**		**003M000101**	**34.6**	**391**	**PEL**	**217**	**76.5**	**19.2**	**6.77**	**1**		**0**	No	TOC Normalized PAHs<MEC
Phenanthrene	0	3	397	205	750	397			750	U	ND	86.7	544	PEL	8.65	4.58	1.38	0.73	0		0	No	TOC Normalized PAHs<MEC
Pyrene	0	3	397	205	750	397			750	U	ND	153	1,398	PEL	4.9	2.59	0.54	0.28	0		0	No	TOC Normalized PAHs<MEC
Total PAHs	**1**	**3**	**2860**	**2,670**	**3,060**	**8,760**	**20,600**	**20,600**	**20,600**		**003M000101**	**1,684**	**16,770**	**PEL**	**12.2**	**5.2**	**1.23**	**0.52**	**1**		**0**	No	TOC Normalized PAHs<MEC
TOC Normalized PAHs	1	3	825.66	685.75	965.58	898.16	1,043.15	1,043.15	1,043.15		003M000101	290	1,800	MEC	3.6	3.1	0.58	0.50	0		0	No	RV HQ <1 and no RC
PCBs (µg/kg)																							
Aroclor-1016	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Aroclor-1221	0	3	80	42	150	80			150	U	ND	67	189	PEL	2.24	1.19	0.79	0.42	0		0	No	Parameter Not Detected
Aroclor-1232	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Aroclor-1242	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Aroclor-1248	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Aroclor-1254	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Aroclor-1260	0	3	39.7	20.5	75	39.7			75	U	ND	21.6	189	PEL	3.47	1.84	0.40	0.21	0		0	No	Parameter Not Detected
Total PCBs	0	3	318	165	600	318			600	U	ND	21.6	189	PEL	27.8	14.7	3.17	1.68	0		0	No	Parameter Not Detected; Max SQL > 1
Pesticides (µg/kg)																							
Aldrin	2	3	1.05	1.05	1.05	0.671	0.082	0.88	0.88	J	003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Endosulfan I	2	3	1.05	1.05	1.05	0.903	0.8	0.86	0.86	J	003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Endosulfan II	0	3	3.97	2.05	7.5	3.97			7.5	U	ND			NA					0		0	No	Parameter Not Detected
Endosulfan sulfate	1	3	4.78	2.05	7.5	3.3	0.34	0.34	0.34	J	003M000301			NA					0		0	Yes	No SV, no RV, and no RC
Heptachlor	2	3	1.2	1.2	1.2	0.628	0.044	0.64	0.64	J	003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Heptachlor epoxide	2	3	1.05	1.05	1.05	1.32	1.4	1.5	1.5	J	003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Methoxychlor	0	3	4.72	1.3	10.5	4.72			10.5	U	ND			NA					0		0	No	Parameter Not Detected
Toxaphene	0	3	203	105	385	203			385	U	ND			NA					0		0	No	Parameter Not Detected
alpha-Chlordane	2	3	1.05	1.05	1.05	0.5	0.1	0.35	0.35	J	003M000101	1.7	4.79	PEL	0.21	0.29	0.07	0.10	0		0	No	RV HQ <1 and no RC
gamma-Chlordane	2	3	1.05	1.05	1.05	0.978	0.084	1.8	1.8	J	003M000101	1.7	4.79	PEL	1.06	0.58	0.38	0.20	0		0	No	RV HQ <1 and no RC
Total Chlordane	2	3	2.1	2.1	2.1	1.48	0.184	2.15	2.15		003M000101	1.7	4.79	PEL	1.26	0.87	0.45	0.31	0		0	No	RV HQ <1 and no RC
Endrin	1	3	2.2	2.05	2.35	1.73	0.78	0.78	0.78	J	003M000101	3.3		NA	0.24	0.52			0		0	Yes	No RV or RC and EPC > SV
Endrin aldehyde	2	3	2.05	2.05	2.05	1.53	0.23	2.3	2.3	J	003M000101	3.3		NA	0.70	0.46			0		0	Yes	No RV or RC and EPC > SV
Endrin ketone	1	3	2.2	2.05	2.35	1.59	0.36	0.36	0.36	J	003M000101	3.3		NA	0.11	0.48			0		0	Yes	No RV or RC and EPC > SV
Total Endrin	2	3	6.15	6.15	6.15	4.84	3.44	4.93	4.93		003M000301	3.3		NA	1.49	1.47			0		0	Yes	No RV or RC and EPC > SV
alpha-BHC	1	3	1.13	1.05	1.2	0.85	0.3	0.3	0.3	J	003M000101		0.99	PEL			0.30	0.86	0		0	No	RV HQ <1 and no RC
beta-BHC	**2**	**3**	**1.05**	**1.05**	**1.05**	**0.933**	**0.25**	**1.5**	**1.5**	**J**	**003M000101**	**0.32**	**0.99**	**PEL**	**4.69**	**2.92**	**1.52**	**0.94**	**1**		**0**	**Yes**	**RV HQ > 1 and no RC**
delta-BHC	2	3	1.05	1.05	1.05	0.482	0.076	0.32	0.32	J	003M000301	0.32	0.99	PEL	1	1.51	0.32	0.49	0		0	No	RV HQ <1 and no RC
gamma-BHC (Lindane)	1	3	1.13	1.05	1.2	0.823	0.22	0.22	0.22	J	003M000101	0.32	0.99	PEL	0.69	2.57	0.22	0.83	0		0	No	RV HQ <1 and no RC
Total BHC	**2**	**3**	**4.2**	**4.2**	**4.2**	**3.09**	**2.34**	**2.73**	**2.73**		**003M000301**	**0.32**	**0.99**	**PEL**	**8.52**	**9.65**	**2.75**	**3.12**	**2**		**0**	**Yes**	**RV HQ > 1 and no RC**
4,4'-DDD	2	3	2.05	2.05	2.05	1.74	0.66	2.5	2.5	J	003M000101	1.22	7.81	PEL	2.05	1.42	0.32	0.22	0	50	0	No	EPC < RC and RV
4,4'-DDE	1	3	4.78	2.05	7.5	3.37	0.56	0.56	0.56	J	003M000301	2.07	374	PEL	0.27	1.63	0.00	0.01	0	40	0	No	EPC < RC and RV
4,4'-DDT	1	3	2.2	2.05	2.35	1.59	0.36	0.36	0.36	J	003M000101	1.19	4.77	PEL	0.30	1.33	0.08	0.33	0	20	0	No	EPC < RC and RV
Total DDT	2	3	6.15	6.15	6.15	6.69	3.57	10.4	10.4		003M000101	3.3	51.7	PEL	3.14	2.03	0.2	0.13	0	110	0	No	EPC < RC and RV
SVOCs (µg/kg)																							
1,2,4-Trichlorobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichlorobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
1,4-Dichlorobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dichlorophenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dimethylphenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrophenol	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
2,4-Dinitrotoluene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2,6-Dinitrotoluene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2-Chloronaphthalene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2-Chlorophenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected

Table 14-3-7
Wetland W1 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.																							
2-Nitroaniline	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
2-Nitrophenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
3-Nitroaniline	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
4-Chloroaniline	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitroaniline	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
4-Nitrophenol	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
Benzo(b)fluoranthene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Benzo(g,h,i)perylene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Benzo(k)fluoranthene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Butylbenzylphthalate	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Carbazole	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Dibenzofuran	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Diethylphthalate	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Dimethylphthalate	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Di-n-butylphthalate	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Di-n-octylphthalate	0	3	397	205	750	397			750	U	ND	182	2,647	PEL	4.12	2.18	0.28	0.15	0		0	No	Parameter Not Detected
Hexachlorobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorobutadiene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Hexachloroethane	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Isophorone	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Nitrobenzene	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
Pentachlorophenol	0	3	950	500	1,800	950			1,800	U	ND			NA					0		0	No	Parameter Not Detected
Phenol	0	3	397	205	750	397			750	U	ND			NA					0		0	No	Parameter Not Detected
VOCs (µg/kg)																							
1,1,1-Trichloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2,2-Tetrachloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1,2-Trichloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,1-Dichloroethene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
1,2-Dichloroethene (total)	1	3	6.75	6.5	7	7.5	9	9	9	J	003M000101			NA					0		0	Yes	No SV, no RV, and no RC
1,2-Dichloropropane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Butanone (MEK)	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
2-Hexanone	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Acetone	0	3	17.3	6	39	17.3			39	U	ND			NA					0		0	No	Parameter Not Detected
Benzene	1	3	6.75	6.5	7	44.5	120	120	120		003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Bromodichloromethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromoform	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Bromomethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon disulfide	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Carbon tetrachloride	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Chlorobenzene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloroform	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Chloromethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
cis-1,3-Dichloropropene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Dibromochloromethane	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Ethylbenzene	1	3	6.75	6.5	7	101	290	290	290		003M000101			NA					0		0	Yes	No SV, no RV, and no RC
Methylene chloride	0	3	36.7	10.5	85	36.7			85	U	ND			NA					0		0	No	Parameter Not Detected
Styrene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Tetrachloroethene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Toluene	1	3	6.75	6.5	7	71.2	200	200	200		003M000101			NA					0		0	Yes	No SV, no RV, and no RC
trans-1,3-Dichloropropene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Trichloroethene	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Vinyl chloride	0	3	12	6.5	22.5	12			22.5	U	ND			NA					0		0	No	Parameter Not Detected
Xylene (Total)	1	3	6.75	6.5	7	671	2,000	2,000	2,000		003M000101			NA					0		0	Yes	No SV, no RV, and no RC

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 detection
NAS Pensacola basewide levels used as reference values for 4,4'-DDT, 4,4'-DDD, 4,4'-DDE and total DDT

Table 14-3-8
Wetland W1 Phase II
Sediment COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Barium	Aldrin	None	None
Lead	Endosulfan I		
Selenium	Endosulfan sulfate		
	Heptachlor		
	Heptachlor epoxide		
	Endrin		
	Endrin aldehyde		
	Endrin ketone		
	Total Endrin		
	beta-BHC		
	Total BHC		

Table 14-3-9
Wetland W1 Phase II
Mean ERM Quotient

Sample ID	Sample Date	Units	Result	VQUAL	Parameter	ERL	ERM	ERM Quotient
003M000101	8/9/1995	mg/kg	1.2	U	Arsenic	8.2	70	0.02
003M000101	8/9/1995	mg/kg	4.1		Cadmium	1.2	9.6	0.43
003M000101	8/9/1995	mg/kg	15.2		Chromium	81	370	0.04
003M000101	8/9/1995	mg/kg	105		Copper	34	270	0.39
003M000101	**8/9/1995**	**mg/kg**	**525**		**Lead**	**46.7**	**218**	**2.41**
003M000101	8/9/1995	mg/kg	0.225	U	Mercury	0.15	0.71	0.32
003M000101	8/9/1995	mg/kg	3.3		Nickel	20.9	51.6	0.06
003M000101	8/9/1995	mg/kg	2	U	Silver	1	3.7	0.54
003M000101	8/9/1995	mg/kg	60.5		Zinc	150	410	0.15
003M000101	8/9/1995	µg/kg	7.5	U	4,4'-DDE	2.2	27	0.28
003M000101	8/9/1995	µg/kg	0.36	J	4,4'-DDT	1.58	46.1	0.01
003M000101	8/9/1995	µg/kg	600	U	Total PCBs	22.7	180	3.33
003M000101	**8/9/1995**	**µg/kg**	**4,800**		**2-Methylnaphthalene**	**70**	**670**	**7.16**
003M000101	8/9/1995	µg/kg	750	U	Acenaphthene	16	500	1.50
003M000101	8/9/1995	µg/kg	750	U	Acenaphthylene	44	640	1.17
003M000101	8/9/1995	µg/kg	750	U	Anthracene	85.3	1,100	0.68
003M000101	8/9/1995	µg/kg	750	U	Benzo(a)anthracene	261	1,600	0.47
003M000101	8/9/1995	µg/kg	750	U	Benzo(a)pyrene	430	1,600	0.47
003M000101	8/9/1995	µg/kg	750	U	Chrysene	384	2,800	0.27
003M000101	8/9/1995	µg/kg	750	U	Dibenz(a,h)anthracene	63.4	260	2.88
003M000101	8/9/1995	µg/kg	750	U	Fluoranthene	600	5,100	0.15
003M000101	8/9/1995	µg/kg	750	U	Fluorene	19	540	1.39
003M000101	**8/9/1995**	**µg/kg**	**7,500**		**Naphthalene**	**160**	**2,100**	**3.57**
003M000101	8/9/1995	µg/kg	750	U	Phenanthrene	240	1,500	0.50
003M000101	8/9/1995	µg/kg	750	U	Pyrene	665	2,600	0.29
003M000101	8/9/1995				ERM Quotient Sum			28.47
003M000101	8/9/1995				Mean ERM Quotient			1.14
003M000101	8/9/1995				Mean ERM Quotient without ND			0.57
003M000101	8/9/1995				Mean ERM Quotient Category			3
003M000201	8/9/1995	mg/kg	0.34	U	Arsenic	8.2	70	0.00
003M000201	8/9/1995	mg/kg	0.065	U	Cadmium	1.2	9.6	0.01
003M000201	8/9/1995	mg/kg	0.185	U	Chromium	81	370	0.00
003M000201	8/9/1995	mg/kg	0.85	U	Copper	34	270	0.00
003M000201	8/9/1995	mg/kg	1		Lead	46.7	218	0.00
003M000201	8/9/1995	mg/kg	0.065	U	Mercury	0.15	0.71	0.09
003M000201	8/9/1995	mg/kg	0.305	U	Nickel	20.9	51.6	0.01
003M000201	8/9/1995	mg/kg	0.55	U	Silver	1	3.7	0.15
003M000201	8/9/1995	mg/kg	1.5	U	Zinc	150	410	0.00
003M000201	8/9/1995	µg/kg	2.05	U	4,4'-DDE	2.2	27	0.08
003M000201	8/9/1995	µg/kg	2.05	U	4,4'-DDT	1.58	46.1	0.04
003M000201	8/9/1995	µg/kg	165	U	Total PCBs	22.7	180	0.92
003M000201	8/9/1995	µg/kg	205	U	2-Methylnaphthalene	70	670	0.31
003M000201	8/9/1995	µg/kg	205	U	Acenaphthene	16	500	0.41
003M000201	8/9/1995	µg/kg	205	U	Acenaphthylene	44	640	0.32
003M000201	8/9/1995	µg/kg	205	U	Anthracene	85.3	1,100	0.19
003M000201	8/9/1995	µg/kg	205	U	Benzo(a)anthracene	261	1,600	0.13
003M000201	8/9/1995	µg/kg	205	U	Benzo(a)pyrene	430	1,600	0.13
003M000201	8/9/1995	µg/kg	205	U	Chrysene	384	2,800	0.07
003M000201	8/9/1995	µg/kg	205	U	Dibenz(a,h)anthracene	63.4	260	0.79
003M000201	8/9/1995	µg/kg	205	U	Fluoranthene	600	5,100	0.04
003M000201	8/9/1995	µg/kg	205	U	Fluorene	19	540	0.38
003M000201	8/9/1995	µg/kg	205	U	Naphthalene	160	2,100	0.10
003M000201	8/9/1995	µg/kg	205	U	Phenanthrene	240	1,500	0.14
003M000201	8/9/1995	µg/kg	205	U	Pyrene	665	2,600	0.08
003M000201	8/9/1995				ERM Quotient Sum			4.38
003M000201	8/9/1995				Mean ERM Quotient			0.18
003M000201	8/9/1995				Mean ERM Quotient without ND			0.00
003M000201	8/9/1995				Mean ERM Quotient Category			1
003M000301	8/9/1995	mg/kg	0.395	U	Arsenic	8.2	70	0.01
003M000301	8/9/1995	mg/kg	0.075	U	Cadmium	1.2	9.6	0.01
003M000301	8/9/1995	mg/kg	0.5	U	Chromium	81	370	0.00
003M000301	8/9/1995	mg/kg	1	U	Copper	34	270	0.00
003M000301	8/9/1995	mg/kg	14.1		Lead	46.7	218	0.06
003M000301	8/9/1995	mg/kg	0.07	U	Mercury	0.15	0.71	0.10
003M000301	8/9/1995	mg/kg	0.35	U	Nickel	20.9	51.6	0.01
003M000301	8/9/1995	mg/kg	0.65	U	Silver	1	3.7	0.18
003M000301	8/9/1995	mg/kg	11.1		Zinc	150	410	0.03
003M000301	8/9/1995	µg/kg	0.56	J	4,4'-DDE	2.2	27	0.02
003M000301	8/9/1995	µg/kg	2.35	U	4,4'-DDT	1.58	46.1	0.05
003M000301	8/9/1995	µg/kg	189	U	Total PCBs	22.7	180	1.05
003M000301	8/9/1995	µg/kg	235	U	2-Methylnaphthalene	70	670	0.35
003M000301	8/9/1995	µg/kg	235	U	Acenaphthene	16	500	0.47
003M000301	8/9/1995	µg/kg	235	U	Acenaphthylene	44	640	0.37
003M000301	8/9/1995	µg/kg	235	U	Anthracene	85.3	1,100	0.21
003M000301	8/9/1995	µg/kg	235	U	Benzo(a)anthracene	261	1,600	0.15
003M000301	8/9/1995	µg/kg	235	U	Benzo(a)pyrene	430	1,600	0.15
003M000301	8/9/1995	µg/kg	235	U	Chrysene	384	2,800	0.08
003M000301	8/9/1995	µg/kg	235	U	Dibenz(a,h)anthracene	63.4	260	0.90
003M000301	8/9/1995	µg/kg	235	U	Fluoranthene	600	5,100	0.05
003M000301	8/9/1995	µg/kg	235	U	Fluorene	19	540	0.44
003M000301	8/9/1995	µg/kg	235	U	Naphthalene	160	2,100	0.11
003M000301	8/9/1995	µg/kg	235	U	Phenanthrene	240	1,500	0.16
003M000301	8/9/1995	µg/kg	235	U	Pyrene	665	2,600	0.09
003M000301	8/9/1995				ERM Quotient Sum			5.04
003M000301	8/9/1995				Mean ERM Quotient			0.20
003M000301	8/9/1995				Mean ERM Quotient without ND			0.00
003M000301	8/9/1995				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 14-3-10
Wetland W1 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**	**640**	**640**	**640**	**1,330**	**664**	**2,270**	**041WW10201**	**2,270**	**J**	**13**	**FDEP**	**175**	**Yes**	**Max Detect > SV**
Antimony	1	6	0.98	0.95	1	1.15	2	2	003W000201	2		160	EPA	0.01	No	Max Detect < SV
Arsenic	0	6	1.41	1	2.25	1.41			ND	2.25	U	50	FDEP	0.05	No	Max SQL< SV
Barium	1	6	7.65	2.9	22.05	16	57.8	57.8	041WW10201	57.8	J		NA		Yes	No SV
Beryllium	0	6	0.275	0.05	0.5	0.275			ND	0.5	U	0.13	FDEP	3.85	No	Max SQL< SV
Cadmium	**1**	**6**	**0.7**	**0.25**	**1**	**0.74**	**0.94**	**0.94**	**003W000101**	**0.94**		**0.66**	**EPA**	**1.42**	**Yes**	**Max Detect > SV**
Calcium	6	6				4,810	3,260	6,790	041WW10101	6,790	J		NA		Yes	No SV
Chromium	0	6	1.69	0.6	2.5	1.69			ND	2.5	U	11	EPA	0.23	No	Max SQL< SV
Cobalt	0	6	0.625	0.25	1	0.625			ND	1	U		NA		Yes	No SV
Copper	**2**	**6**	**4.47**	**2**	**9.2**	**5.38**	**6.6**	**7.8**	**041WW10101**	**7.8**	**J**	**6.54**	**EPA**	**1.19**	**Yes**	**Max Detect > SV**
Cyanide (CN)	0	6	3.75	2.5	5	3.75			ND	5	U	5.2	EPA	0.96	No	Max SQL< SV
Iron	6	6				2,900	419	10,400	003W000101	10,400			NA		Yes	No SV
Lead	**5**	**6**	**0.8**	**0.8**	**0.8**	**20.4**	**2.2**	**56.4**	**041WW10101**	**56.4**		**1.32**	**EPA**	**42.7**	**Yes**	**Max Detect > SV**
Magnesium	6	6				850	649	1,200	003W000101	1,200			NA		Yes	No SV
Manganese	6	6				12.8	3.7	27.4	041WW10101	27.4			NA		Yes	No SV
Mercury	0	6	0.0825	0.065	0.1	0.0825			ND	0.1	U	0.012	EPA	8.33	Yes	Max SQL > SV
Nickel	0	6	2.85	1.2	4.5	2.85			ND	4.5	U	87.71	EPA	0.05	No	Max SQL< SV
Potassium	4	6	184	181.5	186	808	361	1,970	003W000101	1,970			NA		Yes	No SV
Selenium	0	6	1.85	1.7	2	1.85			ND	2	U	5	EPA	0.4	No	Max SQL< SV
Silver	0	6	2.38	2.25	2.5	2.38			ND	2.5	U	0.012	EPA	208	Yes	Max SQL > SV
Sodium	1	6	1,850	1,690	2,120	2,400	5,170	5,170	003W000101	5,170			NA		Yes	No SV
Thallium	0	6	1.9	1.8	2	1.9			ND	2	U	4	EPA	0.5	No	Max SQL< SV
Vanadium	6	6				4.17	1	10.8	041WW10201	10.8	J		NA		Yes	No SV
Zinc	2	6	18.1	6.9	32.4	20.6	21.4	29.8	003W000301	29.8		58.91	EPA	0.51	No	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	0	6	0.025	0.025	0.025	0.025			ND	0.025	U	0.056	EPA	0.45	No	Max SQL< 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	**1**	**6**	**0.025**	**0.025**	**0.025**	**0.022**	**0.0068**	**0.0068**	**003W000101**	**0.0068**	**J**	**0.00004**	**FDEP**	**170**	**Yes**	**Max Detect > 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	1	6	0.025	0.025	0.025	0.0625	0.25	0.25	041WW10201	0.25	J		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	**1**	**6**	**0.05**	**0.05**	**0.05**	**0.0875**	**0.275**	**0.275**	**041WW10201**	**0.275**		**0.0043**	**EPA**	**64**	**Yes**	**Max Detect > 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	0.0625	0.025	0.25	0.0625			ND	0.25	U		NA		Yes	No SV
gamma-BHC (Lindane)	1	6	0.025	0.025	0.025	0.0218	0.0061	0.0061	003W000101	0.0061	J	0.08	EPA	0.08	No	Max Detect < SV
Total BHC	1	6	0.145	0.1	0.325	0.134	0.0811	0.0811	003W000101	0.0811			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 14-3-10
Wetland W1 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	3.75	2.5	5	3.75			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	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2,4,5-Trichlorophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
2,4,6-Trichlorophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2,4-Dichlorophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2,4-Dimethylphenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2,4-Dinitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
2,4-Dinitrotoluene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2,6-Dinitrotoluene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2-Chloronaphthalene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2-Chlorophenol	0	6	3.75	2.5	5	3.75			ND	5	U	43.8	EPA	0.11	No	Max SQL< SV
2-Methyl-4,6-Dinitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
2-Methylphenol (o-Cresol)	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
2-Nitroaniline	0	6	7.5	2.5	12.5	7.5			ND	12.5	U		NA		Yes	No SV
2-Nitrophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
3,3'-Dichlorobenzidine	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
3-Nitroaniline	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
4-Bromophenyl-phenylether	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
4-Chloro-3-methylphenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
4-Chloroaniline	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
4-Chlorophenylphenyl ether	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
4-Methylphenol (p-Cresol)	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
4-Nitroaniline	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
4-Nitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA		Yes	No SV
Benzo(b)fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Benzo(g,h,i)perylene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Benzo(k)fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
bis(2-Chloroethoxy)methane	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
bis(2-Chloroethyl)ether	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**6**	**4**	**2.5**	**5**	**4.17**	**5**	**5**	**041WW10201**	**5**		**0.3**	**EPA**	**16.7**	**Yes**	**Max Detect > SV**
Butylbenzylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Carbazole	0	3	5	5	5	5			ND	5	U		NA		Yes	No SV
Dibenzofuran	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Diethylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Dimethylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Di-n-butylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U	9.4	EPA	0.53	No	Max SQL< SV
Di-n-octylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Hexachlorobenzene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Hexachlorobutadiene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Hexachlorocyclopentadiene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Hexachloroethane	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Indeno(1,2,3-cd)pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Isophorone	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Nitrobenzene	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
N-Nitroso-di-n-propylamine	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
N-Nitrosodiphenylamine	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Pentachlorophenol	0	6	7.5	2.5	12.5	7.5			ND	12.5	U		NA		Yes	No SV
Phenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
PAHs (µg/L)																
2-Methylnaphthalene	1	6	3.2	0.5	5	3.17	3	3	041WW10101	3			NA		Yes	No SV
Acenaphthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Acenaphthylene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Benzo(a)anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Benzo(a)pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Chrysene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV

Table 14-3-10
Wetland W1 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.																
Dibenz(a,h)anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Fluorene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Naphthalene	1	6	3.2	0.5	5	3.67	6	6	041WW10101	6		26	FDEP	0.23	No	Max Detect < SV
Phenanthrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Total PAH	1	6	41.6	6.5	65	37.1	14.5	14.5	041WW10101	14.5			NA		Yes	No SV
VOCs (µg/L)																
1,1,1-Trichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U	270	FDEP	0.02	No	Max SQL< SV
1,1,2,2-Tetrachloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
1,1,2-Trichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
1,1-Dichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
1,1-Dichloroethene	0	6	2.75	0.5	5	2.75			ND	5	U	3.2	FDEP	1.56	Yes	Max SQL > 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	6	0.255	0.01	0.5	0.255			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	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
1,2-Dichloroethene (total)	1	3	5	5	5	4.67	4	4	003W000101	4	J		NA		Yes	No SV
1,2-Dichloropropane	0	6	2.75	0.5	5	2.75			ND	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	3	5	5	5	5			ND	5	U		NA		Yes	No SV
2-Hexanone	0	4	4.38	2.5	5	4.38			ND	5	U		NA		Yes	No SV
4-Methyl-2-Pentanone (MIBK)	0	6	3.75	2.5	5	3.75			ND	5	U		NA		Yes	No SV
Acetone	1	4	5	5	5	7	13	13	041WW10101	13	J		NA		Yes	No SV
Benzene	**3**	**6**	**3.5**	**0.5**	**5**	**17.6**	**16**	**55**	**003W000101**	**55**		**53**	**EPA**	**1.04**	**Yes**	**Max Detect > SV**
Bromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA		Yes	No SV
Bromodichloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Bromoform	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Bromomethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Carbon disulfide	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Carbon tetrachloride	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Chlorobenzene	0	6	2.75	0.5	5	2.75			ND	5	U	17	FDEP	0.29	No	Max SQL< SV
Chloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Chloroform	0	6	2.75	0.5	5	2.75			ND	5	U	289	EPA	0.02	No	Max SQL< SV
Chloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
cis-1,2-Dichloroethene	1	3	0.5	0.5	0.5	1.33	3	3	041WW10101	3			NA		Yes	No SV
cis-1,3-Dichloropropene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Dibromochloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Ethylbenzene	3	6	3.5	0.5	5	6.92	7	13	003W000101	13		453	EPA	0.03	No	Max Detect < SV
Methylene chloride	0	6	3.17	1	5	3.17			ND	5	U	1,580	FDEP	0.00	No	Max SQL< SV
Styrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Tetrachloroethene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Toluene	3	6	3.5	0.5	5	6.92	3	25	003W000101	25		175	EPA	0.14	No	Max Detect < 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	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Trichloroethene	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Vinyl chloride	0	6	2.75	0.5	5	2.75			ND	5	U		NA		Yes	No SV
Xylene (Total)	3	6	3.5	0.5	5	48.4	46	150	041WW10201	150	D		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 14-3-11
Wetland W1 Phase II
Surface Water COPCs Retained After Screening

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Heptachlor epoxide	bis(2-Ethylhexyl)phthalate (BEHP)	1,2-Dichloroethene (total)
Barium	alpha-Chlordane	2-Methylnaphthalene	Acetone
Cadmium	Total Chlordane	Total PAHs	Benzene
Calcium	Total BHC		cis-1,2-Dichloroethene
Copper			Xylene (Total)
Iron			
Lead			
Magnesium			
Manganese			
Potassium			
Sodium			
Vanadium			
		Not Detected Parameters	
Cobalt	Aldrin	1,2,4-Trichlorobenzene	1,1,2,2-Tetrachloroethane
Mercury	Dieldrin	1,3-Dichlorobenzene	1,1,2-Trichloroethane
Silver	Endosulfan II	1,4-Dichlorobenzene	1,1-Dichloroethane
	Endosulfan sulfate	2,2'-oxybis(1-Chloropropane)	1,1-Dichloroethene
	Heptachlor	2,4,5-Trichlorophenol	1,2-Dibromo-3-Chloropropane
	Methoxychlor	2,4,6-Trichlorophenol	1,2-Dibromoethane
	Toxaphene	2,4-Dichlorophenol	1,2-Dichloroethane
	gamma-Chlordane	2,4-Dimethylphenol	1,2-Dichloropropane
	Endrin	2,4-Dinitrophenol	1,3-Dichlorobenzene
	Endrin aldehyde	2,4-Dinitrotoluene	2-Butanone (MEK)
	Endrin ketone	2,6-Dinitrotoluene	2-Hexanone
	Total Endrin	2-Chloronaphthalene	4-Methyl-2-Pentanone (MIBK)
	alpha-BHC	2-Methyl-4,6-Dinitrophenol	Bromochloromethane
	beta-BHC	2-Methylphenol (o-Cresol)	Bromodichloromethane
	delta-BHC	2-Nitroaniline	Bromoform
	4,4'-DDD	2-Nitrophenol	Bromomethane
	4,4'-DDE	3,3'-Dichlorobenzidine	Carbon disulfide
	4,4'-DDT	3-Nitroaniline	Carbon tetrachloride
	Total DDT	4-Bromophenyl-phenylether	Chloroethane
	Aroclor-1016	4-Chloro-3-methylphenol	Chloromethane
	Aroclor-1221	4-Chloroaniline	cis-1,3-Dichloropropene
	Aroclor-1232	4-Chlorophenylphenyl ether	Dibromochloromethane
	Aroclor-1242	4-Methylphenol (p-Cresol)	Styrene
	Aroclor-1248	4-Nitroaniline	Tetrachloroethene
	Aroclor-1254	4-Nitrophenol	trans-1,2-Dichloroethene
	Aroclor-1260	Benzo(b)fluoranthene	trans-1,3-Dichloropropene
	Total PCBs	Benzo(g,h,i)perylene	Trichloroethene
		Benzo(k)fluoranthene	Vinyl chloride
		bis(2-Chloroethoxy)methane	
		bis(2-Chloroethyl)ether	
		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	
		Acenaphthene	
		Acenaphthylene	
		Anthracene	
		Benzo(a)anthracene	
		Benzo(a)pyrene	
		Chrysene	
		Dibenz(a,h)anthracene	
		Fluoranthene	
		Fluorene	
		Phenanthrene	
		Pyrene	

Table 14-3-12
Wetland W1 Phase II
Surface Water Refinement

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	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
Metals (µg/L)																				
Aluminum	**5**	**6**	**640**	**640**	**640**	**1,330**	**664**	**2,270**	**041WW10201**	**2,270**	**J**	**13**	**FDEP**	**175**	**103**	**1,090**	**3**	**6**	**Yes**	**Max Result > Ref. Conc.**
Barium	1	6	7.65	2.9	22.05	16	57.8	57.8	041WW10201	57.8	J		NA			3.67	3	6	Yes	Max Result > Ref. Conc.
Cadmium	**1**	**6**	**0.7**	**0.25**	**1**	**0.74**	**0.94**	**0.94**	**003W000101**	**0.94**		**0.66**	**EPA**	**1.42**	**1.12**	**3**	**0**	**6**	**No**	**Max Result < Ref. Conc.**
Calcium	6	6				4,810	3,260	6,790	041WW10101	6,790	J		NA			7,680	0	6	No	Max Result < Ref. Conc.
Cobalt	0	6	0.625	0.25	1	0.625			ND	1	U		NA			3	0	6	No	Max Result < Ref. Conc.
Copper	**2**	**6**	**4.47**	**2**	**9.2**	**5.38**	**6.6**	**7.8**	**041WW10101**	**7.8**	**J**	**6.54**	**EPA**	**1.19**	**0.82**	**4**	**3**	**6**	**Yes**	**Max Result > Ref. Conc.**
Iron	6	6				2,900	419	10,400	003W000101	10,400			NA			2,360	3	6	Yes	Max Result > Ref. Conc.
Lead	**5**	**6**	**0.8**	**0.8**	**0.8**	**20.4**	**2.2**	**56.4**	**041WW10101**	**56.4**		**1.32**	**EPA**	**43**	**15.5**	**3.2**	**4**	**6**	**Yes**	**Max Result > Ref. Conc.**
Magnesium	6	6				850	649	1,200	003W000101	1,200			NA			20,300	0	6	No	Max Result < Ref. Conc.
Manganese	6	6				12.8	3.7	27.4	041WW10101	27.4			NA			13.2	2	6	Yes	Max Result > Ref. Conc.
Mercury	0	6	0.0825	0.065	0.1	0.0825			ND	0.1	U	0.012	EPA	8.33	6.88	0.13	0	6	No	Max Result < Ref. Conc.
Potassium	4	6	184	181.5	186	808	361	1,970	003W000101	1,970			NA			7,000	0	6	No	Max Result < Ref. Conc.
Silver	0	6	2.38	2.25	2.5	2.38			ND	2.5	U	0.012	EPA	208.33	198	4	0	6	No	Max Result < Ref. Conc.
Sodium	1	6	1,850	1,690	2,120	2,400	5,170	5,170	003W000101	5,170			NA			182,000	0	6	No	Max Result < Ref. Conc.
Vanadium	6	6				4.17	1	10.8	041WW10201	10.8	J		NA			4.7	2	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	Parameter Not Detected
Dieldrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	Parameter Not Detected
Endosulfan II	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	Parameter Not Detected
Endosulfan sulfate	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	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	Parameter Not Detected
Heptachlor epoxide	**1**	**6**	**0.025**	**0.025**	**0.025**	**0.022**	**0.0068**	**0.0068**	**003W000101**	**0.0068**	**J**	**0.00004**	**FDEP**	**170**	**549**		**0**	**6**	**Yes**	**Max Result>SV;Max HQ>1**
Methoxychlor	0	6	0.25	0.25	0.25	0.25			ND	0.25	U		NA				0	6	No	Parameter Not Detected
Toxaphene	0	6	2.5	2.5	2.5	2.5			ND	2.5	U		NA				0	6	No	Parameter Not Detected
alpha-Chlordane	1	6	0.025	0.025	0.025	0.0625	0.25	0.25	041WW10201	0.25	J		NA				0	6	Yes	No SV
gamma-Chlordane	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	Parameter Not Detected
Total Chlordane	**1**	**6**	**0.05**	**0.05**	**0.05**	**0.0875**	**0.275**	**0.275**	**041WW10201**	**0.275**		**0.0043**	**EPA**	**64**	**20.3**		**0**	**6**	**Yes**	**Max Result>SV**
Endrin	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	Parameter Not Detected
Endrin aldehyde	0	6	0.05	0.05	0.05	0.05			ND	0.05	U		NA				0	6	No	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	Parameter Not Detected
Total Endrin	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	6	No	Parameter Not Detected
alpha-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	Parameter Not Detected
beta-BHC	0	6	0.025	0.025	0.025	0.025			ND	0.025	U		NA				0	6	No	Parameter Not Detected
delta-BHC	0	6	0.0625	0.025	0.25	0.0625			ND	0.25	U		NA				0	6	No	Parameter Not Detected
gamma-BHC (Lindane)	1	6	0.025	0.025	0.025	0.0218	0.0061	0.0061	003W000101	0.0061	J	0.08	EPA	0.08	0.27		0	6	No	Max Result<SV
Total BHC	1	6	0.145	0.1	0.325	0.134	0.0811	0.0811	003W000101	0.0811			NA				0	6	Yes	No SV
4,4'-DDD	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0003	FDEP		167		0	6	No	Parameter Not Detected
4,4'-DDE	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.0002	FDEP		250		0	6	No	Parameter Not Detected
4,4'-DDT	0	6	0.05	0.05	0.05	0.05			ND	0.05	U	0.00059	FDEP		84.7		0	6	No	Parameter Not Detected
Total DDT	0	6	0.15	0.15	0.15	0.15			ND	0.15	U		NA				0	6	No	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	Parameter Not Detected
Aroclor-1221	0	6	1	1	1	1			ND	1	U		NA				0	6	No	Parameter Not Detected
Aroclor-1232	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	Parameter Not Detected
Aroclor-1242	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	Parameter Not Detected
Aroclor-1248	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	Parameter Not Detected
Aroclor-1254	0	6	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	6	No	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	Parameter Not Detected
Total PCB	0	6	4	4	4	4			ND	4	U		NA				0	6	No	Parameter Not Detected
SVOCs (µg/L)																				
1,2,4-Trichlorobenzene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	5	5	5	5			ND	5	U		NA				0	3	No	Parameter Not Detected
1,4-Dichlorobenzene	0	3	5	5	5	5			ND	5	U	3	FDEP	2	1.67		0	3	No	Parameter Not Detected
2,2'-oxybis(1-Chloropropane)/bis(2-chlor)	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2,4,5-Trichlorophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
2,4,6-Trichlorophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2,4-Dichlorophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2,4-Dimethylphenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2,4-Dinitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
2,4-Dinitrotoluene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2,6-Dinitrotoluene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2-Chloronaphthalene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2-Methyl-4,6-Dinitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
2-Methylphenol (o-Cresol)	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
2-Nitroaniline	0	6	7.5	2.5	12.5	7.5			ND	12.5	U		NA				0	6	No	Parameter Not Detected

Table 14-3-12
Wetland W1 Phase II
Surface Water Refinement

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	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
SVOCs (µg/L) - cont.																				
2-Nitrophenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
3,3'-Dichlorobenzidine	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
3-Nitroaniline	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
4-Bromophenyl-phenylether	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
4-Chloro-3-methylphenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
4-Chloroaniline	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
4-Chlorophenylphenyl ether	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
4-Methylphenol (p-Cresol)	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
4-Nitroaniline	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
4-Nitrophenol	0	6	11.3	10	12.5	11.3			ND	12.5	U		NA				0	6	No	Parameter Not Detected
Benzo(b)fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Benzo(g,h,i)perylene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Benzo(k)fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
bis(2-Chloroethoxy)methane	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
bis(2-Chloroethyl)ether	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
bis(2-Ethylhexyl)phthalate (BEHP)	**1**	**6**	**4**	**2.5**	**5**	**4.17**	**5**	**5**	**041WW10201**	**5**		**0.3**	**EPA**	**17**	**13.9**		**0**	**6**	**Yes**	**Max Result>SV**
Butylbenzylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Carbazole	0	3	5	5	5	5			ND	5	U		NA				0	3	No	Parameter Not Detected
Dibenzofuran	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Diethylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Dimethylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Di-n-octylphthalate	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Hexachlorobenzene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Hexachlorobutadiene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Hexachlorocyclopentadiene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Hexachloroethane	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Indeno(1,2,3-cd)pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Isophorone	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Nitrobenzene	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
N-Nitroso-di-n-propylamine	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
N-Nitrosodiphenylamine	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Pentachlorophenol	0	6	7.5	2.5	12.5	7.5			ND	12.5	U		NA				0	6	No	Parameter Not Detected
Phenol	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
PAHs (µg/L)																				
2-Methylnaphthalene	1	6	3.2	0.5	5	3.17	3	3	041WW10101	3			NA				0	6	Yes	No SV
Acenaphthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Acenaphthylene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Benzo(a)anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Benzo(a)pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Chrysene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Dibenz(a,h)anthracene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Fluoranthene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Fluorene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Naphthalene	1	6	3.2	0.5	5	3.67	6	6	041WW10101	6		26	FDEP	0.23	0.14		0	6	No	Max Result<SV
Phenanthrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Pyrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Total PAH	1	6	41.6	6.5	65	37.1	14.5	14.5	041WW10101	14.5			NA				0	6	Yes	No SV
VOCs (µg/L)																				
1,1,2,2-Tetrachloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,1,2-Trichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,1-Dichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,2-Dibromo-3-Chloropropane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	Parameter Not Detected
1,2-Dibromoethane	0	6	0.255	0.01	0.5	0.255			ND	0.5	U		NA				0	6	No	Parameter Not Detected
1,2-Dichloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,2-Dichloroethene (total)	1	3	5	5	5	4.67	4	4	003W000101	4	J		NA				0	3	Yes	No SV
1,2-Dichloropropane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
1,3-Dichlorobenzene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	Parameter Not Detected
2-Butanone (MEK)	0	3	5	5	5	5			ND	5	U		NA				0	3	No	Parameter Not Detected
2-Hexanone	0	4	4.38	2.5	5	4.38			ND	5	U		NA				0	4	No	Parameter Not Detected
4-Methyl-2-Pentanone (MIBK)	0	6	3.75	2.5	5	3.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Acetone	1	4	5	5	5	7	13	13	041WW10101	13	J		NA				0	4	Yes	No SV
Benzene	**3**	**6**	**3.5**	**0.5**	**5**	**17.6**	**16**	**55**	**003W000101**	**55**		**53**	**EPA**	**1.04**	**0.33**		**0**	**6**	**Yes**	**Max Result>SV**
Bromochloromethane	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	Parameter Not Detected
Bromodichloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Bromoform	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected

Table 14-3-12
Wetland W1 Phase II
Surface Water Refinement

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	Max Screening HQ	Average Screening HQ	Ref. Conc.	Number Detected > Ref. Conc.	Number Analyzed	Retained for Refinement?	Rationale
VOCs (µg/L) - cont.																				
Bromomethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Carbon disulfide	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Carbon tetrachloride	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Chloroethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Chloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
cis-1,2-Dichloroethene	1	3	0.5	0.5	0.5	1.33	3	3	041WW10101	3			NA				0	3	Yes	No SV
cis-1,3-Dichloropropene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Dibromochloromethane	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Styrene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Tetrachloroethene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
trans-1,2-Dichloroethene	0	3	0.5	0.5	0.5	0.5			ND	0.5	U		NA				0	3	No	Parameter Not Detected
trans-1,3-Dichloropropene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Trichloroethene	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Vinyl chloride	0	6	2.75	0.5	5	2.75			ND	5	U		NA				0	6	No	Parameter Not Detected
Xylene (Total)	3	6	3.5	0.5	5	48.4	46	150	041WW10201	150	D		NA				0	6	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
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 14-3-13
Wetland W1 Phase II
Surface Water COPCs Retained After Refinement

Metals	Pesticides/PCBs	SVOCs/PAHs	VOCs
		Detected Parameters	
Aluminum	Heptachlor epoxide	bis(2-Ethylhexyl)phthalate (BEHP)	Xylene (Total)
Iron	Total BHC	2-methylnaphthalene	cis-1,2-Dichloroethene
Lead	Total Chlordane	Total PAHs	1,2-Dichloroethene (total)
Manganese	alpha-Chlordane		Acetone
Barium			Benzene
Copper			
Vanadium			

Table 14-3-14
Wetland W1 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	2.3E+02	J	1.3E+04	J	MG/KG	003M000101	3 / 3	NAV	4.8E+03	1.0E-03	3	2.68E-06	1.34E-06	4.24E-05	2.84E-05
7440393	Barium	N	3.3E+00	=	2.8E+01	=	MG/KG	003M000101	2 / 3	N/A / 6.3E-01	1.0E+01	1.0E-03	3	5.52E-09	2.76E-09	8.74E-08	5.84E-08
7440439	Cadmium	N	N/A	N/A	4.1E+00	=	MG/KG	003M000101	1 / 3	1.3E-01 / 1.5E-01	1.4E+00	1.0E-03	3	8.20E-10	4.10E-10	1.30E-08	8.68E-09
7440484	Cobalt	C	N/A	N/A	4.5E-01	=	MG/KG	003M000101	1 / 3	1.3E-01 / 1.5E-01	2.0E-01	1.0E-03	3	9.00E-11	4.50E-11	2.04E-10	3.40E-10
7440508	Copper	N	N/A	N/A	1.1E+02	=	MG/KG	003M000101	1 / 3	1.7E+00 / 2.0E+00	3.6E+01	1.0E-03	3	2.10E-08	1.05E-08	3.32E-07	2.22E-07
7439896	Iron	N	2.2E+02	J	3.7E+03	J	MG/KG	003M000101	3 / 3	NAV	1.5E+03	1.0E-03	3	7.34E-07	3.67E-07	1.16E-05	7.77E-06
7439921	Lead	N	1.0E+00	=	5.3E+02	=	MG/KG	003M000101	3 / 3	NAV	1.8E+02	1.0E-03	3	1.05E-07	5.25E-08	1.66E-06	1.11E-06
7439965	Manganese	N	5.6E+00	=	1.3E+01	=	MG/KG	003M000101	2 / 3	N/A / 6.9E-01	6.2E+00	1.0E-03	3	2.52E-09	1.26E-09	3.99E-08	2.67E-08
7782492	Selenium	N	N/A	N/A	4.0E+00	=	MG/KG	003M000101	1 / 3	8.6E-01 / 9.9E-01	1.6E+00	1.0E-03	3	8.00E-10	4.00E-10	1.27E-08	8.47E-09
7440622	Vanadium	N	3.2E-01	=	1.9E+01	=	MG/KG	003M000101	3 / 3	NAV	7.0E+00	1.0E-03	3	3.74E-09	1.87E-09	5.92E-08	3.96E-08
72548	4,4'-DDD	C	6.6E-04	J	2.5E-03	J	MG/KG	003M000101	2 / 3	N/A / 4.1E-03	1.7E-03	3.0E-02	1	1.50E-11	7.50E-12	3.39E-11	5.67E-11
72559	4,4'-DDE	C	N/A	N/A	5.6E-04	J	MG/KG	003M000301	1 / 3	4.1E-03 / 1.5E-02	3.4E-03	3.0E-02	1	3.36E-12	1.68E-12	7.60E-12	1.27E-11
50293	4,4'-DDT	C	N/A	N/A	3.6E-04	J	MG/KG	003M000101	1 / 3	4.1E-03 / 4.7E-03	1.6E-03	3.0E-02	1	2.16E-12	1.08E-12	4.88E-12	8.16E-12
309002	Aldrin	C	8.2E-05	J	8.8E-04	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	6.7E-04	1.0E-01	2	1.76E-11	8.80E-12	3.98E-11	6.65E-11
319846	alpha-BHC	C	N/A	N/A	3.0E-04	J	MG/KG	003M000101	1 / 3	2.1E-03 / 2.4E-03	8.5E-04	4.0E-02	2	2.40E-12	1.20E-12	5.43E-12	9.07E-12
5103719	alpha-Chlordane	C	1.0E-04	J	3.5E-04	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	5.0E-04	4.0E-02	2	2.80E-12	1.40E-12	6.33E-12	1.06E-11
319857	beta-BHC	C	2.5E-04	J	1.5E-03	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	9.3E-04	4.0E-02	2	1.20E-11	6.00E-12	2.71E-11	4.54E-11
319868	delta-BHC	C	7.6E-05	J	3.2E-04	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	4.8E-04	4.0E-02	2	2.56E-12	1.28E-12	5.79E-12	9.68E-12
60571	Dieldrin	C	9.4E-05	J	6.7E-04	J	MG/KG	003M000301	3 / 3	NAV	4.0E-04	1.0E-01	2	1.34E-11	6.70E-12	3.03E-11	5.06E-11
115297	Endosulfan I	N	8.0E-04	J	8.6E-04	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	9.0E-04	1.0E-01	2	1.72E-11	8.60E-12	2.72E-10	1.82E-10
1031078	Endosulfan sulfate	N	N/A	N/A	3.4E-04	J	MG/KG	003M000301	1 / 3	4.1E-03 / 1.5E-02	3.3E-03	1.0E-01	2	6.80E-12	3.40E-12	1.08E-10	7.20E-11
72208	Endrin	N	N/A	N/A	7.8E-04	J	MG/KG	003M000101	1 / 3	4.1E-03 / 4.7E-03	1.7E-03	1.0E-01	2	1.56E-11	7.80E-12	2.47E-10	1.65E-10
7421934	Endrin aldehyde	N	2.3E-04	J	2.3E-03	J	MG/KG	003M000101	2 / 3	N/A / 4.1E-03	1.5E-03	1.0E-01	2	4.60E-11	2.30E-11	7.28E-10	4.87E-10
53494705	Endrin ketone	N	N/A	N/A	3.6E-04	J	MG/KG	003M000101	1 / 3	4.1E-03 / 4.7E-03	1.6E-03	1.0E-01	2	7.20E-12	3.60E-12	1.14E-10	7.62E-11
58899	gamma-BHC (Lindane)	C	N/A	N/A	2.2E-04	J	MG/KG	003M000101	1 / 3	2.1E-03 / 2.4E-03	8.2E-04	4.0E-02	2	1.76E-12	8.80E-13	3.98E-12	6.65E-12
57749	gamma-Chlordane	C	8.4E-05	J	1.8E-03	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	9.8E-04	4.0E-02	2	1.44E-11	7.20E-12	3.26E-11	5.44E-11
76448	Heptachlor	C	4.4E-05	J	6.4E-04	J	MG/KG	003M000101	2 / 3	N/A / 2.4E-03	6.3E-04	1.0E-01	2	1.28E-11	6.40E-12	2.89E-11	4.84E-11
1024573	Heptachlor epoxide	C	1.4E-03	J	1.5E-03	J	MG/KG	003M000101	2 / 3	N/A / 2.1E-03	1.3E-03	1.0E-01	2	3.00E-11	1.50E-11	6.78E-11	1.13E-10
91576	2-Methylnaphthalene	N	N/A	N/A	4.8E+00	=	MG/KG	003M000101	1 / 3	4.1E-01 / 4.7E-01	1.7E+00	1.0E-02	3	9.60E-09	4.80E-09	1.52E-07	1.02E-07
91203	Naphthalene	N	N/A	N/A	7.5E+00	=	MG/KG	003M000101	1 / 3	4.1E-01 / 4.7E-01	2.6E+00	1.0E-02	3	1.50E-08	7.50E-09	2.37E-07	1.59E-07
156605	1,2-Dichloroethene (total)	N	N/A	N/A	9.0E-03	J	MG/KG	003M000101	1 / 3	1.3E-02 / 1.4E-02	7.5E-03	1.0E-02	3	1.80E-11	9.00E-12	2.85E-10	1.90E-10
71432	Benzene	C	N/A	N/A	1.2E-01	=	MG/KG	003M000101	1 / 3	1.3E-02 / 1.4E-02	4.5E-02	1.0E-02	3	2.40E-10	1.20E-10	5.43E-10	9.07E-10
100414	Ethylbenzene	C	N/A	N/A	2.9E-01	=	MG/KG	003M000101	1 / 3	1.3E-02 / 1.4E-02	1.0E-01	1.0E-02	3	5.80E-10	2.90E-10	1.31E-09	2.19E-09
108883	Toluene	N	N/A	N/A	2.0E-01	=	MG/KG	003M000101	1 / 3	1.3E-02 / 1.4E-02	7.1E-02	1.0E-02	3	4.00E-10	2.00E-10	6.33E-09	4.23E-09
1330207	Xylene (Total)	N	N/A	N/A	2.0E+00	=	MG/KG	003M000101	1 / 3	1.3E-02 / 1.4E-02	6.7E-01	1.0E-02	3	4.00E-09	2.00E-09	6.33E-08	4.23E-08

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 14-3-15
Wetland W1 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: Dermal Hazard Quotient	Child Trespasser: Dermal Cancer Risk	Maintenance Worker: Dermal Hazard Quotient	Maintenance Worker: Dermal Cancer Risk
Sediment Dermal Risk	Aluminum	N	1.3E+04	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	4.2E-04	N/A	2.8E-04	N/A
	Barium	N	2.8E+01	7.0E-02	N/A	7.0E-02	1, 3	4.9E-03	N/A	1.8E-05	N/A	1.2E-05	N/A
	Cadmium	N	4.1E+00	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	1.0E-03	N/A	6.9E-04	N/A
	Cobalt	C	4.5E-01	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.3E-08	N/A	2.1E-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	3.7E+03	3.0E-01	N/A	1.5E-01	3	4.5E-02	N/A	2.6E-04	N/A	1.7E-04	N/A
	Lead	N	5.3E+02	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.3E+01	2.4E-02	N/A	4.0E-02	1, 3	9.6E-04	N/A	4.2E-05	N/A	2.8E-05	N/A
	Selenium	N	4.0E+00	5.0E-03	N/A	5.5E-01	1	2.8E-03	N/A	4.6E-06	N/A	3.1E-06	N/A
	Vanadium	N	1.9E+01	7.0E-03	N/A	2.6E-02	1	1.8E-04	N/A	3.3E-04	N/A	2.2E-04	N/A
	4,4'-DDD	C	2.5E-03	N/A	2.4E-01	3.0E-02	2	N/A	8.0E+00	N/A	2.7E-10	N/A	4.5E-10
	4,4'-DDE	C	5.6E-04	N/A	3.4E-01	3.0E-02	2	N/A	1.1E+01	N/A	8.6E-11	N/A	1.4E-10
	4,4'-DDT	C	3.6E-04	5.0E-04	3.4E-01	3.0E-02	2	1.5E-05	1.1E+01	3.3E-07	5.5E-11	5.4E-07	9.3E-11
	Aldrin	C	8.8E-04	3.0E-05	1.7E+01	1.3E-02	3	4.0E-07	1.3E+03	1.0E-04	5.1E-08	1.7E-04	8.6E-08
	alpha-BHC	C	3.0E-04	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	7.6E-07	2.4E-09	1.3E-06	4.0E-09
	alpha-Chlordane	C	3.5E-04	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	1.6E-08	2.8E-12	2.6E-08	4.6E-12
	beta-BHC	C	1.5E-03	2.0E-04	1.8E+00	1.4E-02	3	2.8E-06	1.3E+02	9.6E-06	3.4E-09	1.6E-05	5.7E-09
	delta-BHC	C	3.2E-04	5.0E-04	6.3E+00	1.4E-02	3	7.1E-06	4.4E+02	8.2E-07	2.6E-09	1.4E-06	4.3E-09
	Dieldrin	C	6.7E-04	5.0E-05	1.6E+01	5.0E-01	3	2.5E-05	3.2E+01	1.2E-06	9.7E-10	2.0E-06	1.6E-09
	Endosulfan I	N	8.6E-04	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	9.1E-08	N/A	6.1E-08	N/A
	Endosulfan sulfate	N	3.4E-04	6.0E-03	N/A	5.0E-01	3	3.0E-03	N/A	3.6E-08	N/A	2.4E-08	N/A
	Endrin	N	7.8E-04	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	6.6E-05	N/A	4.4E-05	N/A
	Endrin aldehyde	N	2.3E-03	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	1.9E-04	N/A	1.3E-04	N/A
	Endrin ketone	N	3.6E-04	3.0E-04	N/A	1.3E-02	3	3.8E-06	N/A	3.0E-05	N/A	2.0E-05	N/A
	gamma-BHC (Lindane)	C	2.2E-04	3.0E-04	1.3E+00	9.7E-01	3	2.9E-04	1.3E+00	1.4E-08	5.3E-12	2.3E-08	8.9E-12
	gamma-Chlordane	C	1.8E-03	5.0E-04	3.5E-01	8.0E-01	1	4.0E-04	4.4E-01	8.1E-08	1.4E-11	1.4E-07	2.4E-11
	Heptachlor	C	6.4E-04	5.0E-04	4.5E+00	1.1E-02	3	5.6E-06	4.0E+02	5.2E-06	1.2E-08	8.6E-06	1.9E-08
	Heptachlor epoxide	C	1.5E-03	5.0E-04	4.5E+00	1.1E-02	3	5.6E-06	4.0E+02	1.2E-05	2.7E-08	2.0E-05	4.6E-08
	2-Methylnaphthalene	N	4.8E+00	8.0E-02	N/A	5.0E-01	3	4.0E-02	N/A	3.8E-06	N/A	2.5E-06	N/A
	Naphthalene	N	7.5E+00	2.0E-02	N/A	5.9E-02	3	1.2E-03	N/A	2.0E-04	N/A	1.3E-04	N/A
	1,2-Dichloroethene (total)	N	9.0E-03	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.8E-08	N/A	1.2E-08	N/A
	Benzene	C	1.2E-01	3.0E-03	5.5E-02	8.8E-02	3	2.6E-04	6.3E-01	2.1E-06	3.4E-10	3.4E-06	5.7E-10
	Ethylbenzene	C	2.9E-01	1.0E-01	3.9E-03	9.7E-01	3	9.7E-02	4.0E-03	1.4E-08	5.2E-12	2.3E-08	8.7E-12
	Toluene	N	2.0E-01	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	1.0E-07	N/A	6.8E-08	N/A
	Xylene (Total)	N	2.0E+00	7.0E-01	N/A	1.0E-01	2	7.0E-02	N/A	9.0E-07	N/A	6.0E-07	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.
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 14-3-16
Wetland W1 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	1.3E+04	1.0E+00	N/A	4.24E-03	N/A	2.73E-03	N/A
	Barium	N	2.8E+01	7.0E-02	N/A	1.25E-04	N/A	8.02E-05	N/A
	Cadmium	N	4.1E+00	5.0E-04	N/A	2.60E-03	N/A	1.67E-03	N/A
	Cobalt	C	4.5E-01	2.0E-02	N/A	1.02E-06	N/A	1.64E-06	N/A
	Copper	N	1.1E+02	4.0E-02	N/A	8.31E-04	N/A	5.34E-04	N/A
	Iron	N	3.7E+03	3.0E-01	N/A	3.87E-03	N/A	2.49E-03	N/A
	Lead	N	5.3E+02	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	1.3E+01	2.4E-02	N/A	1.66E-04	N/A	1.07E-04	N/A
	Selenium	N	4.0E+00	5.0E-03	N/A	2.53E-04	N/A	1.63E-04	N/A
	Vanadium	N	1.9E+01	7.0E-03	N/A	8.46E-04	N/A	5.44E-04	N/A
	4,4'-DDD	C	2.5E-03	N/A	2.4E-01	N/A	2.71E-11	N/A	4.36E-11
	4,4'-DDE	C	5.6E-04	N/A	3.4E-01	N/A	8.61E-12	N/A	1.38E-11
	4,4'-DDT	C	3.6E-04	5.0E-04	3.4E-01	3.26E-08	5.54E-12	5.23E-08	8.90E-12
	Aldrin	C	8.8E-04	3.0E-05	1.7E+01	1.33E-06	6.77E-10	2.13E-06	1.09E-09
	alpha-BHC	C	3.0E-04	5.0E-04	6.3E+00	2.71E-08	8.55E-11	4.36E-08	1.37E-10
	alpha-Chlordane	C	3.5E-04	5.0E-04	3.5E-01	3.17E-08	5.54E-12	5.09E-08	8.90E-12
	beta-BHC	C	1.5E-03	2.0E-04	1.8E+00	3.39E-07	1.22E-10	5.45E-07	1.96E-10
	delta-BHC	C	3.2E-04	5.0E-04	6.3E+00	2.89E-08	9.12E-11	4.65E-08	1.47E-10
	Dieldrin	C	6.7E-04	5.0E-05	1.6E+01	6.06E-07	4.85E-10	9.74E-07	7.79E-10
	Endosulfan I	N	8.6E-04	6.0E-03	N/A	4.54E-08	N/A	2.92E-08	N/A
	Endosulfan sulfate	N	3.4E-04	6.0E-03	N/A	1.79E-08	N/A	1.15E-08	N/A
	Endrin	N	7.8E-04	3.0E-04	N/A	8.23E-07	N/A	5.29E-07	N/A
	Endrin aldehyde	N	2.3E-03	3.0E-04	N/A	2.43E-06	N/A	1.56E-06	N/A
	Endrin ketone	N	3.6E-04	3.0E-04	N/A	3.80E-07	N/A	2.44E-07	N/A
	gamma-BHC (Lindane)	C	2.2E-04	3.0E-04	1.3E+00	3.32E-08	1.29E-11	5.33E-08	2.08E-11
	gamma-Chlordane	C	1.8E-03	5.0E-04	3.5E-01	1.63E-07	2.85E-11	2.62E-07	4.58E-11
	Heptachlor	C	6.4E-04	5.0E-04	4.5E+00	5.79E-08	1.30E-10	9.30E-08	2.09E-10
	Heptachlor epoxide	C	1.5E-03	5.0E-04	4.5E+00	1.36E-07	3.05E-10	2.18E-07	4.91E-10
	2-Methylnaphthalene	N	4.8E+00	8.0E-02	N/A	1.90E-05	N/A	1.22E-05	N/A
	Naphthalene	N	7.5E+00	2.0E-02	N/A	1.19E-04	N/A	7.63E-05	N/A
	1,2-Dichloroethene (total)	N	9.0E-03	2.0E-02	N/A	1.42E-07	N/A	9.16E-08	N/A
	Benzene	C	1.2E-01	3.0E-03	5.5E-02	1.81E-06	2.98E-10	2.91E-06	4.80E-10
	Ethylbenzene	C	2.9E-01	1.0E-01	3.9E-03	1.31E-07	5.05E-11	2.11E-07	8.12E-11
	Toluene	N	2.0E-01	2.0E-01	N/A	3.17E-07	N/A	2.04E-07	N/A
	Xylene (Total)	N	2.0E+00	7.0E-01	N/A	9.05E-07	N/A	5.81E-07	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 = 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 14-3-17
Wetland W1 Phase II
Surface Water Dermal Absorbed Dose-Child Trespasser and Adult Maintenance Worker

CAS Number	Chemical		Minimum Concentration	Min. Qual.	Maximum Concentration	Max. Qual.	Units	Location of Max.Conc.	Detection Frequency	Range of Detection Limits	Mean	Maximum Concentration	K_p	DA_{event}	DAD_{sw} (mg/kg-day): Child Trespasser	DAD_{sw} (mg/kg-day): Adult Maintenance Worker
7429905	Aluminum	N	6.6E+02	J	1.9E+03	J	UG/L	003W000101	3 / 3	NAV	1.1E+03	1.9E-03	1.0E-03	4.97E-06	7.86E-05	1.05E-04
7440439	Cadmium	N	N/A	N/A	9.4E-01	=	UG/L	003W000101	1 / 3	5.0E-01 / 5.0E-01	4.8E-01	9.4E-07	1.0E-03	2.44E-09	3.87E-08	5.17E-08
7439896	Iron	N	4.2E+02	=	1.0E+04	=	UG/L	003W000101	3 / 3	NAV	3.8E+03	1.0E-02	2.5E-04	6.76E-06	1.07E-04	1.43E-04
7439921	Lead	N	2.2E+00	=	4.9E+01	=	UG/L	003W000101	2 / 3	N/A / 1.6E+00	1.7E+01	4.9E-05	3.4E-04	4.32E-08	6.84E-07	9.15E-07
7439965	Manganese	N	3.7E+00	=	2.3E+01	=	UG/L	003W000101	3 / 3	NAV	1.2E+01	2.3E-05	1.0E-03	5.88E-08	9.30E-07	1.24E-06
7440622	Vanadium	N	1.0E+00	=	5.4E+00	=	UG/L	003W000101	3 / 3	NAV	2.7E+00	5.4E-06	1.0E-03	1.40E-08	2.22E-07	2.97E-07
58899	gamma-BHC (Lindane)	C	N/A	N/A	6.1E-03	J	UG/L	003W000101	1 / 3	5.0E-02 / 5.0E-02	1.9E-02	6.1E-09	1.1E-02	7.49E-10	1.69E-09	5.67E-09
1024573	Heptachlor epoxide	C	N/A	N/A	6.8E-03	J	UG/L	003W000101	1 / 3	5.0E-02 / 5.0E-02	1.9E-02	6.8E-09	8.6E-03	1.48E-09	3.34E-09	1.12E-08
156605	1,2-Dichloroethene (total)	N	N/A	N/A	4.0E+00	J	UG/L	003W000101	1 / 3	1.0E+01 / 1.0E+01	4.7E+00	4.0E-06	7.7E-03	1.03E-07	1.63E-06	2.18E-06
71432	Benzene	C	N/A	N/A	5.5E+01	=	UG/L	003W000101	1 / 3	1.0E+01 / 1.0E+01	2.2E+01	5.5E-05	1.5E-02	2.48E-06	5.60E-06	1.87E-05
100414	Ethylbenzene	C	N/A	N/A	1.3E+01	=	UG/L	003W000101	1 / 3	1.0E+01 / 1.0E+01	7.7E+00	1.3E-05	4.9E-02	2.02E-06	4.57E-06	1.53E-05
108883	Toluene	N	N/A	N/A	2.5E+01	=	UG/L	003W000101	1 / 3	1.0E+01 / 1.0E+01	1.2E+01	2.5E-05	3.1E-02	2.43E-06	3.84E-05	5.14E-05
1330207	Xylene (Total)	N	N/A	N/A	8.4E+01	=	UG/L	003W000101	1 / 3	1.0E+01 / 1.0E+01	3.1E+01	8.4E-05	5.3E-02	1.41E-05	2.23E-04	2.99E-04

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 14-3-18
Wetland W1 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	1.9E-03	1.0E+00	N/A	1.0E-01	2	1.0E-01	N/A	7.9E-04	N/A	1.1E-03	N/A
	Cadmium	N	9.4E-07	5.0E-04	N/A	2.5E-02	1	1.3E-05	N/A	3.1E-03	N/A	4.1E-03	N/A
	Iron	N	1.0E-02	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	4.9E-05	N/A	N/A	1.5E-01	3	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.3E-05	1.4E-01	N/A	4.0E-02	1	5.6E-03	N/A	1.7E-04	N/A	2.2E-04	N/A
	Vanadium	N	5.4E-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
	gamma-BHC (Lindane)	C	6.1E-09	3.0E-04	1.3E+00	9.7E-01	3	2.9E-04	1.3E+00	5.8E-06	2.3E-09	1.9E-05	7.6E-09
	Heptachlor epoxide	C	6.8E-09	5.0E-04	4.5E+00	1.1E-02	3	5.6E-06	4.0E+02	N/A	N/A	N/A	N/A
	1,2-Dichloroethene (total)	N	4.0E-06	2.0E-02	N/A	8.0E-01	3	1.6E-02	N/A	1.0E-04	N/A	1.4E-04	N/A
	Benzene	C	5.5E-05	3.0E-03	5.5E-02	8.8E-02	3	2.6E-04	6.3E-01	2.1E-02	**3.5E-06**	7.1E-02	**1.2E-05**
	Ethylbenzene	C	1.3E-05	1.0E-01	3.9E-03	9.7E-01	3	9.7E-02	4.0E-03	4.7E-05	1.8E-08	1.6E-04	6.1E-08
	Toluene	N	2.5E-05	2.0E-01	N/A	3.1E-01	3	6.2E-02	N/A	6.2E-04	N/A	8.3E-04	N/A
	Xylene (Total)	N	8.4E-05	7.0E-01	N/A	1.0E-01	2	7.0E-02	N/A	3.2E-03	N/A	4.3E-03	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 14-3-19
Wetland W1 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		Maintenance Worker	
						Ingestion Hazard Quotient	Ingestion Cancer Risk	Ingestion Hazard Quotient	Ingestion Cancer Risk
SW Incidental Ingestion	Aluminum	N	1.9E-03	1.0E+00	N/A	6.0E-08	N/A	3.9E-08	N/A
	Cadmium	N	9.4E-07	5.0E-04	N/A	6.0E-08	N/A	3.8E-08	N/A
	Iron	N	1.0E-02	N/A	N/A	N/A	N/A	N/A	N/A
	Lead	N	4.9E-05	N/A	N/A	N/A	N/A	N/A	N/A
	Manganese	N	2.3E-05	1.4E-01	N/A	5.1E-09	N/A	3.3E-09	N/A
	Vanadium	N	5.4E-06	7.0E-03	N/A	2.4E-08	N/A	1.6E-08	N/A
	gamma-BHC (Lindane)	C	6.1E-09	3.0E-04	1.3E+00	9.2E-11	3.6E-14	1.5E-10	5.8E-14
	Heptachlor epoxide	C	6.8E-09	5.0E-04	4.5E+00	6.2E-11	1.4E-13	9.9E-11	2.2E-13
	1,2-Dichloroethene (total)	N	4.0E-06	2.0E-02	N/A	6.3E-09	N/A	4.1E-09	N/A
	Benzene	C	5.5E-05	3.0E-03	5.5E-02	8.3E-08	1.4E-11	1.3E-07	2.2E-11
	Ethylbenzene	C	1.3E-05	1.0E-01	3.9E-03	5.9E-10	2.3E-13	9.4E-10	3.6E-13
	Toluene	N	2.5E-05	2.0E-01	N/A	4.0E-09	N/A	2.5E-09	N/A
	Xylene (Total)	N	8.4E-05	7.0E-01	N/A	3.8E-09	N/A	2.4E-09	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

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

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).

14.4 UST 18 — Wide Evaluation

All the wetlands associated with UST 18 (Wetlands 52, 72, and W1) were evaluated collectively to help determine the locations that represent the highest probabilities of unacceptable risk. This evaluation was also used to determine if constituents detected were likely to be related to the IR sites associated with UST 18. The evaluations in this section included:

- ***Food-Chain Models:*** Many of the upper-level predators likely to be exposed within Site 41 wetlands would likely be exposed to constituents in more than one wetland. To evaluate this scenario, food-chain models were developed using constituent concentrations from Wetlands 52, 72, and W1.

- ***Mean ERM Quotients:*** This methodology is an effective way to pinpoint areas of potential risk from a mixture of constituents. It is also useful in identifying locations most likely to be impacted by direct toxicity. Figure 14-7 presents the mean ERM quotient categories and the parameters exceeding ERMs.

- ***Basewide Total DDT-Level Comparison:*** A basewide level was established for total DDT at NAS Pensacola. A comparison of site concentrations to the basewide levels is presented in Figure 14-5 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 the UST 18-wide Figure 14-6 to identify locations where PAHs may occur at levels most likely to cause adverse effects.

14.4.1 UST 18 Food-Chain Modeling

To evaluate the potential for risk to upper-trophic-level receptors that forage within the wetlands surrounding UST 18, food-chain models were prepared as presented in Section 8 of this report. No site-specific fish tissue was collected from any of the UST 18 wetlands; therefore, exposure to constituents in prey items was estimated using literature-based BSAFs.

The following constituents were evaluated in these food-chain models:

- Pesticides (total BHCs, total DDT, total chlordanes, total endrin, and dieldrin)
- Total PCBs
- Mercury

The sediment and surface water exposure concentrations used in the food-chain models are presented in Appendix M. Tables 14-4-1 through 14-4-3 (tables are located at the end of each section) show the results of the food-chain models for the following receptor groups:

- Piscivorous Birds (green heron) (Table 14-4-1)
- Piscivorous Mammals (mink) (Table 14-4-2)
- Predatory Fish (red drum) (Table 14-4-3)

14.4.1.1 Food-Chain Modeling Results

Assessment Endpoint 1 — Health and Viability of Piscivorous Bird Communities that Forage Throughout UST 18 Wetlands

No constituent indicated the potential for adverse effects to piscivorous birds foraging in the wetlands included in UST 18.

Assessment Endpoint 2 — Health and Viability of Piscivorous Mammal Communities that Forage Throughout UST 18 Wetlands

No constituent indicated the potential for adverse effects to piscivorous mammals foraging in the wetlands included in UST 18.

Assessment Endpoint 3 — Health and Viability of Predatory Fish Communities that Forage in and around UST 18 Wetlands

Phase II Evaluation

The only evaluation that generated a HQ greater than one was the red drum mercury food-chain model, based on the average concentrations, which was driven by using one-half the SQL for mercury. Mercury was never detected in any of the sediment or surface water samples from UST 18 wetlands.

14.4.2 Mean ERM Quotients

Figure 14-7 shows the mean ERM categories and all ERM exceedances for all UST 18 sediments. This figure shows that during Phase II, the only category 3 sample location in the UST 18 wetlands

was in Wetland W1 at 003M0001. The constituents that exceeded their ERMs at this location included two-methylnaphthalene, naphthalene, and lead. Wetland 52 contained two Category 2 sample locations; however, no constituent exceeded its ERM in either of those locations. Based on this figure, the sample location most likely to cause adverse effects from direct toxicity would be at the far end of Wetland W1. It should be noted that the constituents detected that exceeding their ERMs were all typically related to fuels and could be by-products of runoff from the adjacent runways.

14.4.3 Basewide Total-DDT-Levels

None of the sediment samples collected from the UST 18 wetlands exceeded the basewide total DDT level.

14.4.4 TOC-Normalized Total PAHs Concentrations

Figure 14-6 shows that the only sample associated with UST 18 which had total PAH concentrations that may cause adverse effects is within Wetland W1 (003M0001). PAHs were not detected at locations 003M002 or 003M003 and were coded red on the figure due to elevated SQLs at those locations. Based on this evaluation, adverse effects due to exposure to total PAHs at location 003M0001 cannot be ruled out.

14.5 Conclusions

The only potential for adverse effects within the UST 18 wetlands is from PAHs in Wetland W1. However, UST 18 is currently being investigated under the auspices of the FDEP Petroleum Program. Since petroleum contamination is excluded from CERCLA (42 USC 9601(14)), CERCLA has no authority to drive further investigation at this site. Therefore, any further investigation or remediation of UST 18 shall be handled in accordance with Florida law.

Table 14-4-1
UST 18 Wetlands FCM (Phase 2)
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	0	0	0	0	0.0000	0.0000	0	0.0000	0.44	0.86	0.00E+00	0.00E+00
	Average	0.091	0.0001	0.182	0.00002093	0.0000	0.0021	0.0021162	0.0088	0.44	0.86	2.00E-02	1.02E-02
Total BHC													
	Max	0.0051	0.0002	0.0051	0.000001173	0.0000	0.0001	0.000064363	0.0003	0.563	2.25	4.74E-04	1.19E-04
	Average	0.0016	0.0001	0.0016	0.000000368	0.0000	0.0000	0.000021038	0.0001	0.563	2.25	1.55E-04	3.88E-05
Total Chlordane													
	Max	0.0022	0.0003	0.00517	0.000000506	0.0000	0.0001	0.000066771	0.0003	2.14	10.7	1.29E-04	2.59E-05
	Average	0.0007	0.0001	0.001645	0.000000161	0.0000	0.0000	2.13485E-05	0.0001	2.14	10.7	4.14E-05	8.28E-06
Dieldrin													
	Max	0.0095	0	0.045885	0.000002185	0.0000	0.0005	0.000529863	0.0022	0.044	0.44	5.00E-02	5.00E-03
	Average	0.0012	0.0001	0.005796	0.000000276	0.0000	0.0001	0.0000692	0.0003	0.044	0.44	6.53E-03	6.53E-04
Total DDT													
	Max	0.0179	0	0.076791	0.000004117	0.0000	0.0009	0.000887214	0.0037	0.2	0.4	1.84E-02	9.20E-03
	Average	0.0051	0.0002	0.021879	0.000001173	0.0000	0.0003	0.000257322	0.0011	0.2	0.4	5.34E-03	2.67E-03
Total Endrin													
	Max	0.0096	0	0.0096	0.000002208	0.0000	0.0001	0.000112608	0.0005	0.01	0.1	4.67E-02	4.67E-03
	Average	0.0029	0.00015	0.0029	0.000000667	0.0000	0.0000	0.000037422	0.0002	0.01	0.1	1.55E-02	1.55E-03
Total PCB													
	Max	0.0348	0	0.057	0.000008004	0.0000	0.0007	0.000664332	0.0028	0.112	1.12	2.46E-02	2.46E-03
	Average	0.1116	0.004	0.183	0.000025668	0.0001	0.0021	0.002221244	0.0092	0.112	1.12	8.23E-02	8.23E-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.

Table 14-4-2
UST 18 Wetlands FCM (Phase 2)
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	0	0	0	0.0000	0.0000	0	0.0000	0.032	0.16	0.00E+00	0.00E+00
	Average	0.091	0.0001	0.182	0.000273	0.0000	0.0053	0.00555678	0.0101	0.032	0.16	3.16E-01	6.31E-02
Total BHC													
	Max	0.0051	0.0002	0.0051	0.0000153	0.0000	0.0001	0.00017476	0.0003	0.014	0.14	2.27E-02	2.27E-03
	Average	0.0016	0.0001	0.0016	0.0000048	0.0000	0.0000	0.00005698	0.0001	0.014	0.14	7.40E-03	7.40E-04
Total Chlordane													
	Max	0.0022	0.0003	0.00517	0.0000066	0.0000	0.0001	0.00017387	0.0003	3.9	7.8	8.11E-05	4.05E-05
	Average	0.0007	0.0001	0.001645	0.0000021	0.0000	0.0000	0.000055585	0.0001	3.9	7.8	2.59E-05	1.30E-05
Dieldrin													
	Max	0.0095	0	0.045885	0.0000285	0.0000	0.0013	0.001359165	0.0025	0.015	0.15	1.65E-01	1.65E-02
	Average	0.0012	0.0001	0.005796	0.0000036	0.0000	0.0002	0.000177464	0.0003	0.015	0.15	2.15E-02	2.15E-03
Total DDT													
	Max	0.0179	0	0.076791	0.0000537	0.0000	0.0022	0.002280639	0.0041	0.6	3	6.91E-03	1.38E-03
	Average	0.0051	0.0002	0.021879	0.0000153	0.0000	0.0006	0.000661351	0.0012	0.6	3	2.00E-03	4.01E-04
Total Endrin													
	Max	0.0096	0	0.0096	0.0000288	0.0000	0.0003	0.0003072	0.0006	0.092	0.92	6.07E-03	6.07E-04
	Average	0.0029	0.00015	0.0029	0.0000087	0.0000	0.0001	0.00010147	0.0002	0.092	0.92	2.01E-03	2.01E-04
Total PCB													
	Max	0.0348	0	0.057	0.0001044	0.0000	0.0017	0.001759488	0.0032	0.05	0.1	6.40E-02	3.20E-02
	Average	0.1116	0.004	0.183	0.0003348	0.0002	0.0053	0.005873696	0.0107	0.05	0.1	2.14E-01	1.07E-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 14-4-3
UST 18 Phase II Data
Red Drum Exposure Model

OU10	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
UST 18 Maximum	0	0	0	0	0.00	0.00	0.00
UST 18 Average	0.091	0.1092	0.02548	0.0091	0.23	**1.56**	0.78

Note:
A = Forage Fish tissue concentrations calculated BSAF of 2.0 from Evans and Engel 1994.