UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

MAY 3 1 2016

REPLY TO THE ATTENTION OF
S-6J

MEMORANDUM

SUBJECT: ENFORCEMENT ACTION MEMORANDUM - Determination of Threat to Public Health or Welfare or the Environment at the Cedar Creek Site, Cedarburg, Ozaukee County, Wisconsin (Site ID # 05KG)

FROM: Scott Hansen
Remedial Project Manager/On-Scene Coordinator

THRU: Joan Tanaka, Chief
Remedial Response Branch 1

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TO: Richard C. Karl, Director
Superfund Division

I. PURPOSE

The purpose of this Action Memorandum is to document the determination of an imminent and substantial threat to public health or welfare or the environment posed by the presence of polychlorinated biphenyl (PCB)-contaminated sediment and near-shore soil at the Cedar Creek Site OU-2A (Site) in Cedarburg, Wisconsin and to document approval of the proposed non-time critical removal action (NTCRA) described herein.

In accordance with the August 21, 2014, Administrative Order on Consent (AOC) with the United States Environmental Protection Agency (EPA), the Potentially Responsible Party (PRP), Mercury Marine, prepared an Engineering Evaluation/Cost Analysis (EE/CA) Report to evaluate removal action alternatives (RAAs) to address hazardous substances present in Cedar Creek. After reviewing and evaluating the three sediment alternatives and the two soil alternatives presented in the EE/CA, EPA documented the preferred alternatives in a Proposed Plan that was released for a 30-day public comment period conducted from November 16th – December 16th, 2015. EPA's responses to the comments received during this period are in the Responsiveness Summary (Appendix A).

The response action proposed in this Action Memorandum is necessary to mitigate threats to public health, welfare, and the environment posed by the presence of high levels of uncontrolled

hazardous substances at the Site as documented in the *Remedial Investigation Report* (ARCADIS, May 2012) and the *EE/CA* (Anchor QEA, May 2015). The hazardous substances include near-shore PCB-contaminated soil and sediment in Cedar Creek.

The proposed removal actions consist of the following: removal and off-site disposal of all sediment in Ruck Pond Raceway (approximately 2 to 4 feet) followed by a 6-inch clean sand layer; removal and off-site disposal of PCB-contaminated near-shore soil above 1 ppm PCB; and removal and off-site disposal of sediment from Columbia and Wire and Nail Ponds followed by a 6-inch clean sand or backfill layer. The removal actions meet the Removal Action Objectives (RAOs), comply with Applicable or Relevant and Appropriate Requirements (ARARs), effectively and safely remove the contaminated soil and sediment, and are cost-effective.

This response action will be conducted in accordance with CERCLA Section 104(a)(1), 42 U.S.C. § 9604(a)(1), to abate or eliminate the threat posed to public health and/or the environment caused by the presence of the hazardous substances at the Site. The uncontrolled conditions of the hazardous substances present at the Site make it eligible for a non-time critical removal action (NTCRA).

Mercury Marine is prepared to conduct the NTCRA described in this Action Memorandum. Mercury Marine was an operator of the facility from which there was a release of PCBs from a storm water discharge pipe to the creek. As a result the sediments and floodplain soil were impacted from the release.

There are no nationally significant or precedent-setting issues associated with the Site.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID #: WID988590261
RCRA ID: None
STATE ID: None
Category: Non-time Critical Removal

A. Background

The Site was initially divided into two operable units (OUs), Plant 2 OU-1 and Cedar Creek OU-2, to facilitate remedial work at the Plant 2 portion of the larger Cedar Creek Superfund Alternative Site. OU-2 consists of Cedar Creek and its impoundments, raceways, free-flowing reaches, and soil from the end of Ruck Pond Dam to its confluence with the Milwaukee River. OU-2 was further divided into two separate OUs (OU-2A and OU2-B), following the completion of work at OU-1.

- **Cedar Creek OU-2A – Cedar Creek Ponds**. This OU consists of Cedar Creek, its impoundments, raceways, free-flowing reaches, sediment, and soil from the end of Ruck Pond Dam continuing downstream 1.3 miles. It includes the Columbia Pond and the Wire and Nail Pond reaches (Figure 2-1). This NTCRA is only for OU-2A.

- **Cedar Creek OU-2B – Creek**. This OU consists of Cedar Creek, a former impoundment and raceway, free-flowing reaches, sediment, and soil from the end of Wire and Nail Pond Dam to Cedar Creek's confluence with the Milwaukee River. OU-2B will be addressed at a later date through remedial authority.

PCBs entered Cedar Creek from two local sources via storm sewers associated with Mercury Marine's Plant 2 facility and the Amcast Industrial Corporation (Amcast) Cedarburg facility. The Mercury Marine Plant 2 facility was located on St. John Avenue in Cedarburg, Wisconsin, and was operated by Mercury Marine from 1951 to 1982 (Figure 1-2). A storm sewer from the Plant 2 property discharged into Ruck Pond, a Cedar Creek impoundment upstream of the Site, creating a conduit for PCBs to be transported from the facility to the creek. The Amcast Cedarburg facility (an automotive parts manufacturing facility) was located on Hamilton Road in Cedarburg, Wisconsin, and operated from 1939 to 2004. Storm sewers from the facility ultimately discharged to Hamilton Pond (located in OU-2B). PCB contamination present at the Amcast Cedarburg facility, and in the storm sewers and upland ponds that ultimately discharge to the Cedar Creek Site, are being addressed by EPA as a separate Superfund National Priorities List site.

PCBs were originally detected in fillets from fish collected from the Cedar Creek impoundments in 1984. These results prompted a sediment investigation in four impoundments on Cedar Creek (from upstream to downstream at that time: Ruck, Columbia, Wire and Nail, and Hamilton ponds) by the Wisconsin Department of Natural Resources (WDNR) in 1986. These and subsequent studies conducted by WDNR and others confirmed the presence of PCBs in the creek system, including the stream channel and portions of its surrounding floodplain. To address the PCB-contaminated sediment, Mercury Marine undertook a removal action in Ruck Pond (the most upstream of the four impoundments on Cedar Creek) in 1994. Additionally, the storm sewer located between Mercury Marine's Plant 2 and the storm sewer outfall discharging to Ruck Pond was cleaned and two laterals connecting the storm sewer to Plant 2 were sealed. In April 1996, following heavy rains and associated high creek flow, the Hamilton Pond Dam failed. The PRPs removed the remnants of the failed dam and, in 2001, they removed PCB-laden soil exposed after dam failure.

B. Physical Location and Site Description

The Cedar Creek Site encompasses a 4.2-mile reach of Cedar Creek from the Ruck Pond Dam to the Creek's confluence with the Milwaukee River, downstream of the City of Cedarburg (Figure 1-2). It includes Columbia, Wire and Nail, and Former Hamilton ponds.

The upper portion of the Site, which is the subject of this Action Memo, OU2-A, is approximately 1.3 miles in length and includes Cedar Creek, Columbia Pond, the Ruck Pond raceway, and Wire and Nail Pond. The Ruck Pond raceway is a diversion channel that receives storm water discharge from the City of Cedarburg. It serves to divert flow from Ruck Pond to Columbia Pond. Columbia Pond is impounded by Columbia Mills dam, which has a small raceway along its northern end. Land use along Columbia Pond and the upstream raceway include commercial facilities, private residences, and two community parks, the Adlai Horn Park and Cedar Creek City Park. Downstream of Columbia Pond is Wire and Nail Pond, an elongated

and narrow impoundment composed of two distinct basins. The entire pond is approximately 1,600 feet long; a partial control structure is associated with the dam raceway. Land use to the north of the pond is commercial, while the south is wooded and undeveloped.

Below Wire and Nail Pond, which is the beginning of OU2-B, is a 1.6-mile portion of a free-flowing stream that extends down to the former pool, i.e. the Former Hamilton Pond. Land use along this reach includes residential properties along the east bank. The west bank is mostly undeveloped and wooded. Private residents, the City of Cedarburg, and a few businesses own the properties bordering the former pond. Downstream of the Former Hamilton Pond is another free-flowing stretch that extends from the Green Bay Road Bridge down to the confluence with the Milwaukee River. This stretch is approximately 1.3 miles in length. The land adjacent to this area includes a mix of residential parcels, undeveloped wooded and wetland areas.

C. Previous Investigations

From 1997 to 2010, Mercury Marine conducted remedial investigation (RI) activities in OU-2A, including the sampling of sediment, soil, water column, and fish. These investigations, along with additional data collection activities are discussed below.

- Sediment sampling in Ruck Pond Raceway, Columbia Pond, and Wire and Nail Pond in 1997, 1998, and 2003. Analytical parameters included PCBs and total organic carbon (TOC). A subset of samples were analyzed for dioxins, radiochemical parameters for geochronological dating, and geotechnical parameters.
- Soil sampling in 2003 on nine transects within OU-2A. They collected additional soil samples in 2004 around Columbia Pond. Analytical parameters included PCBs and TOC.
- One round of water column sampling in 2003 as part of the RI, which included collection of surface water samples from Columbia Pond and Wire and Nail Pond for analysis of filtered and unfiltered PCBs and TOC, as well as total suspended solids.
- Resident fish sampling in 2003, 2004 and 2010. The fish were collected from an upstream reference location (Cedarburg Pond), and Columbia and Wire and Nail ponds within OU-2A. Samples were analyzed for PCBs and lipid content.
- Caged fish studies in 2003, 2004, and 2005 in Cedarburg Pond (upstream reference location), Columbia Pond, and Wire and Nail Pond. Samples were collected at 3- and 6-week intervals after each study began and analyzed for PCBs and lipid content.

1. Sediment

From 1997 to 2003, a total of 242 sediment samples were collected from 58 locations in Cedar Creek OU-2A. PCB concentrations in those samples ranged from non-detect (ND - 48 samples) to 345 milligrams per kilogram (mg/kg), reported in a sediment sample from the 0- to 1-foot interval collected from Columbia Pond near where the Ruck Pond Raceway merges with the pond. Within Columbia Pond and Wire and Nail Pond, samples were generally collected in 1-foot increments for the top 2 feet and up to 2-foot increments from below 2 feet to refusal. Sediment PCB concentrations are presented in 1-foot increments from the surface to 5 feet below the sediment bed. General trends in PCB concentrations are described below:

- PCB concentrations are greater than 1 mg/kg at all depths sampled in the Ruck Pond Raceway and range from 4.5 to 107 mg/kg.
- Within Columbia Pond, the highest PCB concentration (345 mg/kg) is located just downstream of and adjacent to Ruck Pond Raceway. Laterally, PCB concentrations were detected at one or more depth intervals throughout the pond, mostly in the range of 5 to 50 mg/kg. Vertically, PCB sediment concentrations are greatest within the top 2 feet and are generally low (e.g., less than 1 mg/kg) at depths of approximately 3 feet and greater.
- PCBs were detected in the sediment at one or more depth intervals throughout Wire and Nail Pond, with a maximum detected concentration of 49.5 mg/kg (average results for duplicate analyses) with most of the data ranging from 1 to 10 mg/kg. Vertically, PCB concentrations are generally lower at the surface (e.g., 0 to 0.5 foot and 0 to 1 foot), increasing to the maximum concentration per location at approximately 1 to 3 feet, and decreasing to PCB concentrations generally below 1 mg/kg at 4 feet.

2. Soil

From 1997 to 2004, a total of 185 soil samples were collected from 87 locations within Cedar Creek OU-2A. PCB concentrations in these samples ranged from ND to 19 mg/kg, which was found in the 0.5- to 1-foot interval of a sample collected from a low-lying area adjacent to the Ruck Pond Raceway. Soil sampling generally occurred along transects oriented perpendicular to the creek channel, and samples were collected in 6-inch intervals from the top foot, with some additional sampling in the 12- to 18-inch interval upstream of Columbia Mills Dam. General lateral and vertical patterns in soil PCB concentrations are described below:

- PCB concentrations in the soil near the Ruck Pond Raceway range from ND to 19 mg/kg, the highest PCB concentration in the soil.
- The PCB concentrations in the soil near Columbia Pond ranged from ND to 11 mg/kg.
- Due to the steep banks, soil samples were collected at seven locations near Wire and Nail Pond (eight total samples). PCB concentrations ranged from 0.12 to 2 mg/kg.
- Along a given transect, PCB concentrations generally decreased with distance moving from the creek channel up into the higher elevation portions of the floodplain. This trend is consistent with the conceptual site model as the higher elevations are inundated less frequently.
- PCB concentrations were generally higher at the surface than in the subsurface.
- In general, PCBs were not detected in soil outside of the 10-year floodplain.

C. <u>Environmental Justice Analysis</u>

An Environmental Justice (EJ) analysis for the Site is contained in Attachment 3. Screening of the surrounding area used Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the Site at W66 N598 Madison Avenue, Cedarburg, Wisconsin. EPA has determined that there is a low potential for EJ concerns at this location.

D. Principal Threat and Cleanup Levels

PCB-contaminated sediment and soil present an unacceptable risk at the Site. Site cleanup is needed due to the risk from actual and potential exposure to PCBs. The primary risk from contaminated sediment is from fish consumption. Considering the linkage between contaminant concentration in fish and contaminant concentrations in sediments, a sediment cleanup goal is the primary mechanism for mitigating the human health risks associated with contaminated fish consumption. In soil, the presence of PCBs occurs during high water events when PCBs suspended in the water column have been transported to and deposited in the floodplain areas. There is a potential risk of exposure to residential and recreational users in these floodplain areas. Recreational use is primarily in the city park, but many residential yards make up the shoreline of the creek.

Preliminary Remediation Goals (PRGs) are the cleanup goals that will protect human health and the environment against potential risks posed by exposure to chemicals of concern at the Site. PRGs are typically developed on the basis of chemical-specific ARARs, when available, or site-specific, risk related factors (i.e., the baseline risk assessment). For soil, the Toxic Substances Control Act (TSCA) as well as the Wisconsin Administrative Code (WAC) § Natural Resources (NR) 700, along with its regulatory standards, apply and are the ARARs for the Site. For sediment, no chemical-specific ARAR is applicable outside of the generic statutory requirements of Wisconsin Statutes (Wis. Stats.) § 292.11(3). As such, EPA generated a site-specific sediment cleanup level.

Soil Cleanup Standard

The cleanup level for the soils is 1 mg/kg total PCBs, which is a TSCA ARAR. Under 40 C.F.R. 761.61(a)(4)(i)(A) self-implementing regulations for PCB remediation, 1 mg/kg PCB is the cleanup level required for high occupancy areas without further conditions . In addition, the soil is also subject to WAC § NR 720. Therefore, the development of a PRG (defined as residual contaminant level [RCL] in NR 720), considers the ARAR based on NR 720 and relevant guidance, such as RR-890 (WDNR 2014). Based on the requirements of NR 720, EPA, in conjunction with WDNR, determined that a soil cleanup level of 1 mg/kg total PCBs should be applied.

Sediment Cleanup Standards

The proposed remedy utilizes three sediment remediation criteria to measure the effectiveness of the remedy: a long-term surface weighted average concentration (SWAC) goal of 0.25 mg/kg, a not-to-exceed value of 2.5 mg/kg of PCBs at any depth, and a 98% mass removal of PCB-contaminated sediment. It is expected that the combination of these three cleanup requirements will reduce the fish tissue contaminant concentrations in OU-2A waterways to safe levels within a reasonable timeframe.

Removal measures that achieve a SWAC between 0.25 mg/kg to 0.5 mg/kg would reduce fish exposure to PCBs in the sediments. Reduced exposure to contaminated sediments is expected to result in a significant reduction of PCBs in fish tissue and the mitigation of the potential human health risks associated with fish consumption.

It is reasonable to assume the preferred cleanup option, SED-2, will lead to safe fish-tissue concentrations (0.21 mg/kg) within 30 years based on the following supportive evidence:

Ruck Pond Remediation

Sediment Alternative SED-2 is anticipated to be protective based on Site-specific data from the Ruck Pond Cedar Creek cleanup, where mass removal of contaminated sediments has reduced the PCB concentrations in fish tissue.

The Ruck Pond impoundment has no upstream sources of PCBs (background in Cedarburg Pond is non-detect) and fish forage exclusively in Ruck Pond because it is isolated by dams and has no tributaries. The 1994 PCB sediment removal at Ruck Pond was about 21 years ago. It was one of the first major removal actions at the Site. Similar to the OU-2A impoundments, Ruck Pond had very high PCB concentrations and a shallow bedrock. Following mass removal, a thin layer of very high concentration residuals remained in the cracks and crevices of the bedrock.

After 21 years, post-remediation data at Ruck Pond demonstrate the effectiveness of the cleanup action. The dredging immediately reduced the PCB sediment concentrations by 70% - 99%. Within 6 years of the mass removal, deposition, dispersion, and dilution reduced the residual PCB sediment concentration by 94% to 99.9%. Although there was a short-term spike in fish tissue PCB concentrations immediately after the removal action, the fish tissue concentrations at 6 years post-removal were 16% to 87% lower than pre-removal. Within an additional 13 years, the fish tissue contaminant concentration was reduced 94% to 98%. Fish tissue PCB concentrations for 4 different fish species averaged approximately 3 mg/kg prior to Ruck Pond Remediation (1994). Based on fish collected in 2013, those same fish species had an average fish tissue PCB concentration of approximately 0.11 mg/kg. Therefore, it is reasonable to assume that a mass removal with a long-term SWAC goal of 0.25 mg/kg in OU2-A will be effective at reducing fish tissue concentrations to 0.21 mg/kg within 30 years.

Modeling

In 1997, WDNR modeled remediation options for a Mass Balance project for this Site and the Milwaukee River. The model assessed various remediation options and their potential effect on the mass transport of PCBs to the Milwaukee River and PCB concentrations in sediment, water column, and fish tissue. This model was based on site-specific sediment, water column, and feral and caged fish data. It assumed a mass removal with a residual layer of PCBs at 5 mg/kg and no sand cover. The model predicted that there would be significant reductions across all three media with nearly all dredging scenarios. The most important impoundment to remediate is Columbia Pond because it contains the highest percentage of PCBs, nearly 80% of the Site PCBs. By removing all contaminated sediment above 2.5 mg/kg and 98% of the contaminant mass in OU2-A, as prescribed in the proposed removal action SED-2, modelling predicts a significant reduction in the mass transport of PCBs to the Milwaukee River and in PCB concentrations in fish.

E. NPL Listing Status

The Site is not on the National Priorities List (NPL) and is being addressed by Mercury Marine as a Superfund Alternate (SA) Site under an Administrative Order on Consent (AOC).

F. Maps, Pictures and Other Graphic Representations

Figures and Tables are included as attachments.

G. Other Actions to Date

1. Previous actions

In 1984 WDNR's investigation identified PCBs in fish fillets from the Cedar Creek impoundments. These results prompted a sediment investigation in four ponds on Cedar Creek by the WDNR in 1986: Ruck, Columbia, Wire and Nail, and Hamilton ponds. These and subsequent studies confirmed the presence of PCBs in the creek system, including the stream channel and in portions of its surrounding floodplain.

Mercury Marine took samples of OU-2A sediment, soil, water column, and fish from 1997 to 2005. They completed a removal action in Ruck Pond (the most upstream of the four impoundments on Cedar Creek) in 1994. Additionally, they cleaned two storm sewers located near the plant and Ruck Pond and sealed two laterals connecting the storm sewers to Plant 2. After the 1996 Hamilton Pond Dam failure due to high water flow in the creek, Mercury Marine removed remnants of the failed dam. In 2001, Mercury Marine removed PCB-contaminated soils exposed as a result of the dam failure.

2. Current actions

EPA and Mercury Marine entered into an AOC in 2014, requiring Mercury Marine to conduct an EE/CA for the Site. In order to further understand the extent of PCB contamination, Mercury Marine collected sediment and floodplain soil samples in 2014 and 2015. EPA, in consultation with WDNR, reviewed all of the possible cleanup alternatives proposed in the EE/CA to address the unacceptable risk at the Site. The EE/CA was approved by EPA in July 2015.

H. State and Local Authorities' Role

1. State and local actions to date

Mercury Marine performed two removal actions under State authority: the Ruck Pond removal in 1994 and the Hamilton Pond removal in 2001.

2. Potential for continued State/Local response

EPA has been the lead on the CERCLA response activities for the Site since 2002. In 2003 EPA entered into an AOC with Mercury Marine to perform a remedial investigation (RI) and feasibility study (FS) at the Site. The Order was amended in 2008. WDNR is the support agency for this Site and EPA will continue overseeing the cleanup in consultation with the WDNR.

III. THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORYAND REGULATORY AUTHORITIES

The conditions present at the Cedar Creek OU-2A Site present an imminent and substantial threat to the public health, or welfare, and the environment based upon the factors set forth in NCP Section 300.415(b)(2). These factors include, but are not limited to, the following:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

The sediment in OU-2A is contaminated with PCB concentrations above 50 mg/kg. Actual or potential exposure to the PCB-contaminated material exists for recreational users (anglers), fish, and wildlife such as mink. Actual or potential exposure to aquatic species, although not quantified, may become part of the ecological food chain as wildlife consumes the impacted animals on the lower echelons of the food chain. In addition, there is currently a fish advisory in effect at Cedar Creek warning people not to eat the fish.

Recreational use is primarily limited to the city park, but many residential yards make up the shoreline of the creek. In the creek, anglers have been observed fishing in the area where PCB-contaminated sediments have been documented in the creek. The exposure assumptions regarding fishing include: PCBs bio-accumulate in fish; people fish year-round when the creek is not iced over; and consumption of the fish by adults and children.

There is contaminated soil in the floodplain areas of the creek. During high flow events, the low lying floodplains along the creek become inundated; this occurs to some extent every year. The distribution of PCB concentrations in the floodplain soil reflects this mechanism – the highest soil PCB concentrations are predominantly present near the shoreline (residential yards and the city park) and in the low-lying areas (wetlands) where floodwater naturally accumulates. Additionally, PCBs in soil are generally higher at the surface (0- to 0.5-foot depth interval). There is exposure to soil via direct contact to residential and recreational users.

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Adverse weather conditions may cause PCB-laden sediment to migrate or be released as a result of scouring during a flood event. If the dams for Columbia and Wire and Nail Ponds (OU-2A) were damaged or compromised, the contaminated sediments could be released and migrate downstream.

High levels of hazardous substances or pollutants or contaminants in sediment or soil at or near the surface that migrate.

High levels of PCBs were found in several surface sediment sampling locations during the investigative sampling phase as well as in the water column. In addition, during high water events, PCBs are transported to and deposited in the floodplain soil. If PCB contamination is not addressed in OU-2A, PCBs will continue to migrate to downstream areas of the creek and the

Milwaukee River. Models have estimated that approximately 5 kg of PCBs per year migrate from Cedar Creek to the Milwaukee River (WDNR, TDML, 2008).

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Removal Action Activities

1. Proposed action description:

Proposed Removal Action for the Site, SED-2 and SOIL-2 include:

a. Develop and implement a site-specific Health and Safety Plan, including a Site Emergency Contingency Plan;

b. Prepare a detailed work plan (design) to accomplish the project in the most effective, efficient and safe manner;

c. Sediment removal to include:

- For the Ruck Pond raceway, (i) dredge or excavate all sediment to the extent practicable, (ii) excavate any remaining sediment near the shoreline exceeding 2.5 mg/kg at all depths and (iii) excavate soils to achieve the PCB soil PRG of 1.0 mg/kg, and (iv) dispose of it at an approved location.

- Dredge or excavate sediments with PCB concentrations exceeding 2.5 mg/kg at all depths in Columbia Pond and Wire and Nail Pond and dispose of it at an approved location.

- Achieve a post-dredge sediment surface weighted average concentration (SWAC) of 0.5 mg/kg and long-term SWAC of 0.25 mg/kg in a reasonable timeframe.

- Remove 98% of the mass of PCBs in the ponds sediment.

- Excavate soils to achieve the PCB soil PRG of 1.0 mg/kg. The specific method used for implementing the soil PRG will be based on site-specific data and will be determined in the design.

- Backfill sediment removal areas with 6 inches of cover material as necessary to accelerate or enhance the natural recovery processes.

- Produce a plan and then implement that plan to periodically monitor to ensure the long-term SWAC goal is achieved.

Remediation of Ruck Pond Raceway will include the removal of all sediment (approximately 2 feet in the western area and 4 feet in the eastern area) to the extent practicable as depicted on Figure 4-2. Sediments found in culverts would be removed by power-washing. Excluding work to be performed in the culverts, sediment removal within Ruck Pond Raceway would be conducted over an area of approximately 0.88 acres with an estimated removal volume of 5,400 cubic yards (cy). The raceway entrance gate at Ruck Pond Dam can be closed to reduce flow in the raceway; therefore, the preferred removal method would be dry excavation. Isolated check dams with sump pumps will be located near large storm water culverts and other water sources to minimize wet excavation to the extent practicable. As part of the design, various gate operation scenarios will be assessed to verify acceptability, such as dam stability and the potential for upstream flooding.

Removed sediment will be transported via lined trucks to a staging and dewatering area where material will be processed and conditioned to meet disposal requirements and transported and disposed of at a regulated facility. Based on a review of existing data, approximately 2,500 cy of sediment contain PCB concentrations below 50 mg/kg and can be disposed of at a subtitle D landfill. About 2,900 cy have PCB concentrations above 50 mg/kg and must be disposed of in a Toxic Substances Control Act (TSCA)-approved landfill. Removal completion will be confirmed with visual observations and post-removal PCB confirmation sampling if measurable amounts of sediment remain. Additional details on the performance metrics will be documented in the design and included in the Construction Quality Assurance Plan or Performance Standards Verification Plan.

The design will ensure that PCB concentrations greater than 2.5 mg/kg would be removed in each of Columbia and Wire and Nail Ponds. Removal activities would occur over approximately 12.6 acres in Columbia Pond and 2.3 acres in Wire and Nail Pond. The depth of sediment removal in Columbia Pond and Wire and Nail Pond, respectively, are presented on the right panels of Figures 4-6 and 4-7. Based on the RI data, the average removal depth for this alternative is 2.8 feet and results in 98% PCB mass removal. The volume targeted for removal in both Columbia Pond and Wire and Nail Pond is approximately 66,000 cubic yards and will be refined during the design process.
Confirmation sampling will consist of sediment cores segmented into 6-inch intervals.

The post-dredging PCB concentrations are estimated to be 0.58 mg/kg and 0.26 mg/kg in Columbia Pond and Wire and Nail Pond, respectively (see Figures 4-6 and 4-7). The removal volumes and removal areas will be refined to meet the post-dredge SWAC of 0.5 mg/kg. The long-term SWAC of 0.25 mg/kg relies on a combination of sediment removal and sedimentation over time. A 6-inch sand layer can be placed in the dredged areas to provide a substrate for benthic populations and can enhance the natural attenuation process in reaching the long-term

SWAC goal of 0.25 mg/kg. Specific performance metrics on dredging completion will be developed during the design phase.

d. Excavate floodplain soil above 1 mg/kg PCB, then backfill. The estimated amount of soil to be removed is 4,000 cy. However, the actual amount will be defined in pre-design studies and post-removal confirmation sampling.

e. Mix sediment with dewatering agents to stabilize for transportation;

f. Treat water collected during excavation activities; and

g. Transport and dispose of all excavated soil and sediment off-site at a RCRA-/CERCLA-approved disposal facility in accordance with the EPA Off-Site Rule.

The removal actions will be conducted in a manner not inconsistent with the NCP. The threats posed by uncontrolled substances considered hazardous meet the criteria listed in NCP Section 300.415(b)(2), and the response actions proposed herein are consistent with any long-term remedial actions which may be required. Long-term monitoring will be part of the future ROD for the Cedar Creek Site (OU-2B). The proposed removal of hazardous substances, pollutants and contaminants that pose a substantial threat of release is expected to minimize substantial requirements for post-removal Site controls, or Institutional Controls (ICs).

2. Contribution to remedial performance

The proposed removal action will contribute to the efficient performance of the long-term remedial action for the Cedar Creek Site and is not inconsistent with anticipated remedial actions.

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

3. Engineering Evaluation/Cost Analysis (EE/CA):

The EE/CA was completed in July 2015 and a Proposed Plan was released for public comment on November 16, 2015. The Memo for approving an EE/CA for the NTCRA is included in Attachment 3.

The EE/CA considered other sediment cleanup options, including: (1) dredging/disposal of sediments with PCB concentrations greater than 1 mg/kg; and (2) a combination of dredging/disposal and capping. The EE/CA also considered capping floodplain soils. Those alternatives were evaluated for short-and long-term aspects of the Removal Criteria: Effectiveness, Implementability, and Cost. The alternative selected in this Action Memorandum meets all three of the Removal Criteria most effectively of the evaluated alternatives.

4. Applicable or Relevant and Appropriate Requirements:

All ARARs of federal and state law will be complied with to the extent practicable. All hazardous substances, pollutants or contaminants removed off-site pursuant to this removal action for treatment, storage and disposal shall be treated, stored, or disposed at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440. The list of ARARs (Tables 3-1 and 3-2) is included in Attachment 2.

B. Project Schedule

The removal actions are expected to take approximately 17 months to complete. The project start date is predicated on the completion of the remedial design for this action.

C. Estimated Costs

In the July 2015 EE/CA, the estimated cost for sediment and soil removal was $24,840,000. See Table A-2 in Attachment 2 for a detailed cost assumption for SED-2. The detailed costs for SOIL-2 will be determined in the design phase of the project.

The removal actions described in this Action Memorandum will be implemented by Mercury Marine with EPA oversight.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health or the environment will result if this response action is delayed or not taken. Delayed action increases the chance that highly contaminated surface sediment and/or riverbank soil could be further exposed or migrate to areas where human or ecological exposures could increase.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Addendum (See Appendix B). The Enforcement Addendum is confidential and therefore not subject to discovery.

IX. RECOMMENDATION

This decision document represents the selected non-time critical removal action for the Cedar Creek OU-2A Site located in Cedarburg, Ozaukee County, Wisconsin. This document has been developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This

decision is based on the Administrative Record for the Site (see Attachment 3). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a NTCRA and we recommend your approval of the selected removal action. You may indicate your decision by signing below.

APPROVE: Richard C Karl DATE: 5-31-16
Richard C. Karl, Director
Superfund Division

DISAPPROVE: _____ DATE: _____
Richard C. Karl, Director
Superfund Division

Appendix A: Responsiveness Summary

Appendix B: Enforcement Addendum

Attachments

1. Figures
2. Tables
3. Administrative Record Index
   EE/CA approval memo
   Environmental Justice Analysis

cc: B. Schlieger, U.S. EPA, 5203-G
L. Nelson, U.S. DOI, w/o Enf. Addendum

Appendix A

Responsiveness Summary

RESPONSIVENESS SUMMARY
Cedar Creek Site – OU2A

This Responsiveness Summary provides a summary of public comments the United States Environmental Protection Agency (EPA) received on the Proposed Plan for the Cedar Creek Site – OU2A (Site), and EPA's responses to those comments. The Proposed Plan identified EPA's preferred cleanup option after evaluation of the removal alternatives in the Engineering Evaluation/Cost Analysis (EE/CA) completed by Mercury Marine for EPA approval under the 2014 Administrative Order on Consent. The Proposed Plan was released to the public on November 16, 2015, and the public comment period ran from November 16 through December 16, 2015. Wisconsin Department of Natural Resources (WDNR) provided support in developing the Proposed Plan. EPA held a public meeting regarding the Proposed Plan on December 3, 2015 at the Cedarburg City Hall in Cedarburg, Wisconsin. WDNR participated in the public meeting and assisted in responding to questions.

EPA received written comments (via regular and electronic mail) and verbal comments (at the public meeting) during the public comment period. EPA received comments from approximately 11 people. Documentation of all comments received during the public meeting (including the verbal comments reflected in the transcript of the public meeting) are included in the Administrative Record for the Site. EPA carefully considered all comments prior to selecting the final Site cleanup. The selected cleanup plan is documented in an Action Memorandum.

This Responsiveness Summary does not repeat verbatim each individual comment. Rather, the comments are summarized and grouped by the type of issue raised. The comments fell within several different categories: support for the proposed cleanup, concerns about property during the Site cleanup, concerns with the proposed cleanup and requests for a different alternative.

I. SUPPORT FOR THE PROPOSED CLEANUP

A majority of the comments received indicated that the community was pleased that cleanup of the Site was finally going to happen. Many indicated that keeping residents informed about future work on their property is a high priority.

II. CONCERNS DURING SITE CLEANUP

A couple of comments expressed concern about restoring the creek and residential property after the cleanup. A restoration plan will be part of the design. The restoration plan will be reviewed by EPA and the state regulatory agencies. EPA will make every effort to inform the community about anticipated restoration efforts during the design phase.

III. CONCERNS WITH THE PROPOSED REMEDY

One commenter did not agree with EPA's recommended sediment cleanup of 2.5 mg/kg PCBs. This person stated that a lower cleanup level would be safer.

The cleanup level selected is protective of human health and the environment. A lower clean-up level would not likely result in a significantly more protective remedy than the selected cleanup plan. The selected cleanup plan addressess all significant risks from the site. In addition, within 15 years the PCB sediment concentrations will be lower due to natural recovery processes such as sedimentation on top of the sediment remaining after initial cleanup measures.

IV. PREFERENCE FOR DIFFERENT ALTERNATIVE

One commenter indicated their preference for sediment alternative 3 (SED-3), instead of SED -2. Based upon EPA's evaluation of all of the sediment cleanup options, EPA believes that the sediment alternative (SED-2) is the better option. SED-2 includes a long-term surface-weighted average concentration (SWAC) goal of 0.25 mg/kg, a not-to-exceed value of 2.5 mg/kg of PCBs at any depth, and a 98 percent mass removal of PCB-contaminated sediment. SED-2 will result in an eventual SWAC concentration of 0.25 mg/kg PCB after the monitored recovery from sedimentation occurs. The 0.25 mg/kg PCB is the same level of protectiveness as SED-3, albeit in a longer timeframe. SED-2 achieves this goals at a lower cost and with less adverse short-term impacts than SED-3.

V. SPECIFIC COMMENTS

Comment 1: What is the plan for protecting, preserving, and restocking the creek?
EPA Response: Details about site restoration after initial cleanup measures will be determined during the Remedial Design. Site restoration activities could include: Site access roads being removed; shoreline areas returned to pre-construction conditions to the extent practicable; a 6-inch layer of clean soil will be used to backfill soil removal areas; and a 6-inch layer of clean sand will be used to backfill (some or all) dredged creek areas, in order to accelerate or enhance the natural recovery process. EPA will make every effort to inform the community about possible restoration efforts during the design phase. EPA will ensure that the cleanup at the Site will protect human health and the environment.

Comment 2: Many of the mature trees will be removed from the shoreline of the creek during the cleanup. I hope all efforts are made to keep the original mature trees.
EPA Response: EPA plans to restore the shoreline (residential property) to its original state to the extent practicable, while ensuring the contamination is removed. We will make every effort to leave mature trees undisturbed, and will be working closely with property owners about cleanup measures on their specific property.

Comment 3: The words, "removing soils from certain floodplain areas and replacing with clean backfill" means replacing with topsoil and sod, and protecting existing trees.
EPA Response: Backfill activities will be specified in the remedial design. Clean soil will be brought in as backfill. The property restoration will be specific to the property, and EPA will work closely with property owners about cleanup measures on their property.

Comment 4: During the cleanup, they will work with you to make it acceptable. Is it going to be the same? No. It's probably going to be a little different, but it will be different to your standards and they'll work very hard to do that.
EPA Response: EPA agrees with the commenter that we will work closely with property owners when planning and conducting work on their property, and make every effort to address their concerns.

Comment 5: I am hoping from what I'm hearing is that something will start (cleanup) in 2016.
EPA response: The current schedule has cleanup starting in 2016.

Comment 6: I'm sure that whatever happens will be in the best interests of the creek and for the citizens. It's unfortunate that as a citizen I cannot get a hard copy in the library or at City Hall. That is terrible.
EPA Response: EPA appreciates the support of our work.

EPA regrets that paper copies of our documents were not available at the public repositories and that community members were inconvenienced. Due to space restrictions and the large size of our documents, the information repositories, Cedarburg Public Library and City Hall, requested to receive only electronic copies of site-related documents. EPA seeks to conserve paper usage where possible. We do much of our business electronically, so this request was consistent with EPA practices. If you would like a hard copy of site-related document(s), please send a request to the remedial project manager or community involvement coordinator; and we will do our best to respond accordingly.

Comment 7: I think that EPA's web site is less than desirable. It stinks.
EPA Response: EPA regrets there is dissatisfaction with the Cedar Creek web site. The website is a work-in-progress. All of EPA's Superfund site web pages have recently undergone a major transformation. The new web pages went live on Sept. 30, 2015 and continue to be revised. In the meantime, we are committed to keeping the Cedar Creek web page updated. If you have trouble accessing the new web page or have specific input about the website, please contact the site remedial project manager or community involvement coordinator directly for assistance.

Comment 8: We don't have any details. And I think that's unfortunate. So to me the process is not desirable.
EPA Response: The proposed plan summarizes the cleanup alternatives that EPA evaluated and the EE/CA provides detailed information about the cleanup alternatives, including the selected cleanup plan. Both documents were available in electronic form in the site public repositories during the public comment period.

EPA is committed to continued communication about implementation of the cleanup plan as the design documents are developed, and as the cleanup action is implemented.

Comment 9: We would like to keep what we have now and not really have it change or change for other people's interests. So we would like to keep this with all of us and with the people that are doing the cleanup and not have outside influences come in and tell us what we think we should do.
EPA Response: EPA is committed to implementing a protective cleanup plan at Cedar Creek-OU2. The Potentially Responsible Party, Mercury Marine, is anticipated to conduct the cleanup with oversight by EPA, working closely with WDNR.

Comment 10: We prefer sediment cleanup alternative 3 (SED-3).
EPA Response: Based upon EPA's evaluation of all of the sediment cleanup options, EPA believes that the sediment alternative (SED-2) is the better option. SED-2 includes a long-term surface-weighted average concentration (SWAC) goal of 0.25 mg/kg, a not-to-exceed value of 2.5 mg/kg of PCBs at any depth, and a 98 percent mass removal of PCB-contaminated sediment. SED-2 will result in an eventual SWAC concentration of 0.25 mg/kg PCB after the monitored recovery from sedimentation occurs. The 0.25 mg/kg PCB is the same level of protectiveness as SED-3, albeit in a longer timeframe. SED-2 achieves this goals at a lower cost and with less adverse short-term impacts than SED-3.

Comment 11: Waiting 30 years for safe fish consumption is concerning.
EPA Response: EPA agrees that waiting 30 years for safe fish consumption is a long time. SED-2 however provides the best balance of long-term cleanup goals and acceptable short-term adverse impacts to Cedar Creek during cleanup implementation, in a cost-effective manner. SED-2 requires time for sedimentation to result in achieving the long-term SWAC of 0.25 mg/kg PCBs. Given the life-cycle of fish in Cedar Creek, it will take time for the fish tissue contaminant concentrations to reduce.

Previous site cleanup actions have resulted in significant reductions in fish tissue contaminant concentrations. Fish tissue PCB concentrations for four different fish species averaged approximately 3 mg/kg prior to Ruck Pond Remediation (1994). Based on fish collected in 2013, those same fish species had an average fish tissue PCB concentration of approximately 0.11 mg/kg. Therefore, it is reasonable to assume that a mass removal with a long-term SWAC goal of 0.25 mg/kg will be effective at reducing fish tissue concentrations to 0.21 mg/kg within 30 years. The Ruck Pond removal was 21 years ago and tissue contaminant concentration of some fish species is below 0.21 mg/kg.

However, there are certain fish (carp) that the fish tissue concentration might take longer to achieve.

Comment 12: We would question why a 6-inch sand layer is proposed for a post-dredge cover.
EPA Response: The 6-inch layer of sand is an optional addition to the dredging in the event the SWAC cannot be achieved by dredging alone.

Comment 13: We urge EPA to require cleanup of any contaminated soils below the 10-year floodplain.
EPA Response: All contaminated soil above 1 ppm PCB will be removed. If soils contaminated at this level are found on the 10-year floodplain, it will be removed. The majority of the contaminated soil (above 1 ppm PCB) is expected to be found in the 2-year floodplain.

Appendix B

Enforcement Addendum

(Not Subject to Discovery)

ENFORCEMENT ADDENDUM

HAS BEEN REDACTED – ONE PAGE

ENFORCEMENT CONFIDENTIAL

NOT SUBJECT TO DISCOVERY

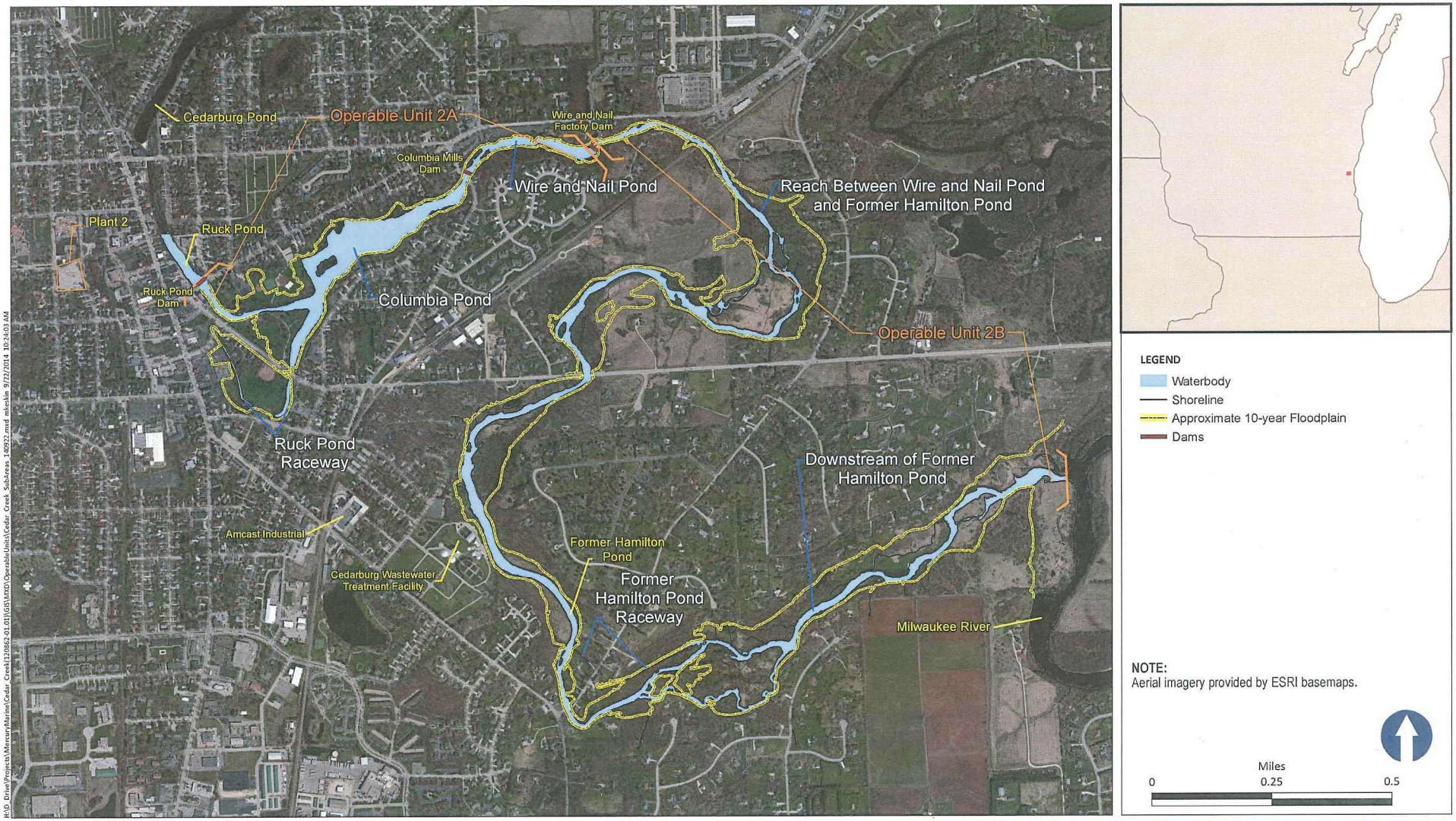
FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

Attachment 1

Figures



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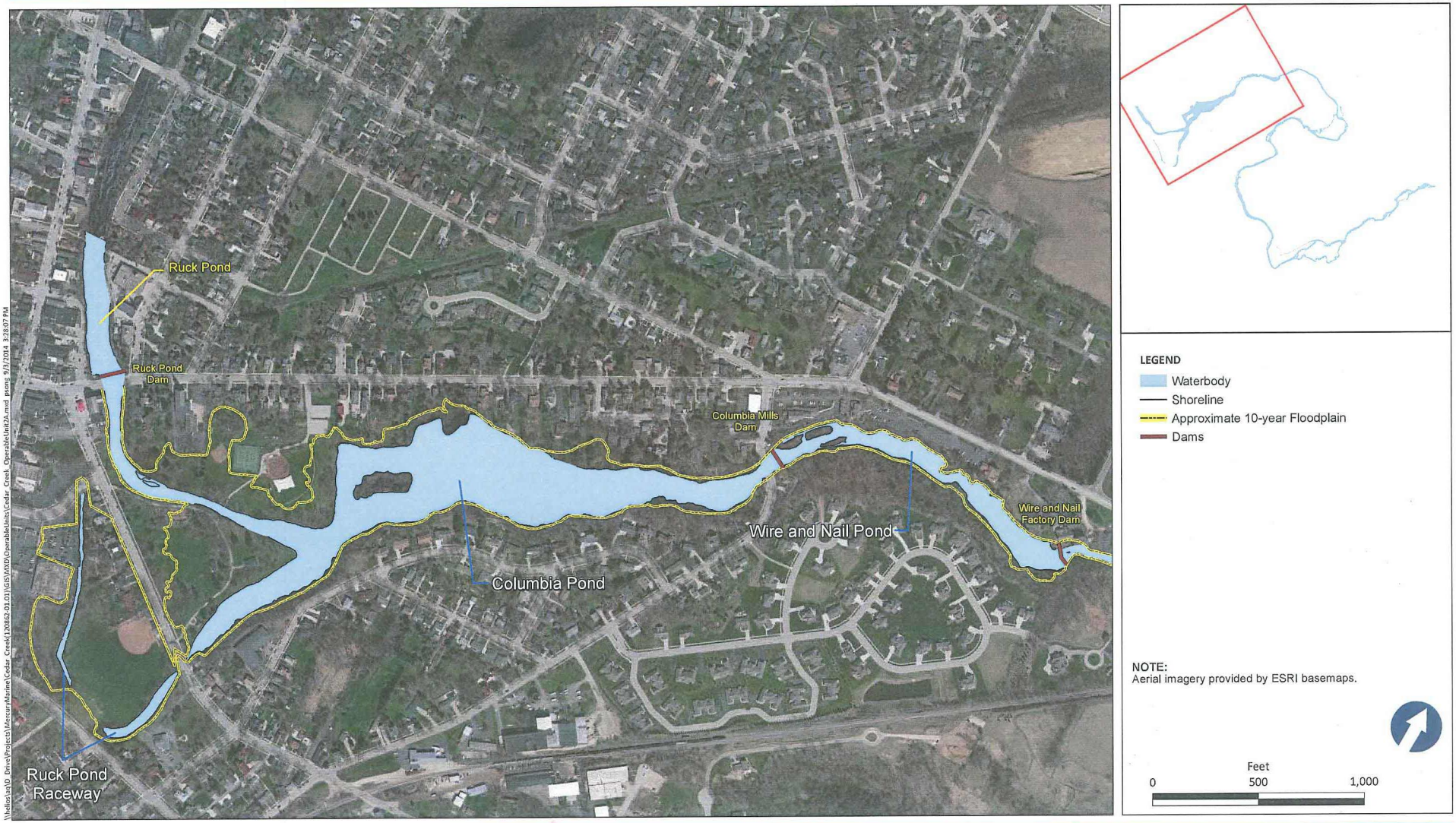
ANCHOR QEA

Figure 1-2
Site Reaches/Areas
Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A



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ANCHOR QEA

Figure 2-1
Cedar Creek Operable Unit 2A - Cedar Creek Ponds
Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A

LEGEND

- Core Locations
- Approximate 10-yr Floodplain

Depth of Sediment Removed (ft)

- 2
- 4

NOTE:
Aerial imagery provided by ESRI basemaps

Feet
0 100 200

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ANCHOR QEA

Figure 4-2
Proposed Remedial Areas at Ruck Pond Raceway
Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A

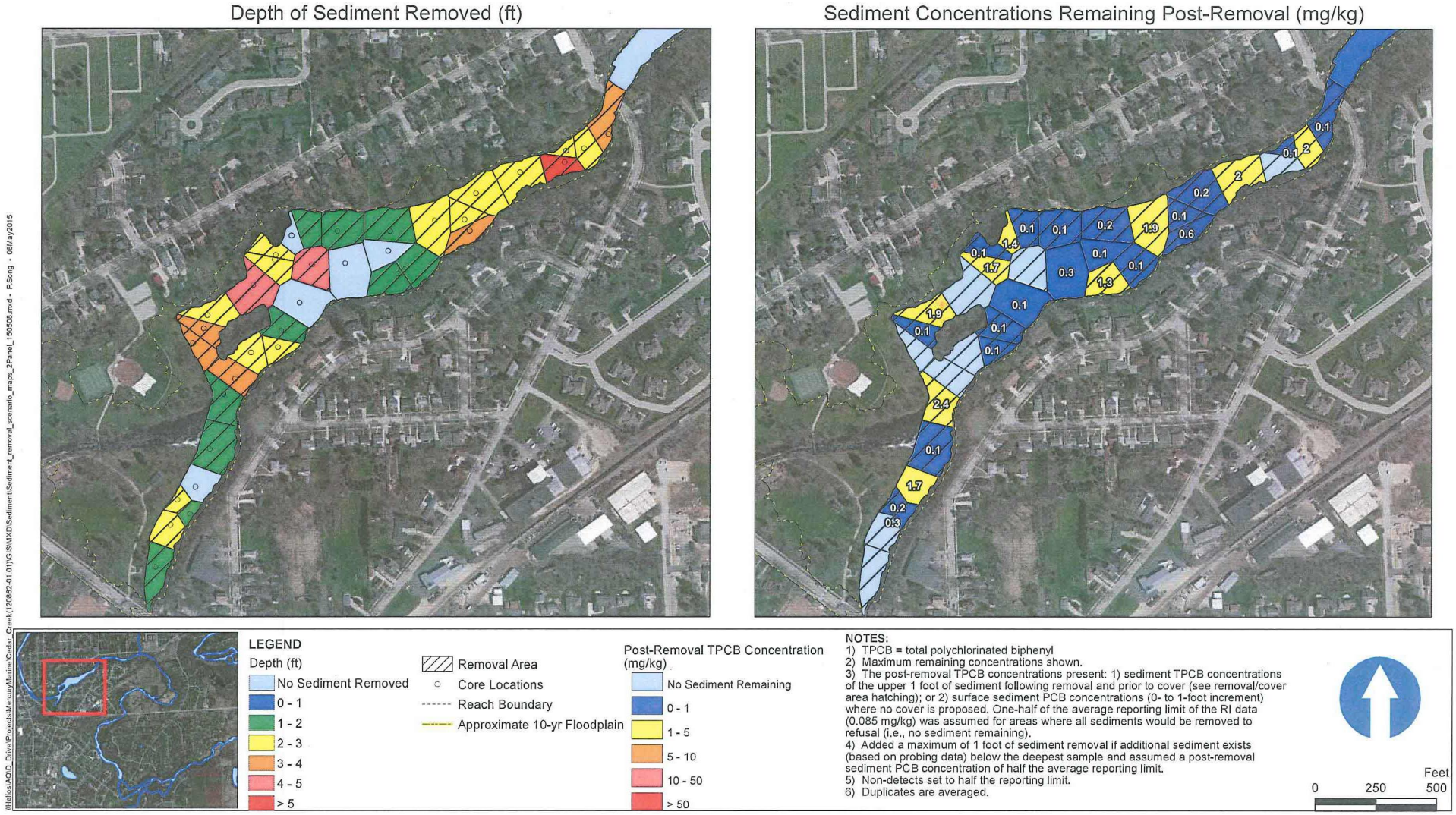

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Figure 4-6
Proposed Sediment Removal Depths and Post-Removal PCB Concentrations within Columbia Pond for Alternative SED-2
Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A

ANCHOR QEA

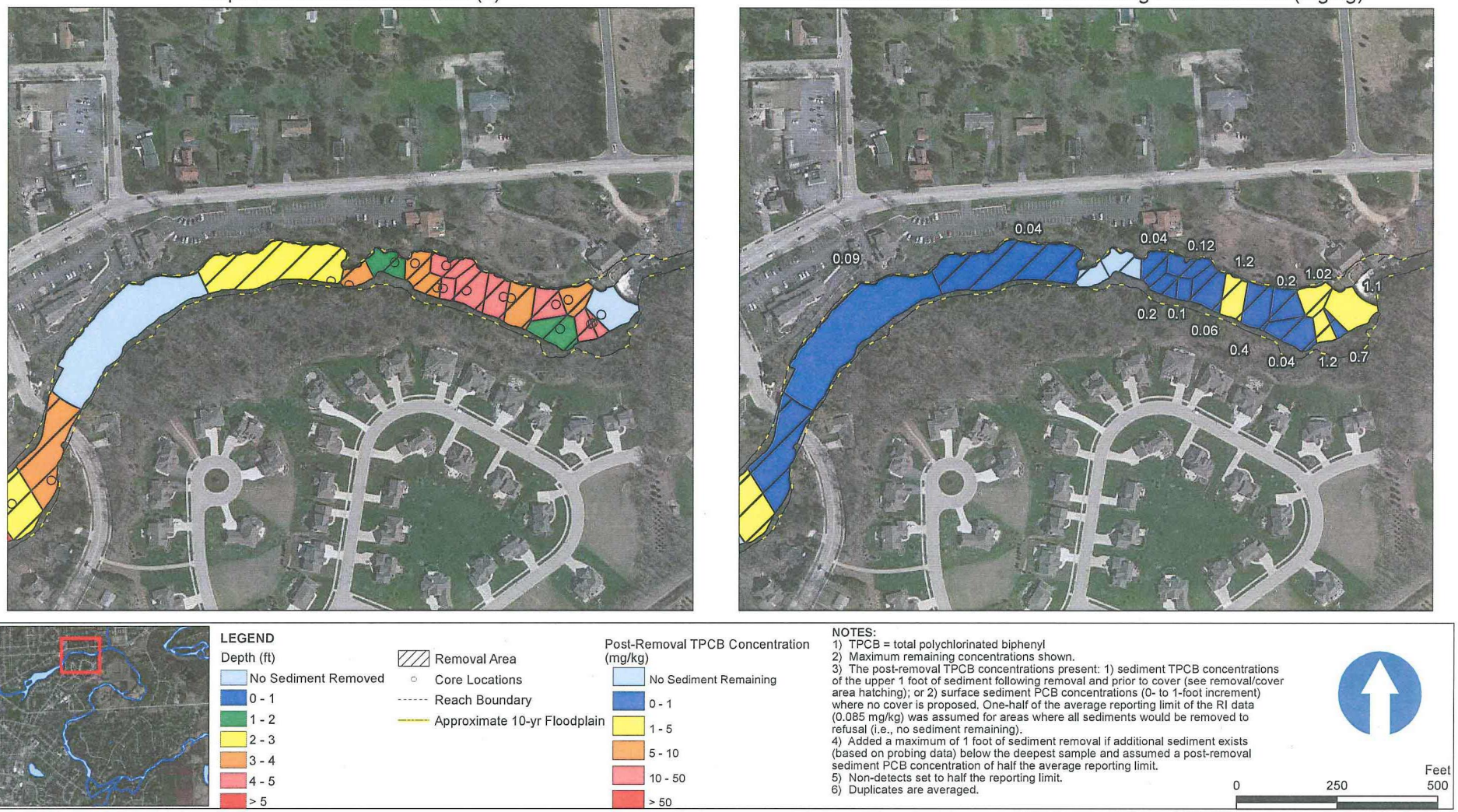

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Figure 4-7
Proposed Sediment Removal Depths and Post-Removal PCB Concentrations within Wire and Nail Pond for Alternative SED-2
Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A

ANCHOR QEA

Attachment 2

Tables

Table A-2
Preliminary Cost Estimate Sediment Alternative SED-2

Removal of sediments with PCB concentrations greater than 2.5 mg/kg (RAL of 2.5 mg/kg) in Columbia and Wire and Nail ponds with the goal of achieving a post-dredge SWAC of 0.5 mg/kg and a long-term SWAC of 0.25 mg/kg, which is the equivalent of 98% removal of the mass of PCBs based on the best available data; a 6-inch sand layer may be placed following removal to enhance natural attenuation

Engineering Evaluation/Cost Analysis Report
Cedar Creek Site – Operable Unit 2A

5/7/2015

ITEM NO.	DESCRIPTION	UNIT	NO. OF UNITS	UNIT COST	ESTIMATED COST (Present Day)
1	Mobilization/Demobilization	LS	1	$ 325,000	$ 325,000
2	Clear Staging/Dewatering Area	AC	1.3	$ 7,500	$ 9,750
3	Access Road to Staging Area and In-Pond Road				
	Geotextile Layer	SY	1,240	$ 5	$ 5,600
	Gravel Layer	CY	720	$ 12	$ 8,600
	Duramat Placement	SY	4,250	$ 161	$ 684,300
4	Water Diversion Barrier Placement (SED-2)	LS	1	$ 950,000	$ 950,000
5	Turbidity Curtains Installation and Maintenance	LF	1,500	$ 65	$ 97,500
6	Construct Material Offloading Area	LS	1	$ 30,000	$ 30,000
7	Debris Removal	CY	2,850	$ 30	$ 85,500
8	Ruck Pond Raceway Residual Sediment Washing of Culverts	LF	900	$ 13	$ 11,700
Columbia Pond Excavation					
9	Mechanical Excavation in the Dry (Non-TSCA)	CY	29,800	$ 36	$ 1,072,800
10	Mechanical Dredging (Non-TSCA)	CY	9,100	$ 38	$ 345,800
11	Mechanical Excavation in the Dry (TSCA)	CY	14,600	$ 36	$ 525,600
12	Equipment Decontamination	LS	1	$ 5,400	$ 5,400
Wire and Nail Pond Dredging					
13	Mechanical Dredging (Non-TSCA)	CY	12,380	$ 38	$ 470,400
Ruck Pond Raceway Excavation					
14	Mechanical Excavation in the Dry (TSCA)	CY	2,900	$ 36	$ 104,400
15	Mechanical Excavation in the Dry (Non-TSCA)	CY	2,500	$ 36	$ 90,000
Sediment Dewatering					
16	Construct Dewatering Area	LS	1	$ 65,000	$ 65,000
17	Dewatering and Amending	CY	71,280	$ 19	$ 1,354,300
18	Portland Cement	TON	10,690	$ 115	$ 1,229,400
19	Water Treatment - SED-2	LS	1	$ 1,156,500	$ 1,156,500
20	Sediment Disposal (Non-TSCA)	TON	88,700	$ 35	$ 3,104,500
21	Sediment Disposal (TSCA)	TON	28,900	$ 110	$ 3,179,000
Sand Layer Placement					
22	Columbia Pond	CY	16,800	$ 31	$ 523,100
23	Wire and Nail Pond	CY	3,000	$ 31	$ 93,400
24	Ruck Pond Raceway	CY	1,200	$ 31	$ 37,400
Miscellaneous Items					
25	Contractor Quality Control	MO	16.6	$ 19,500	$ 323,300
26	Staging/Dewatering Area Restoration	ACRE	1.3	$ 40,000	$ 52,000
27	Restore Access Road	SF	11,200	$ 2	$ 22,400
28	Off-Site Disposal of Project Related Materials	TON	6,880	$ 80	$ 550,400
29	Construction Monitoring/Oversight	MO	17	$ 46,200	$ 765,854
30	Turbidity Monitoring	MO	15.0	$ 21,300	$ 319,500
31	Health and Safety Management	MO	16.6	$ 32,500	$ 538,750
				Construction Total:	$ 18,137,000
32				Engineering and Administration (10%):	$ 1,814,000
33				Construction Contingency (20%):	$ 3,627,000
				Long-Term Monitoring:	$0
				Total (Present Day):	$ 23,578,000
				Rounded Total (Present Day):	$ 23,580,000

see Assumptions on next page

ASSUMPTIONS

- All assumptions, quantities, and unit prices used in this cost estimate are preliminary for the purposes of the Cedar Creek Site work. Cost estimates will be refined during future design development efforts.
- All costs are provided in present-day dollars and all cost expenditures are assumed to occur at the start of construction.
- Work is to be conducted 6 days per week, 10 hours per day.
- Costs do not include property costs (where applicable), legal fees, agency oversight, or public relations efforts.
- These costs have been developed using currently available information regarding site characteristics such as site bathymetry, potential debris, and physical properties of the existing sediment at the site. As information regarding these site characteristics changes or new information becomes available, these costs will be subject to change.
- These estimates are developed using current and generally accepted engineering cost estimation methods. Note that these estimates are based on assumptions concerning future events, and actual costs may be affected by known and unknown risks including but not limited to changes in general economic and business conditions, site conditions that were unknown to Anchor QEA, LLC, at the time the estimates were performed, future changes in site conditions, regulatory or enforcement policy changes, and delays in performance. Actual costs may vary from these estimates and such variations may be material.

GENERAL NOTES

1 Mobilization/demobilization costs include all equipment, material, and labor necessary to bring construction equipment to the site in preparation for completing the work. This line item is based on professional experience from Anchor QEA, LLC, and experience by Mercury Marine with other remedial activities at and near the site.

2 Involves clearing and grubbing the areas identified as necessary for staging of construction equipment and the dewatering system.

3 Involves construction of an access road from existing local roadways to the staging and dewatering areas adjacent to the work area. Assumes that the access roads will consist of a base geotextile layer and gravel stone. In-lake roads will consist of a gravel layer placed beneath Duramat operating mats (or similar material). Mats will be relocated following construction work in a given area of the site.

4 A water diversion bypass system will be required to divert water from the active work area at Ruck Pond Raceway and Columbia Pond. Stoplogs within the Columbia Mills Dam millrace will be removed to lower water surface elevations. The flow diversion structures assume a jersey barrier system, covered with plastic sheeting to prevent seepage and anchored in place utilizing sandbags. The diversion structure will divide the remedial footprint into two sections – west (behind the island) and east (main channel). The diversion structure is assumed for the duration of dry excavation and wet dredging activities.

5 Turbidity curtains will be utilized during all mechanical dredging operations. Quantities of turbidity curtain include a 100% replacement/repair allowance for damages expected to occur over the duration of the project.

6 Assumes that a material offloading area will be constructed at a nearshore location adjacent to the work area.

7 Debris removal operations will be conducted utilizing equipment already on site to perform excavation/mechanical dredging operations. Current estimate assumes a 5% debris presence within the sediment removal prism. This estimate will be further refined during future design/survey efforts.

8 Pressure washing of the culverts in the Ruck Pond Raceway to be performed by two laborers utilizing a 7-gpm, 3,000-psi pressure washer with supervision by the Health and Safety Officer. Production assumes 250 square feet of cleaning per day and 900 linear feet of culverts.

9 Mechanical excavation operations for removal of non-TSCA sediment in Columbia Pond will be conducted utilizing a long-reach excavator operating from Duramat (or similar equipment) access road and will load material directly to haul trucks for transport to the on-site dewatering area.

10 Mechanical dredging operations in deep-water areas of Columbia Pond will be conducted utilizing a long-reach excavator equipped with a clamshell bucket operating from a shallow-draft barge. Material will be loaded to mini-scows and transported to the material offloading area for transport to the on-site dewatering area.

11 Mechanical excavation operations for removal of TSCA sediment in Columbia Pond will be conducted utilizing a long-reach excavator operating from Duramat (or similar equipment) access road and will load material directly to haul trucks for transport to the on-site dewatering area.

12 Following removal of TSCA material, removal equipment will be decontaminated on site prior to being utilized to perform any additional construction tasks. Decontamination procedure is preliminarily anticipated to involve power-washing of all exposed equipment, with generated water being collected and treated on site.

13 Mechanical dredging operations in Wire and Nail Pond will be conducted utilizing a long-reach excavator equipped with a clamshell bucket operating from a shallow-draft barge. Material will be loaded to mini-scows and transported to the material offloading area for transport to the on-site dewatering area.

14 Mechanical excavation operations for removal of TSCA sediment in Ruck Pond Raceway will be conducted utilizing a long-reach excavator operating from Duramat (or similar equipment) access road and will load material directly to haul trucks for transport to the on-site dewatering area.

15 Mechanical excavation operations for removal of non-TSCA sediment in Ruck Pond Raceway will be conducted utilizing a long-reach excavator operating from Duramat (or similar equipment) access road and will load material directly to haul trucks for transport to the on-site dewatering area.

16 Assumes that a sediment dewatering area will be constructed at a nearshore location adjacent to the work area.

17 Includes costs to dewater and amend sediment in the on-site dewatering area.

18 Portland cement will be dosed to the removed sediment at a rate of 10% by weight.

19 Water treatment system assumes a 100-gpm system installed on site to treat water generated at the sediment dewatering area. Includes installation, media changeout (every 3 months), and daily operating costs. Assumes that treated water will be discharged back to the pond or to the local wastewater treatment plant.

20 Assumes non-TSCA-regulated sediments will be disposed at a facility regulated to accept such waste. Portland cement dosed to the sediment to aid in dewatering has been included in the disposal tonnage.

21 Assumes TSCA-regulated sediment removed will be disposed at a facility regulated to accept such waste. Portland cement dosed to the sediment to aid in dewatering has been included in the disposal tonnage.

22 Assumes that a 6-inch sand layer will be placed over Columbia Pond following material removal operations. A 3-inch overplacement allowance and a 10% loss of materials factor has been included in the placement volume.

23 Assumes that a 6-inch sand layer will be placed over Wire and Nail Pond following material removal operations. A 3-inch overplacement allowance and a 10% loss of materials factor has been included in the placement volume.

24 Assumes that a 6-inch sand layer will be placed over Ruck Pond Raceway following material removal operations. A 3-inch overplacement allowance and a 10% loss of materials factor has been included in the placement volume.

25 Contractor quality control assumes contractor's foreman full-time at the site in oversight role throughout the duration of the work.

26 Restoration of the staging/dewatering areas involves removing all constructed work areas and restoring the areas to conditions similar to those existing prior to the start of construction operations at the site.

27 Restoration of the access roads involves removing all placed materials and restoring the areas to conditions similar to those existing prior to the start of construction operations at the site.

28 Off-site disposal of project-related materials includes disposal of all removed debris, damaged turbidity curtains, access roads, staging areas, miscellaneous rubbish, etc.

29 Construction monitoring/oversight assumes one full-time employee acting in an oversight capacity and performing daily dust monitoring, independent of the contractor, throughout construction operations.

30 Assumes project engineer working 2.5 hours per day to monitor turbidity during all in-water sediment removal operations.

31 Assumes full-time CIH on site throughout the project duration.

32 An engineering and administration fee of 10% is included in this design based on previous experience in similarly sized remediation projects.

33 Due to the conceptual nature of the evaluation, a 20% contingency fee has been added to the total construction cost to cover unknowns, unforeseen circumstances, or unanticipated conditions that are not possible to evaluate from the data on hand at the time the estimate was prepared.

Table 3-1
State ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
STATE CHEMICAL-SPECIFIC ARARs				
Total Maximum Daily Load	WDNR 2008	*Polychlorinated Biphenyls (PCBs) Total Maximum Daily Load for Cedar Creek and Milwaukee River (Thiensville Segment)* Ozaukee County, Wisconsin; proposes a long-term goal of sediment PCB concentration for Cedar Creek	TBC	To be considered when developing sediment cleanup levels
Investigation and Remediation of Environmental Contamination	WAC NR 700	Establishes standards and procedures that allow for site-specific flexibility, pertaining to the identification, investigation, and remediation of sites and facilities	Applicable	Applicable to soils for implementation of a given remedial alternative
STATE ACTION-SPECIFIC ARARs				
Plans and Specifications Review of Projects and Operations	WAC NR 108	General operation and control of specific water/wastewater system	Applicable	Applicable for community water systems, sewage systems, and industrial wastewater facilities
Management of PCBs and Products Containing PCBs	WAC NR 157	Establishes procedures for the storage, collection, transportation, processing, and final disposal of PCBs and materials containing PCBs at any level	Applicable	Applicable for removal and transport of PCBs
Wisconsin Pollutant Discharge Elimination System	WAC NR 200	Technology-based effluent limits (NR 220–297): Requires compliance with limitations for discharge to navigable waters, including water quality effluent limits, water quality standards, national performance standards, toxic and pretreatment effluent standards, and carriage and interstitial return water from on-site wastewater treatment	Applicable	Applicable action-specific ARAR for remedial alternatives involving discharges
Water Quality Antidegradation	WAC NR 207	Establishes implementation procedures for the antidegradation policy in NR 102.05(1)(a)	Applicable	Applicable to proposed new or increased discharges

Table 3-1
State ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
Dam Design and Construction	WAC NR 333	Establishes dam design protocols and dam hazard rating definitions	Applicable	Potentially applicable for implementation of a remedial alternative that leaves contamination in place and relies on long-term maintenance of Columbia Mills Dam or Wire and Nail Factory Dam
Sediment Sampling and Analysis, Monitoring Protocol, and Disposal Criteria for Dredging Projects	WAC NR 347	Establishes procedures and protocols for sediment sampling and analysis, disposal criteria, and monitoring requirements for dredging projects regulated by the State of Wisconsin	TBC	TBC with regard to removal and on-site transport of sediments
Control of Particulate Emissions	WAC NR 415	Establishes emission limitations for particulate matter and provides precautions to prevent particulate matter from becoming airborne	Applicable	Applicable action-specific ARAR relating to fugitive dust
Notification of the Discharge of Hazardous Substances	WAC NR 706	Notification procedures and responsibilities by discharger of hazardous substances including containment, cleanup, disposal, and restoration	Applicable	Applicable for removal and on-site transport of contaminated sediments and soils (e.g., transport of soils to stockpile areas; shoreline loading/unloading of sediments)
STATE LOCATION-SPECIFIC ARARS				
Floodplain Management Program	WAC NR 116	Establishes floodplain zoning and management procedures	Applicable	Applicable for excavation and filling in the floodplain
Geographic Information System (GIS) Registry	Wisconsin Statutes Section 292.12, WAC NR 726 and 727	Provides notification about residual contamination and/or other continuing obligations on a property	Applicable	Applicable for alternatives involving upland soil/floodplain

Table 3-1
State ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
Wetlands	Wisconsin Statutes Section 281.36, NR 299, NR 300, NR 350, NR 353	Provides requirements regarding wetland disturbances and restoration activities	Applicable	Applicable where remedial work is proposed in wetlands
Regulation of Navigable Waters	Wisconsin Statutes Chapter 30	State statute for navigable waters, harbors, and navigation: Substantive provisions that address minimizing adverse effects on navigable waterways resulting from work performed	TBC	Applicable for work performed in navigable waterways

Notes:
ARAR – Applicable or Relevant and Appropriate Requirement
NR – Natural Resources
PCB – polychlorinated biphenyl
TBC – to be considered
WAC NR – Wisconsin Administrative Code, Natural Resources
WDNR – Wisconsin Department of Natural Resources

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
FEDERAL CHEMICAL-SPECIFIC ARARs				
Clean Water Act (as amended in the Federal Water Pollution Control Act)	40 CFR 122, 125, 129, 131; CWA 301-304, 401; 33 USC 1251-1387	Provides for federal, state, and local surface water quality guidelines (including discharge requirements to control pollutants to navigable waters [i.e., NPDES])	Relevant and appropriate	Establishes relevant and appropriate water quality criteria to protect against adverse effects
FEDERAL ACTION-SPECIFIC ARARs				
NPDES Program Requirements	40 CFR 122, Subpart B; 40 CFR 125; 40 CFR 301, 303, and 307; CWA Section 401	Establishes NPDES permitting requirements for point source discharges; regulates discharge of water into navigable waters including the quantity and quality of discharge	Applicable	Implemented by the state; refer to Wisconsin Pollutant Discharge Elimination System (WAC NR 200; Table 3-1)
	33 USC 1342; 40 CFR 122.26 (c)(1) (ii)(C); 40 CFR 122.44(k); 40 CFR 125.1-.3, .100-.104	BMPs to control pollutants in stormwater discharges during construction activities: Best Available Technology effluent limits for toxic and non-conventional pollutants; Best Conventional Technology limits for conventional pollutants; water-quality-based effluent limitations BMPs to prevent release of toxics to surface water from ancillary areas or spills	Relevant and appropriate	BMPs for erosion and sedimentation control will be adopted to minimize the potential for rainfall or flood-induced migration of soils and sediments from disturbed areas
Clean Water Act	33 USC 1251 et seq.; CWA Section 404	Requirements for the discharge of dredged/fill material into navigable waters or wetlands	Applicable	Applicable to alternatives that involve dredging or filling in a navigable waterway or wetlands

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
Toxic Substances Control Act	40 CFR 761.50(a)(3)	Prohibits discharge of water containing PCBs to navigable waters unless PCB concentration is less than approximately 3 parts per billion or in accordance with discharge limits of NPDES permit	Applicable	Applicable to the discharge criteria of water treatment effluent
	40 CFR 761.61(c) 40 CFR 761.65	Establishes cleanup options and storage options for PCB remediation waste	Applicable	Applicable to remedial actions that involve PCB-contaminated wastes
	40 CFR 761.79	Establishes decontamination standards and procedures for removing PCBs from non-porous surfaces	Applicable	Applicable to decontamination of equipment used in excavation and restoration activities
	40 CFR 761.40	Requirements regarding the marking of PCB containers and PCB storage areas	Applicable	Applicable to remedial actions that involve PCB-contaminated wastes
	40 CFR 761, Subpart G	Policy used to determine adequacy of cleanup of spills resulting from the release of materials containing PCBs at concentration of 50 parts per million or greater	Applicable	Applicable in the event of PCB spills occurring during the work
Hazardous Materials Transportation Act, as amended	49 CFR 171	General information, regulations, and definitions: Department of Transportation rules for the on-site packaging and labeling in preparation of transportation of hazardous materials	Applicable	Applicable for on-site packaging and labeling of material to be shipped off site
Rivers and Harbors Act	33 CFR 320-330	Prohibits unauthorized obstruction or alteration of any navigable water in the United States (dredging, filling, coffer dams, piers, etc.)	Applicable	Applicable for alternatives that involve dredging or filling in a navigable waterway

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
USEPA Guidance	EPA-540-G-89-004 OSWER Directive 9355.3-01, October 1988	*Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*: Describes the general procedures for conducting a remedial investigation or feasibility study	TBC	Guidance will be considered during preparation of the feasibility study
	EPA/540/R-95/052, OSWER Directive No. 9355.7-04, May 1995	*Land Use in the CERCLA Remedy Selection Process*: Presents information for considering land use in making remedy selection decisions at National Priorities List sites	TBC	Guidance will be considered during evaluation of remedial alternatives
	OSWER Directive 9200.4-17P, 1997	*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*: Provides guidance regarding the use of Monitored Natural Attenuation for the cleanup of soil and groundwater	TBC	This guidance may be considered for potential actions at the site
	EPA-905-B-96-004, 1998	*Assessment and Remediation of Contaminated Sediments (ARCS) Program Guidance for In Situ Subaqueous Capping of Contaminated Sediments*: Provides technical guidance for subaqueous, in situ capping as a remediation technique for contaminated sediments	TBC	Guidance will be considered during preparation of remedial alternatives that consider capping

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
USEPA Guidance	OSWER 9355.7-03B-P, June 2001	*Comprehensive Five-Year Review Guidance*: Provides guidance on conducting 5-year reviews for sites at which hazardous substances, pollutants, or contaminants remain on site above levels that allow for unrestricted use and unlimited exposure	TBC	Guidance will be considered during preparation of any post remediation monitoring plans
	EPA-540-R-05-012 OSWER 9355.0-85, December 2005	*Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*: Provides technical and policy guidance for project managers and management teams making remedy decisions for contaminated sediment sites	TBC	Guidance will be considered during preparation of remedial alternatives
	ERDC/EL TR-08-4, February 2008	*The Four Rs of Environmental Dredging: Resuspension, Release, Residual, and Risk*: Provides technical guidance on assessing the effects of environmental dredging on site remedies	TBC	Guidance will be considered during preparation of remedial alternatives that consider dredging
	ERDC/EL TR-08-294, September 2008	*Technical Guidelines for Environmental Dredging of Contaminated Sediments*: Provides technical guidelines for evaluating environmental dredging as a sediment remedy component	TBC	Guidance will be considered during preparation of remedial alternatives that consider dredging
FEDERAL LOCATION-SPECIFIC ARARs				
Migratory Bird Treaty Act	16 USC 703-712	Prohibits pursuit, capture, killing, or selling of migratory birds, including feathers, eggs, and nests	Applicable	Applicable to alternatives that involve removal of vegetation that may harbor nesting migratory birds

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
USEPA Guidance	OSWER Directive 9355.7-04, May 1995	*Land Use in CERCLA Remedy Selection Process*: Identifies considerations for incorporating anticipated future land use in the remedy selection process	TBC	Provides guidance for consideration of future site land use in selection of a site remedy
	OSWER 9355.0-89, December 2012	*Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*: Provides guidance on choosing the most appropriate institutional controls to protect human health and the environment	TBC	Provides guidance for consideration of institutional controls as a component of a site remedy
Endangered Species Act of 1973, as amended, 16 USC 1531-1544	16 USC 1536; 40 CFR 6.302; 50 CFR 402	Endangered and Threatened Wildlife and Plants: Federal agencies are required to verify that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of a critical habitat of such species, unless such agency has been granted an appropriate exemption by the Endangered Species Committee (16 USC 1536)	Applicable	Applicable if endangered species are present and habitat areas would be impacted by site remediation activities; consultation with U.S. Fish and Wildlife Service and National Marine Fisheries Service will occur
Fish and Wildlife Coordination Act, 16 USC 662	16 USC 662; 40 CFR 6.302	Federal/state coordination of changes to waterbodies: Departments and agencies must first consult with the U.S. Fish and Wildlife Service, Department of the Interior, and appropriate agency head when proposing to impound or divert the waters of any stream, deepen a channel, or otherwise control or modify a stream or other body of water; this includes consulting with the head of the agency exercising administration over the wildlife resources of the particular state in which the action is to take place to conserve wildlife resources and to prevent the loss or damage to those resources	Applicable	Applicable to federal agencies and actions under auspices of federal agencies in any surface waterbody that may be impacted by remedial activities; consultation with U.S. Fish and Wildlife Service will occur

Table 3-2
Federal ARARs/TBCs

Regulation	Citation	Description	Applicability/ Appropriateness	Rationale
National Historic Preservation Act, 16 USC 470 et seq.	36 CFR 800, 36 CFR 65, and 40 CFR 6.301	Proposed remedial actions must take into account effect on historical properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed undertaking	Applicable	Applicable if activities will affect historical properties or landmarks at or near the site
Historic Sites, Buildings, and Antiquities Act, 16 USC 461 et seq.	36 CFR 62.6	National Landmarks: Proposed remedial actions must consider the existence of national landmarks and avoid undesirable impacts upon such landmarks	Applicable	Applicable if activities will affect historical areas of the site

Notes:
ARAR – Applicable or Relevant and Appropriate Requirement
BMPs – best management practices
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CFR – Code of Federal Regulations
CWA – Clean Water Act
ERDC/EL – Engineer Research and Development Center, Environmental Laboratory
NPDES – National Pollutant Discharge Elimination System
OSWER – Office of Solid Waste and Emergency Response
PCB – polychlorinated biphenyl
RCRA – Resource Conservation and Recovery Act
TBC – to be considered
USC – U.S. Code
USEPA – U.S. Environmental Protection Agency

Attachment 3

http://semspub.epa.gov/src/collection/05/AR5044

Superfund Records Collections

Superfund Site: CEDAR CREEK (EPA ID: WID988590261)
Collection Description: CEDAR CREEK AR

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Index of Documents

Date	Index Document Title	DocID	Author/(Org)	Addressee/(Org)	Pages	Size
11/12/2015	ADMINISTRATIVE RECORD SITE INDEX - CEDAR CREEK - REMEDIAL - UPDATE 4	922055	(US ENVIRONMENTAL PROTECTION AGENCY)	(FILE)	2	22.13 KB
08/07/2014	EPA MEMO RE: ENGINEERING EVALUATION/COST ANALYSIS APPROVAL MEMORANDUM FOR A PROPOSED NON TIME-CRITICAL REMOVAL ACTION	478706	SCOTT HANSEN(US ENVIRONMENTAL PROTECTION AGENCY)	RICHARD KARL(US ENVIRONMENTAL PROTECTION AGENCY)	7	1.53 MB
06/11/2012	ADMINISTRATIVE RECORD SITE INDEX - UPDATE #3	424305	US EPA(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	1	38.15 KB
03/31/2008	ADMINISTRATIVE RECORD SITE INDEX - REMEDIAL AR - UPDATE #2	348191	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	1	12.92 KB
02/25/2008	ADMINISTRATIVE RECORD SITE INDEX - UPDATE #1	290058	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	2	46.52 KB
11/02/2005	ADMINISTRATIVE RECORD SITE INDEX - REMEDIAL AR - ORIGINAL - UPDATE #3	238786	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	3	53.71 KB

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Date	Title	DocID	Author/(Org)	Addressee/(Org)	Pages	Size
11/09/2015	U.S. EPA - PROPOSED PLAN	922051	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	40	2.31 MB
11/03/2015	PUBLIC NOTICE: EPA PROPOSES CLEANUP PLAN FOR CEDAR CREEK SITE	922052	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	1	44.56 KB
11/02/2015	EPA POSTCARD RE: EPA PROPOSES CLEANUP PLAN FOR CEDAR CREEK SITE	922049	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	2	113.2 KB
11/01/2015	EPA FACT SHEET - EPA PROPOSES SOIL, SEDIMENT CLEANUP FOR CEDAR CREEK	922050	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	8	2.19 MB
05/08/2015	ANCHOR QEA - ENGINEERING EVALUATION/COST ANALYSIS REPORT - OPERABLE UNIT 2A	922182	STUART MESSUR(ANCHOR QEA)	SCOTT HANSEN(US ENVIRONMENTAL PROTECTION AGENCY)	161	12.47 MB
08/21/2014	ADMINISTRATIVE ORDER ON CONSENT & SETTLEMENT AGREEMENT FOR REMEDIAL DESIGN (SIGNED, WITH ATTACHED COVER MEMORANDUM) - V -W-14-C-013	461801	LAWRENCE KYTE(US ENVIRONMENTAL PROTECTION AGENCY)	RICHARD KARL(US ENVIRONMENTAL PROTECTION AGENCY)	31	2.2 MB
11/27/2012	REMEDIAL ACTION CONSENT DECREE FOR THE PLANT 2 OPERABLE UNIT AT THE CEDARVILLE DAMS (A/K/A CEDAR CREEK OU1 – PLANT 2) SUPERFUND SITE	919524			165	5.27 MB
10/09/2012	REMEDIAL ACTION CONSENT DECREE FOR PLANT 2 OU AT THE CEDARVILLE DAMS (A/K/A CEDAR CREEK OU1 - PLANT 2) (SIGNED) (ENTERED 10/09/12) - MERCURY MARINE	444328			47	345.31 KB
05/01/2012	ARCADIS - REMEDIAL INVESTIGATION REPORT	918908	(ARCADIS)		234	900.86 KB
05/01/2012	REMEDIAL INVESTIGATION REPORT	424304	(ARCADIS)	US EPA(US ENVIRONMENTAL PROTECTION AGENCY)	833	112.85 MB
02/01/2012	REMEDIAL DESIGN FOR MERCURY MARINE PLANT 2	424303	(ARCADIS)	US EPA(US ENVIRONMENTAL PROTECTION AGENCY)	546	19.43 MB
10/02/2010	ADMINISTRATIVE ORDER ON CONSENT FOR REMEDIAL INVESTIGATION (UNSIGNED, VERSION 1)	918903			34	114.6 KB
03/31/2008	RECORD OF DECISION (ROD) (SIGNED)	295662	RICHARD KARL(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	107	20.44 MB
03/04/2008	ADMINISTRATIVE SETTLEMENT AGREEMENT & ORDER ON CONSENT (AOC) FOR RI/FS (SIGNED) - V-W -08-C-892 - MERCURY MARINE	289382	LEVERETT NELSON(US ENVIRONMENTAL PROTECTION AGENCY)	RICHARD KARL(US ENVIRONMENTAL PROTECTION AGENCY)	67	3.89 MB
10/10/2007		290054			46	1.58 MB

Date	Title	DocID	Author/(Org)	Addressee/(Org)	Pages	Size
	TRANSCRIPT: U.S. EPA PUBLIC HEARING FOR PROPOSED CLEANUP PLAN		(BROWN & JONES REPORTING, INC.)	(US ENVIRONMENTAL PROTECTION AGENCY)		
10/01/2007	ALTERNATIVES DOCUMENT/FOCUSED FEASIBILITY STUDY REPORT	290055	NONE NONE(ARCADIS BBL)	(MARINE MERCURY)	64	1.25 MB
10/01/2007	ARCADIS - REMEDIAL INVESTIGATION REPORT, MERCURY MAIRINE - PLANT 2	290057	NONE NONE(ARCADIS BBL)	(US ENVIRONMENTAL PROTECTION AGENCY)	563	25.14 MB
10/01/2007	EPA FACT SHEET: EPA PROPOSES CLEANUP PLAN FOR FORMER CEDAR CREEK PLANT 2 SITE	290056	(US ENVIRONMENTAL PROTECTION AGENCY)	(PUBLIC)	8	707.17 KB
01/01/2005	BBL INC - PRELIMINARY SITE CHARACTERIZATION SUMMARY	255807	(BLASLAND BOUCK & LEE INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	173	24.45 MB
03/22/2004	FOTH & VAN DYKE - TECHNICAL MEMORANDUM - PRELIMINARY SITE CHARACTERIZATION SUMMARY	255811	(FOTH & VAN DYKE & ASSOCIATES INC)	SCOTT HANSEN(US ENVIRONMENTAL PROTECTION AGENCY)	80	6.87 MB
11/01/2003	BBL INC - REMEDIAL INVESTIGATION / FEASIBILITY STUDY FIELD SAMPLING PLAN	255809	(BLASLAND BOUCK & LEE INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	328	16.62 MB
10/01/2003	FOTH & VAN DYKE - QUALITY MANAGEMENT PLAN FOR THE RI FOR THE AMCAST CORP	238791	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	69	2.45 MB
09/01/2003	FOTH & VAN DYKE - QAPP FOR RI FOR THE AMCAST CORP	238790	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	586	26.97 MB
09/01/2003	FOTH & VAN DYKE - FINAL FIELD SAMPLING PLAN FOR AMCAST INDUSTRIAL CORP	238789	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	99	5.96 MB
07/01/2003	FOTH & VAN DYKE - FIELD SAMPLING PLAN	255812	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	85	6.89 MB
07/01/2003	BBL INC - REMEDIAL INVESTIGATION / FEASIBILITY STUDY WORK PLAN	255808	(BLASLAND BOUCK & LEE INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	72	10.32 MB
06/01/2003	FOTH & VAN DYKE - REMEDIAL INVESTIGATION WORK PLAN FOR AMCAST INDUSTRIAL CORP	238788	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	541	29.73 MB
02/28/2003	ADMINISTRATIVE ORDER ON CONSENT (AOC) (SIGNED) - V-W-03-C-737 - CEDAR CREEK	173286	WILLIAM MUNO(US ENVIRONMENTAL PROTECTION AGENCY)	(AMCAST INDUSTRIAL CORP)	54	2.67 MB
12/02/2002	WDNR MEMO RE: DOCUMENTS FOR ADMINISTRATIVE RECORD (09/03/92 PRELIMINARY ASSESSMENT; 04/94 TECHNICAL MEMORANDUM FOR STORM SEWER CLEANING & SEALING PLAN)	230842	MARGARET BRUNETTE(WI DEPT OF NATURAL RESOURCES)	SCOTT HANSEN(US ENVIRONMENTAL PROTECTION AGENCY)	82	2.98 MB
09/27/2002	ADMINISTRATIVE ORDER ON CONSENT (AOC) (SIGNED) - V-W-02-C-715 - CEDAR CREEK	167658	WILLIAM MUNO(US ENVIRONMENTAL PROTECTION AGENCY)		71	3.14 MB
07/01/2002	FOTH & VAN DYKE - HEALTH & SAFETY PLAN FOR REMEDIAL INVESTIGATION FOR AMCAST INDUSTRIAL CORPORATION SITE	238787	(FOTH & VAN DYKE & ASSOCIATES INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	52	4.28 MB
09/01/2001	BUILDING INVESTIGATIONS DOCUMENTATION REPORT	290053	(BLASLAND BOUCK & LEE INC)	(US ENVIRONMENTAL PROTECTION AGENCY)	56	7.71 MB
06/13/2000	BBL - SUBSURFACE INVESTIGATIONS DOCUMENTATION REPORT - MERCURY MARINE PLANT 2	230840	(BLASLAND BOUCK & LEE INC);TOM BAUMGARTNER (MERCURY - MARINE)	TONY MARTIG(US ENVIRONMENTAL PROTECTION AGENCY)	93	12.26 MB
12/01/1998	BBL - SEDIMENT CHARACTERIZATION REPORT	230839	(BLASLAND BOUCK & LEE INC)		61	10.97 MB
01/29/1998	MERCURY MARINE LETTER RE: STATUS REPORT OF CLEANUP ACTIVITIES AT PLANT 2	230837	ALAN HAASE(MERCURY - MARINE)	MARGARET GRAEFE(WI DEPT OF NATURAL RESOURCES)	3	92.74 KB
09/04/1997	BAIRD & ASSOCIATES - (FINAL) MILWAUKEE RIVER PCB MASS BALANCE PROJECT REPORT	230844	(BAIRD & ASSOCIATES)	(WI DEPT OF NATURAL RESOURCES)	269	18.68 MB
06/18/1993	WDNR - (FINAL DRAFT) CEDAR CREEK PCB MASS BALANCE	230836	STEVE WESTENBROEK(WI DEPT OF NATURAL RESOURCES)	MIKE SCOVILLE(BLASLAND BOUCK & LEE INC)	142	11.91 MB
05/01/1992	STRAND ASSOCIATES - (FINAL) PCB INVESTIGATION - VOL 1	230846	(STRAND ASSOCIATES INC)	(WI DEPT OF NATURAL RESOURCES)	85	3.97 MB
05/01/1992	STRAND ASSOCIATES - (FINAL) PCB INVESTIGATION - VOL 2	230847	(STRAND ASSOCIATES INC)	(WI DEPT OF NATURAL RESOURCES)	337	22.42 MB
01/01/1986	WDNR - DISTRIBUTION OF PCB IN CEDAR CREEK SEDIMENTS	230828	ROBERT WAKEMAN(WI DEPT OF NATURAL RESOURCES);WILLIAM WAWARZYN(WI DEPT OF NATURAL RESOURCES)		45	1.5 MB

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Last updated on Tuesday, January 05, 2016

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

AUG 07 2014

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: Engineering Evaluation/Cost Analysis Approval Memorandum for a Proposed Non-Time-Critical Removal Action at the Cedar Creek Site, Cedarburg, WI

FROM: Scott Hansen, Remedial Project Manager SEH 8/7/14

THRU: Rebecca Frey, Chief
Remedial Response Section 3

Joan Tanaka, Chief
Remedial Response Branch 1

TO: Richard C. Karl, Director
Superfund Division

The purpose of this memorandum is to request approval to proceed with an Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action (NTCRA) at the Cedar Creek Site in Cedarburg, WI (the Site). The purpose of the NTCRA is to address PCB-contaminated sediment from two upstream impoundments of Cedar Creek. The U.S. Environmental Protection Agency (EPA) expects to reach a settlement agreement with Mercury Marine (Mercury) that will require Mercury to prepare the EE/CA. EPA will then select a removal alternative and pursue a settlement agreement with Mercury to design and implement the action. EPA has consulted, and will continue to consult, with the Wisconsin Department of Natural Resources (WDNR).

I. Site Background

Cedar Creek and its watershed are located in the Milwaukee River basin in southeastern Wisconsin. Cedar Creek starts at the outlet of Little Cedar Lake in Washington County and flows south by southeast through Washington and Ozaukee counties for approximately 31.5 miles before its confluence with the Milwaukee River, downstream of the city of Cedarburg. In the Cedarburg area five impoundments existed on Cedar Creek. They are (from upstream to downstream) Cedarburg, Ruck, Columbia, Wire and Nail, and Hamilton Ponds. Cedarburg Pond is upstream of the Site. In April 1996, following heavy rains and associated high creek flow, the Hamilton Pond dam failed and was removed. The attached figures show the various areas described above, including the location of the former Hamilton Pond.

The portion of the creek that includes the Ruck Pond Raceway and Columbia Pond is approximately one mile in length. Columbia Pond is characterized as a wide, shallow impoundment covering approximately 14.8 acres, with a maximum width of 400 feet and a maximum observed water depth of 7.5 feet. The banks on the southern side of Columbia Pond are relatively steep and wooded. On the northern side, the pond is less steep and appears to be more developed. Just upstream from the pond, the Ruck Pond Raceway (a diversion conduit/channel) joins the main channel of Cedar Creek. The raceway can serve to divert flow from Ruck Pond, and has a maximum observed water depth of 2 feet and an average width of 12 feet. Land use along Columbia Pond and the upstream raceway include some commercial facilities, but primarily private residences, together with Adlai Horn and Cedar Creek City Parks.

Wire and Nail Pond is an elongated and narrow impoundment, comprised of two distinct basins. The uppermost basin is shallower and wider than the lower basin. The entire pond is approximately 3 acres in size, approximately 0.3 miles long, and has a maximum observed water depth of 14 feet. Pond widths range from 40 to 100 feet. There is a partial control structure associated with the dam raceway. Based upon a review of aerial photographs and topographic mapping, the banks along Wire and Nail Pond appear to be relatively steep in some areas. Land use to the north of the pond appears to be entirely commercial while the south is wooded and undeveloped.

Below Wire and Nail Pond is a 1.6-mile-long portion of free-flowing stream that extends down to the former pool (i.e. the former Hamilton Pond) that was formed by the Hamilton dam. This reach of stream is braided in some areas, has a relatively wider flood plain than the upstream areas and the creek bed has a relatively steep gradient. A portion of the creek in this braided area splits into two separate channels and then rejoins downstream to form a single channel. Land use includes residential properties along the east bank, with the west bank being undeveloped and wooded in many places.

Below the former Hamilton Pond is another free-flowing stretch that extends from the Green Bay Road Bridge down to the confluence with the Milwaukee River. This stretch is approximately one and one-third mile in length. It is also braided with a relatively flat and wider flood plain. A portion of the creek splits into two channels for approximately one-third mile, before reconnecting to a single channel downstream. Land use in this area includes a mix of residential parcels and undeveloped, wooded areas.

The main constituents of concern at the Site are polychlorinated biphenyls (PCBs). During the early 1980s, the WDNR detected PCBs in Hamilton Pond sediment. This prompted additional studies that led to the discovery of PCBs in sediment of three other impoundments on Cedar Creek – namely, Ruck, Columbia, and Wire and Nail Ponds. The Site has not been listed on the NPL but is being addressed using the Superfund Alternative Approach.

Under a State-lead project, Mercury performed a sediment removal action in Ruck Pond, the uppermost impoundment of Cedar Creek with PCB-contaminated sediment, in 1994. In 2000, Mercury also performed a soil removal action along the Former Hamilton Pond.

In 2002, EPA took the lead on the project. Following discussions between Mercury and EPA, Mercury signed an Administrative Order on Consent (AOC) in September 2002 to perform a remedial investigation/feasibility study (RI/FS) for the portion of Cedar Creek from just below the Ruck Pond dam to the confluence of the creek with the Milwaukee River, as well as for Mercury's Plant 2 property. In March 2008, the AOC with Mercury was revised due to the Amcast bankruptcy. EPA decided to split the Cedar Creek project into two operable units, the Plant 2 property and Cedar Creek. EPA signed a Record of Decision (ROD) for Plant 2 in March 2008. Mercury signed an AOC for the Plant 2 remedial design in September 2008, and a consent decree for remedial action was entered in November 2012. The Plant 2 remedial action field work was complete in 2013. As for the creek operable unit, EPA approved the RI Report in May 2012 and Mercury was developing the FS when the parties began to discuss opportunities to accelerate work in the upstream portions of the creek while further evaluation of downstream areas is conducted. Based on the sampling conducted during the RI, Columbia Pond and Wire and Nail Pond were found to contain the highest PCB concentrations at the Site.

It has been a central feature of EPA's Superfund program guidance to integrate the removal and remedial programs in order to achieve the greatest human health and environmental protection in the most efficient fashion. To this end, Superfund decision makers have been urged to broadly use the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal authority to achieve timely and protective results. However, due to process and statutory differences between the requirements applicable to removal actions and remedial actions, the determination of which program is most applicable for a site is made by EPA on a case-by-case basis, considering the following site-specific factors (OSWER 9360.0-40P):

- Whether there is an actual or potential threat to human health or the environment from a release or threatened release of a hazardous substance, pollutant, or contaminant;
- The time-sensitivity of the response; and
- The complexity and comprehensiveness of the likely action(s).

Based on a review of EPA's guidance, the National Contingency Plan (NCP), and conditions at the Site, and upon approval of this EE/CA Approval Memorandum, EPA, in consultation with WNDR, will direct Mercury to develop an EE/CA to achieve acceptable levels of human health and ecological risks at the upstream portions of the creek (i.e., Columbia Pond and Wire and Nail Pond). EPA will then select a response action which will be implemented by Mercury as a NTCRA.

II. Threat to Public Health, Welfare, or the Environment

In order for EPA to make a determination that a removal action is warranted, there must be an actual or a potential unacceptable risk to human health or the environment from the release or potential release of hazardous substances, pollutants or contaminants. EPA will formally document this determination in the Action Memorandum for the NTCRA (which will be issued after the EE/CA is completed and presented for public comment).

Though several actions were previously taken to eliminate PCB-contaminated sediment from the Site, sediment sample results indicate elevated levels of PCBs (greater than 50 ppm) still exist in the sediment and ecological receptors (e.g., fish). Based on the RI risk assessment, unacceptable risk exists in fish tissue and sediment. The primary risk driver is consumption of PCB-contaminated fish. If no action is taken to address the sediments in the upstream portions of the creek, unacceptable risks to human and ecological receptors will continue, and the sediment with high PCB concentrations will continue to migrate downstream at a slow but steady rate, increasing the scope and cost of downstream remediation needed in the future.

III. Factors for Determining Appropriateness of a Removal Action

Section 300.415(b)(2) of the NCP provides factors for determining the appropriateness of a removal action. The factor most applicable to current conditions at the Site is 300.415(b)(2)(i), *"Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants,"* because the contaminated sediment has led to actual human and ecological exposures to PCBs at the Site.

IV. Determining the Appropriateness of the NTCRA Process

In accordance with § 300.415(b)(4) of the NCP, EPA's implementing regulations for CERCLA, EPA has determined that a planning period of at least six months exists before on-site activities could be initiated. This is based on an analysis of the time-sensitivity and complexity of the potential response actions for the sediment in the upstream areas of the creek that will be addressed by the EE/CA and NTCRA.

Any response actions to address the sediment in the upstream areas of the creek through a NTCRA are anticipated to be consistent with the overall remedial action for the Site. However, failure to address the sediment in the upstream areas would increase the scope and cost of the final remedies selected for the downstream portions of the Site. Failure to address the upstream portions of the Site would also result in continued unacceptable risks to human health and the environment. Based on the above considerations, it is appropriate to conduct an EE/CA for a NTCRA.

V. Statutory Basis for Action

The information presented in this memorandum and the Administrative Record indicates that actual or threatened releases of hazardous substances, pollutants, or contaminants from the Site may present an imminent and substantial endangerment to public health or the environment.

VI. Enforcement/Proposed Actions/Cost Estimates

EPA expects to enter into an AOC with Mercury to complete an EE/CA for the upstream portions of the creek, as well as a subsequent AOC that will require Mercury to design and implement the NTCRA response action selected by EPA, in consultation with WDNR.

With approval of this memorandum, an EE/CA will be developed and finalized, and the information generated will be used to establish the scope of the proposed actions and cost estimates. EPA cannot estimate the cost of the potential NTCRA options until the scope of work is determined by the EE/CA. As noted earlier, EPA expects Mercury to conduct and finance both the EE/CA and the subsequent NTCRA.

EPA's guidance (OSWER 9360.0-40P) states: *"For non-time-critical removal actions where the cost of the selected removal action could exceed $6 million, the Region must consult with the Director of OERR prior to signing the EE/CA Approval Memorandum (or its equivalent). This consultation requirement applies both to fund-lead actions and those actions to be performed by PRPs."*

If EPA finds, during the development of the EE/CA, that the cost of the NTCRA could exceed six million dollars, consultation will occur immediately, but at this time it does not appear likely that costs will approach this amount.

VII. Public Involvement

EPA expects to issue an EE/CA for public comment in late 2014 or early 2015, along with a concurrent fact sheet that notifies the public of EPA's preferred remedy and provides an opportunity for public involvement.

VIII. Environmental Justice Analysis

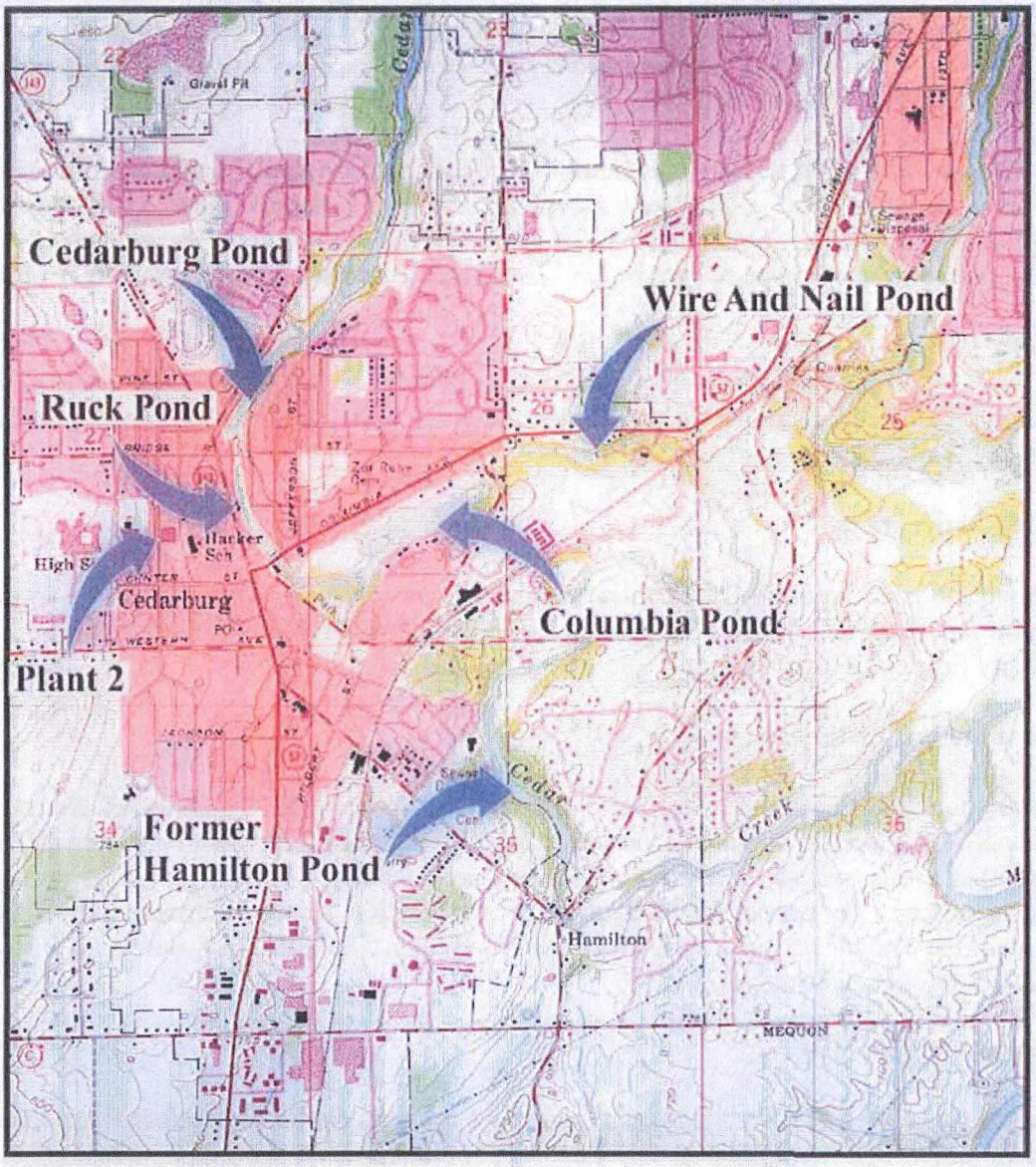
To identify potential Environmental Justice (EJ) areas of concern, EPA uses the EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern. As part of the preparation of any NTCRA Action Memorandum, EPA will determine if the Site meets the criteria identified in "Region 5 Interim Environmental Justice (EJ) Screening Approach, December 2011."

IX. Approval/Disapproval

The conditions at the Site meet the NCP criteria for a removal action. Therefore, I am requesting approval to proceed with an EE/CA. Your approval or disapproval should be indicated below.

Approve: Joan Garbo for RK Date: August 8, 2014
Director, Superfund Division

Disapprove: _____ Date: _____
Director, Superfund Division



REFERENCE: Base Map Source: USGS 7.5 Min. Topo. Quad., Cedarburg, Wis. (1959, Photorevised 1971 and 1976).

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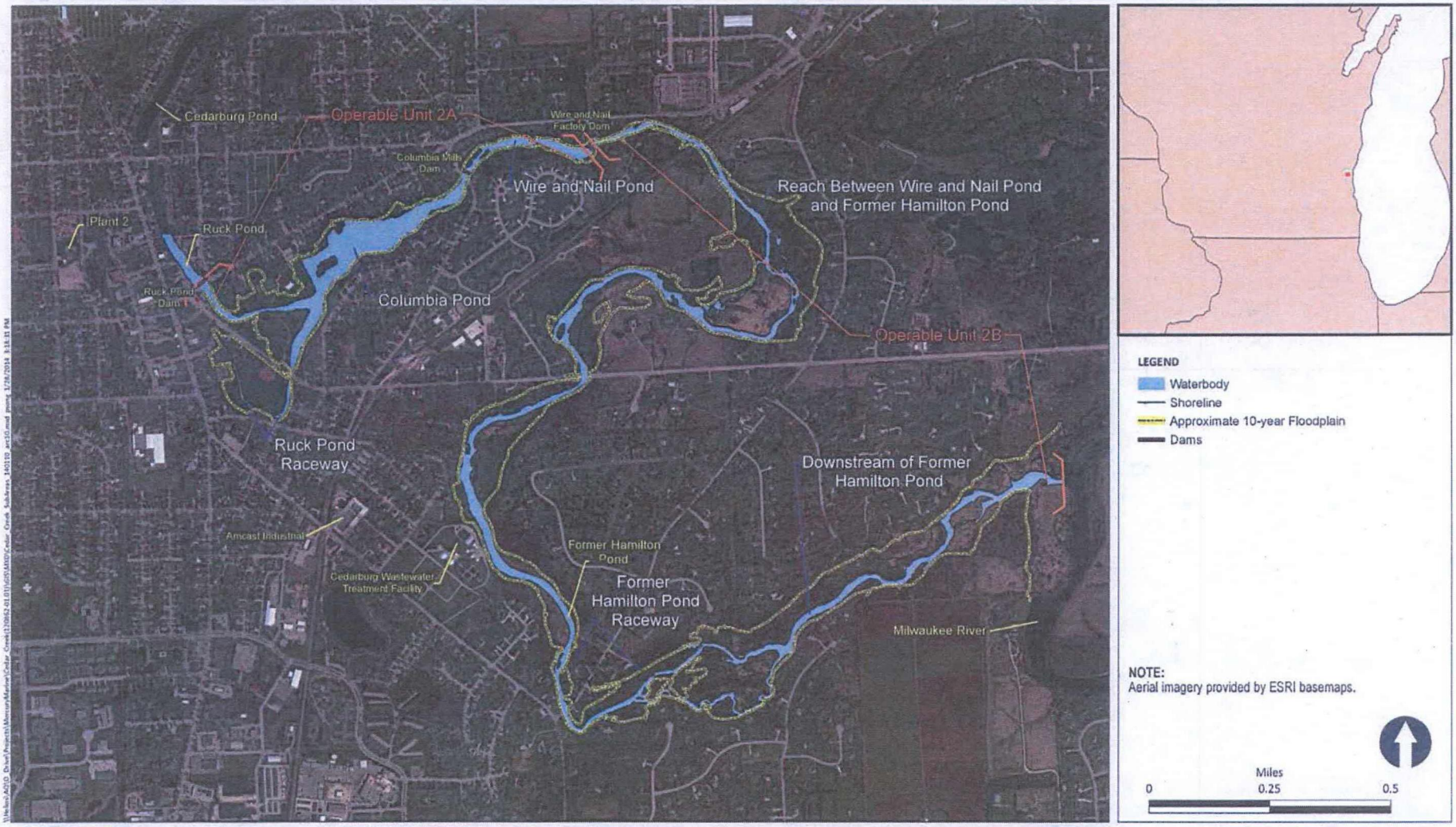
ANCHOR QEA

Figure 1-1
Site Location Map
Draft Engineering Evaluation/Cost Analysis Report
Cedar Creek Site – Operable Unit 2A



ANCHOR QEA

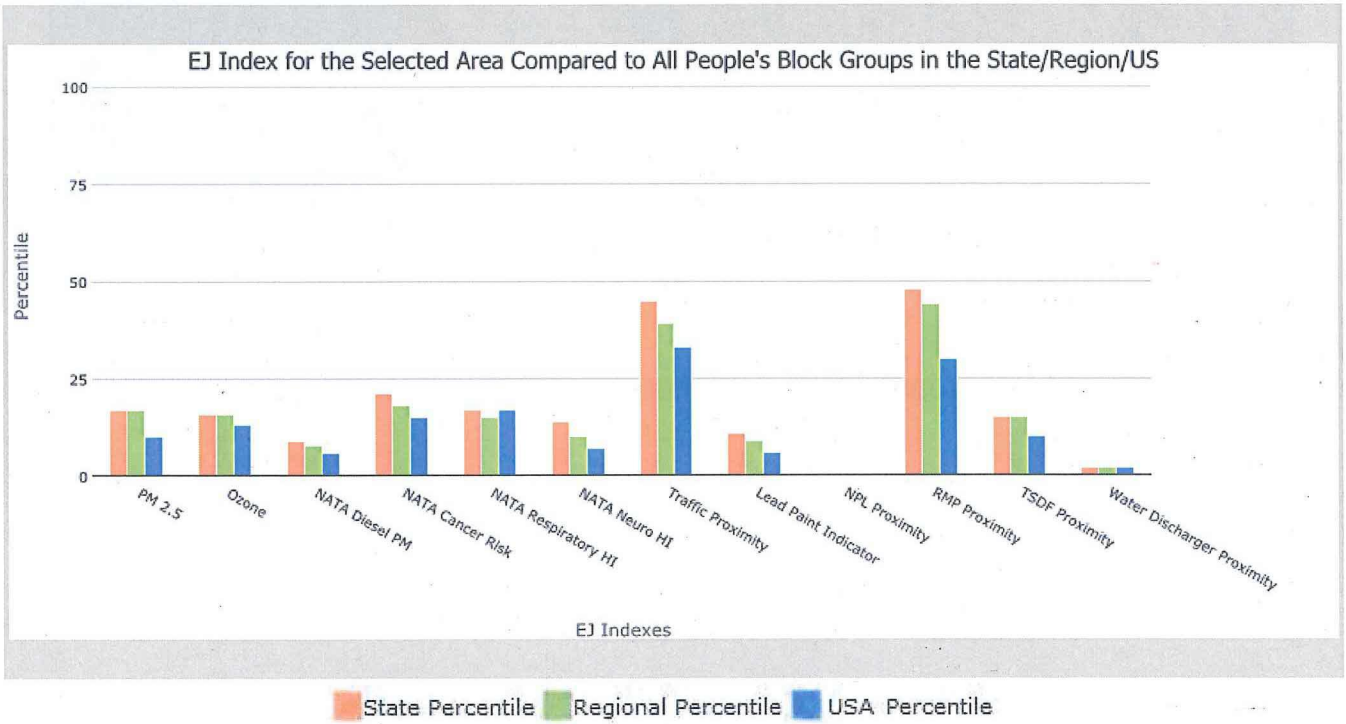
Figure 1-2
Site Reaches/Areas
Draft Engineering Evaluation/Cost Analysis Report
Cedar Creek Site - Operable Unit 2A

EJSCREEN Report

for 1 mile Ring Centered at 43.299044,-87.988530, WISCONSIN, EPA Region 5

Approximate Population: 9313

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	17	17	10
EJ Index for Ozone	16	16	13
EJ Index for NATA Diesel PM	9	8	6
EJ Index for NATA Air Toxics Cancer Risk	21	18	15
EJ Index for NATA Respiratory Hazard Index	17	15	17
EJ Index for NATA Neurological Hazard Index	14	10	7
EJ Index for Traffic Proximity and Volume	45	39	33
EJ Index for Lead Paint Indicator	11	9	6
EJ Index for Proximity to NPL sites	0	0	0
EJ Index for Proximity to RMP sites	48	44	30
EJ Index for Proximity to TSDFs	15	15	10
EJ Index for Proximity to Major Direct Dischargers	2	2	2

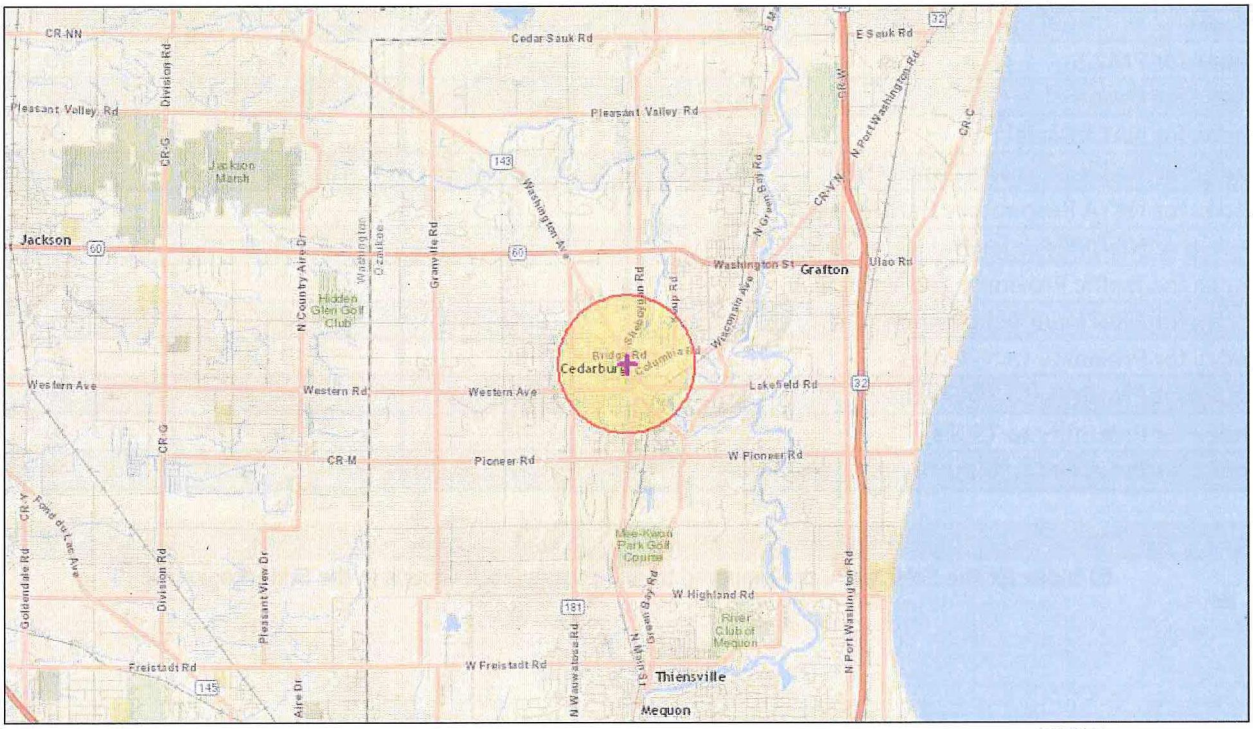


This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

EJSCREEN Report

for 1 mile Ring Centered at 43.299044,-87.988530, WISCONSIN, EPA Region 5

Approximate Population: 9313



February 17, 2016

Digitized Point

Buffer Area

1:144,448

0 1.25 2.5 5 mi

0 2 4 8 km

Sources: Esri, HERE, DeLorme, USGS, Intermap, Increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

EJSCREEN Report

for 1 mile Ring Centered at 43.299044,-87.988530, WISCONSIN, EPA Region 5

Approximate Population: 9313

Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in µg/m^3)	9.96	9.82	47	10.8	20	9.78	51
Ozone (ppb)	42.6	41.2	72	44.4	29	46.1	26
NATA Diesel PM (µg/m^3)*	0.835	0.724	68	0.712	60-70th	0.824	60-70th
NATA Cancer Risk (lifetime risk per million)*	37	43	44	42	<50th	49	<50th
NATA Respiratory Hazard Index*	1.4	1.6	54	1.5	50-60th	2.3	<50th
NATA Neurological Hazard Index*	0.065	0.072	64	0.067	60-70th	0.063	70-80th
Traffic Proximity and Volume (daily traffic count/distance to road)	8.7	82	25	69	25	110	20
Lead Paint Indicator (% Pre-1960 Housing)	0.36	0.39	53	0.4	52	0.3	64
NPL Proximity (site count/km distance)	0.67	0.089	98	0.086	98	0.096	98
RMP Proximity (facility count/km distance)	0.059	0.36	20	0.33	12	0.31	17
TSDF Proximity (facility count/km distance)	0.035	0.036	65	0.051	63	0.054	63
Water Discharger Proximity (facility count/km distance)	0.68	0.21	94	0.23	93	0.25	92
Demographic Indicators							
Demographic Index	9%	23%	16	28%	12	35%	8
Minority Population	5%	17%	36	24%	28	36%	15
Low Income Population	14%	30%	19	32%	19	34%	19
Linguistically Isolated Population	0%	2%	61	2%	59	5%	45
Population With Less Than High School Education	3%	10%	16	12%	15	14%	14
Population Under 5 years of age	6%	6%	49	6%	49	7%	47
Population over 64 years of age	17%	14%	70	13%	71	13%	73

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: http://www.epa.gov/ttn/atw/natamain/index.html.

For additional information, see: www.epa.gov/environmentaljustice