Sheboygan River Area of Concern

Beneficial Use Impairment Removal Recommendations

[Restrictions on Dredging Activities]

Submitted to

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September 2014

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Purpose

The purpose of this document is to recommend removal of the Restrictions on Dredging Activities Beneficial Use Impairment (BUI) in the Sheboygan River Area of Concern (AOC). This document provides information supporting the recommendation and documents the actions completed to meet the BUI removal target.

Background

In 1985, the International Joint Commission designated the lower 14 miles of the Sheboygan River from the Sheboygan Falls Dam to the harbor of Lake Michigan as an Area of Concern (AOC) due to pollutants including polychlorinated biphenyls (PCBs) polynuclear aromatic hydrocarbons (PAHs), heavy metals, phosphorus, nitrogen, suspended solids, and fecal coliform bacteria. The primary sources of pollution were municipal treatment plants, industries, and agricultural and urban runoff.

A 1989 Stage I Remedial Action Plan (WDNR, 1989) identified the following nine beneficial use impairments (BUIs) in the AOC:

- Restrictions on fish and wildlife consumption
- Eutrophication or undesirable algae
- Degradation of fish and wildlife populations
- Fish tumors or other deformities
- Bird or animal deformities or reproduction problems
- Degradation of benthos
- Degradation of phytoplankton and zooplankton populations
- Restriction on dredging activities
- Loss of fish and wildlife habitat

Rationale for BUI Listing

Picture 1. Industry located along Sheboygan River in 1940-50s. (Photo courtesy of Sheboygan County Historical Research Center, Sheboygan Falls)

Throughout the 20th century, various municipalities and industries (Picture 1) developed and prospered along the Sheboygan River. River discharges of waste disposal were considered acceptable and the increase of municipal and industrial effluent contributed to the impairment of the river's natural resources. Historical sediment sampling showed high levels of contaminants and provided the rationale for BUI listing in the 1989 RAP (WNDR, 1989) stating that the listing was a consequence of the introduction of pollutants:

> "Primary sources of pollution are those which manufacture, use, or produce the materials which subsequently become pollutants. Sources of pollution include municipal treatment plants, industries, and agricultural and urban runoff."
>
> "Polychlorinated biphenyls (PCBs) contained in the sediment are the most widespread and environmentally significant contaminant in the AOC. Their presence is primarily attributable to industrial sources."

Primary sources of contamination were spread out across the entire 14 mile length of the AOC (Figure 1). Flow and sediment accumulation dynamics also change within the different reaches of the river. For this reason, the location and concentrations of contaminants varied in the river segments.

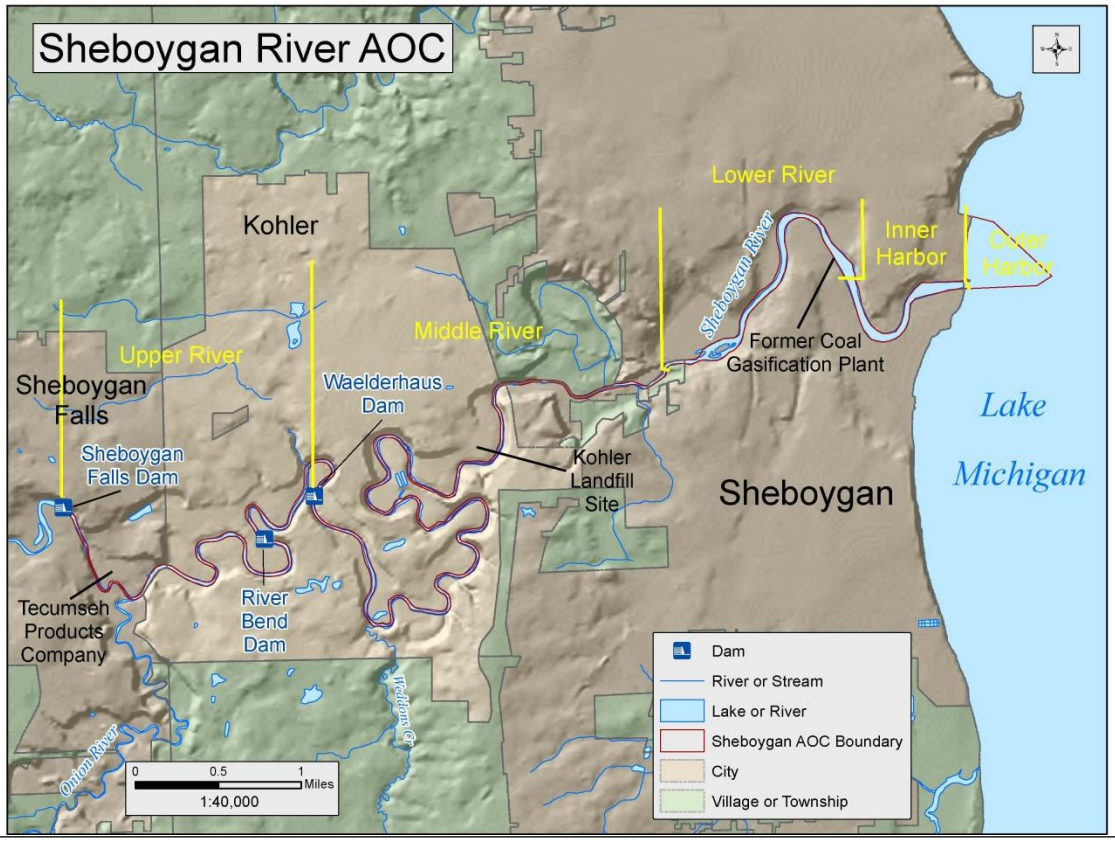

Figure 1. Landmarks located along river segments of the Sheboygan Area of Concern. (WDNR Map)

Polychlorinated biphenyls (PCBs) are linked to many adverse health effects, including cancer, and are persistent in the environment. The primary source of PCB contamination in the river sediment is considered to originate from Tecumseh Products Company. The former manufacturing plant was located on the river (Figure 1) in Sheboygan Falls. The firm made die cast aluminum parts (Picture 2) and the hydraulic fluid used in the manufacturing processes contained PCBs. Prior to its ban, PCB contaminated material was discharged on the plant site.

Picture 2. Operator and die-casting machine at Tecumseh Products Company in 1958. (Photo courtesy of Sheboygan County Historical Research Center, Sheboygan Falls)

Polynuclear aromatic hydrocarbons (PAHs) are also associated with harmful health effects and can be present in asphalt roads, roofing tars, and grilled food. Waste from a former coal gasification plant known as Camp Marina (Picture 3) was the primary source of PAHs present in the AOC. The plant was located on the north bank of the lower river (Figure 1) at 732 N. Water Street in Sheboygan and was owned and operated by Wisconsin Public Service Corp from 1872 until 1929. The plant provided fuel and electricity from coal and included a process called coal gasification. The by-products from the process, known as coal tar, made their way into the groundwater and the river. Much of this waste included hazardous oily tars that are composed primarily of PAHs. The Camp Marina plant was dismantled in the 1950s and 60s.

Heavy metals were associated with waste from the Kohler Company Landfill located in the middle river (Figure 1) in Sheboygan County. The landfill used 40 acres of land between 1950 and the mid-1970s primarily for disposal of foundry and manufacturing wastes produced by Kohler's manufacturing facilities. Certain waste streams disposed of in the landfill, such as chrome plating wastes and enamel powder, contained heavy metals. Consequently, eight metals, phenols, and PAHs, were present in groundwater and may have found their way into the Sheboygan River over the years of operation.

Due to the presence of contaminated sediments from various sources throughout the AOC (Picture 4), dredging in the lower Sheboygan River and Harbor were restricted. Although the Harbor is a U.S. Army Corps of Engineers (U.S. ACE) federally authorized navigational channel from the harbor to just downstream of Pennsylvania Avenue, it was not dredged for navigation purposes since 1969 because of contaminated sediment disposal concerns.

Sheboygan River PCBs examined

Cancer-causing chemicals buried in sediment may make fish unsafe

By Eric Litke
Sheboygan Press staff

Some scientists are worried that a dangerous chemical in the Sheboygan River could potentially make fish unsafe to eat and harm area residents.

Scientists will be gathering data for the next two months to determine if the polychlorinated biphenyls – or PCBs – buried in the sediment of the river are coming to the surface and being swept into Lake Michigan. This research will complement data gathered over the last four years to determine the amount of PCBs within Sheboygan Harbor.

The highest level of PCBs in the lower Sheboygan River was found 4.5 feet below the river bottom between the Pennsylvania Avenue and Eighth Street bridges, where there were 161 parts per million.

Anything above one part per million of the known carcinogen is considered dangerous.

"That's where the potential hazard is," said researcher Erik Christensen, professor of civil engineering and mechanics at the University of Wisconsin-Milwaukee. "Even though it's down there in the depths, there might be some chance of erosion if you have a big storm."

But Richard Nagle, assistant regional counsel for the Environmental Protection Agency, is not worried.

"Risk is concentration and exposure – if you don't have exposure, then there's no risk," Nagle said. "The only thing that's moving around (on the river bottom) is the top couple inches, maybe the top foot."

He said the sediment concentrations haven't substantially shifted since the EPA started examining the area.

"We've got 20 years – in some cases 30 years – worth of data, and the sed-

See PCBs/A2

MEASURING PCBs

Researchers have submerged a Bottom Erosion and Deposition System at the breakwater beyond the mouth of the Sheboygan River.

- The stainless-steel assembly weighs 1,200 pounds and is 5 feet high, 4 feet wide and 7 feet long.
- It will remain in the water until September, to determine if PCB-contaminated sediment is flushed into Lake Michigan.
- The BEDS assembly includes six instruments to measure sediment shifts on the lake bottom, how quickly sediment settles and how concentrated fine and coarse sediments are, as well as how the sediment changes.

INSIDE

Cleanup already under way at former Tecumseh die-casting plant in Sheboygan Falls/A2

THE R/V Neeskay, operated by the Great Lakes WATER Institute of UW-Milwaukee, docks in the Sheboygan harbor Tuesday. Chin Wu photo

Picture 4. Newspaper article addressing contaminants in sediment throughout the Sheboygan River AOC (Sheboygan Press, July 2005)

BUI Removal Objectives

In addition to defining the problems and sources of problem with the Sheboygan River AOC, the 1989 RAP (WDNR, 1989) also developed long term goals for achieving beneficial uses in the AOC. The goal that relates to contamination was to "protect the ecosystem (including humans, wildlife, fish, and other organisms) from the adverse effects (on the reproduction, survival, and health of individuals, and the integrity of interspecies relationships) of toxic substances". The 1995 RAP update document (WDNR, 1995) then provided detailed objectives to achieve each goal. Objectives listed for this goal included significantly reducing inputs of toxic substances from all point and nonpoint sources, improving and maintaining sediment quality for organisms and elimination of sediment disposal restrictions, and increasing public understanding of sources of pollution and prevention.

Final Delisting Target

The process of delisting AOCs is defined by policies and guidance and is carried out by states and provinces for each AOC. In 2001, the U.S. EPA published a specific set of guidance for delisting targets that addressed each beneficial use impairment.

The development of delisting targets is essential to the development of an overall strategy for restoring the AOC. Therefore, in 2008, the Wisconsin DNR, with input from local partners, drafted Delisting Targets for BUI removal on the Sheboygan River AOC. Before finalizing and submitting the targets, a public input session was conducted to share information and discuss the targets and future remediation. As stated in the 2008 Delisting Targets for the Sheboygan River Area of Concern: Final Report, removal of the Restrictions on Dredging BUI can occur when:

- All remediation actions for contaminated sediments are completed and monitored according to the approved remediation plans; and
- A dredging alternatives plan is developed that includes an evaluation of the following:
    - Restrictions that must remain in place to protect human health and the environment
    - Restrictions that must remain in place due to Superfund or RCRA requirements that are based upon state and federal law
    - Priority areas for navigational use
    - Priority areas where dredging is needed for other purposes (i.e. utilities)
    - Costs associated with removing dredging restrictions in priority areas
    - Funding available to address removing dredging restrictions in priority areas

Additionally, the document called for the following as actions:

- Determine the degree of contamination in the sediment and track trends in the level of contamination as remediation efforts proceed throughout the AOC.
- To the extent feasible, planning and implementation steps to meet this delisting target should be coordinated with Superfund remediation planning and implementation efforts.

Summary of Remedial Actions

Since designation as an AOC, much progress has occurred to address pollutant sources. Remediation, initially led by Superfund, has occurred over several time periods within the last 30 years. Three Superfund projects are present within the AOC, including the former Camp Marina site in the lower river (U.S. EPA, 2013), the Kohler Company Landfill in the middle river (U.S. EPA,

2014), and the Sheboygan River and Harbor Superfund encompassing the 14 miles of the Sheboygan River AOC (U.S. EPA, 2014).

The following is a summary of events, Superfund projects, and remediation efforts on the Sheboygan River AOC:

- 1976 DNR discovers PCB's in river
- 1984 Kohler Company Landfill listed as Superfund site
- 1985 Sheboygan River designated as an AOC
- 1986 Sheboygan River and Harbor listed as Superfund site
- 1986 Camp Marina site listed as Superfund site
- 1995-1998 Superfund remediation of Kohler Company Landfill, including treatment of groundwater and leachate
- 2002 Superfund remediation of upland portion of Camp Marina
- 2004 Superfund Phase I of remediation in the upper river of soils, groundwater, and adjoining riverbank soils of Sheboygan River and Harbor
- 2006-2007 Superfund Phase II of remediation in the upper river of PCB contaminated sediment of the Sheboygan River and Harbor
- 2009 Superfund Characterization and sediment sampling in the lower river of the Sheboygan River and Harbor
- 2009 Sheboygan River Dredge Workgroup forms
- 2011 Superfund remediation of sediment and shoreline at Camp Marina
- 2011-2012 Superfund remediation of lower river of Sheboygan River and Harbor
- 2013 Great Lakes Legacy Dredging Project completed
- 2013 Strategic Navigational Dredging Project completed

In 2009, a dredging workgroup was formed to evaluate dredging needs and assess opportunities for removing contamination and alleviating dredging restrictions in the lower Sheboygan River and inner harbor. The workgroup was made up of local, state and federal officials, local stakeholders, and the Superfund project Responsible Parties (RPs). The workgroup pursued dredging of contaminated sediments beyond what was required of the Superfund RPs. The dredging required by the Superfund program did not meet the community's needs for environmental restoration or navigation. A Great Lakes Legacy Act and a Strategic Navigational Dredging project supported through USEPA, Army Corps of Engineers, and DNR were deemed necessary by the workgroup stakeholders in order to sufficiently address the delisting targets.

Efforts to improve the Sheboygan River accelerated in 2010 when the U.S. EPA selected the Sheboygan River AOC as a priority AOC focused on BUI removal and short-term delisting. Careful planning throughout 2011 led to a great deal of activity to remove contaminated sediments and enhance navigation. Through four dredging projects that occurred in 2011-2012, over 400,000 cubic yards of contaminated sediment were removed from the lower river and inner harbor (Figure 2).

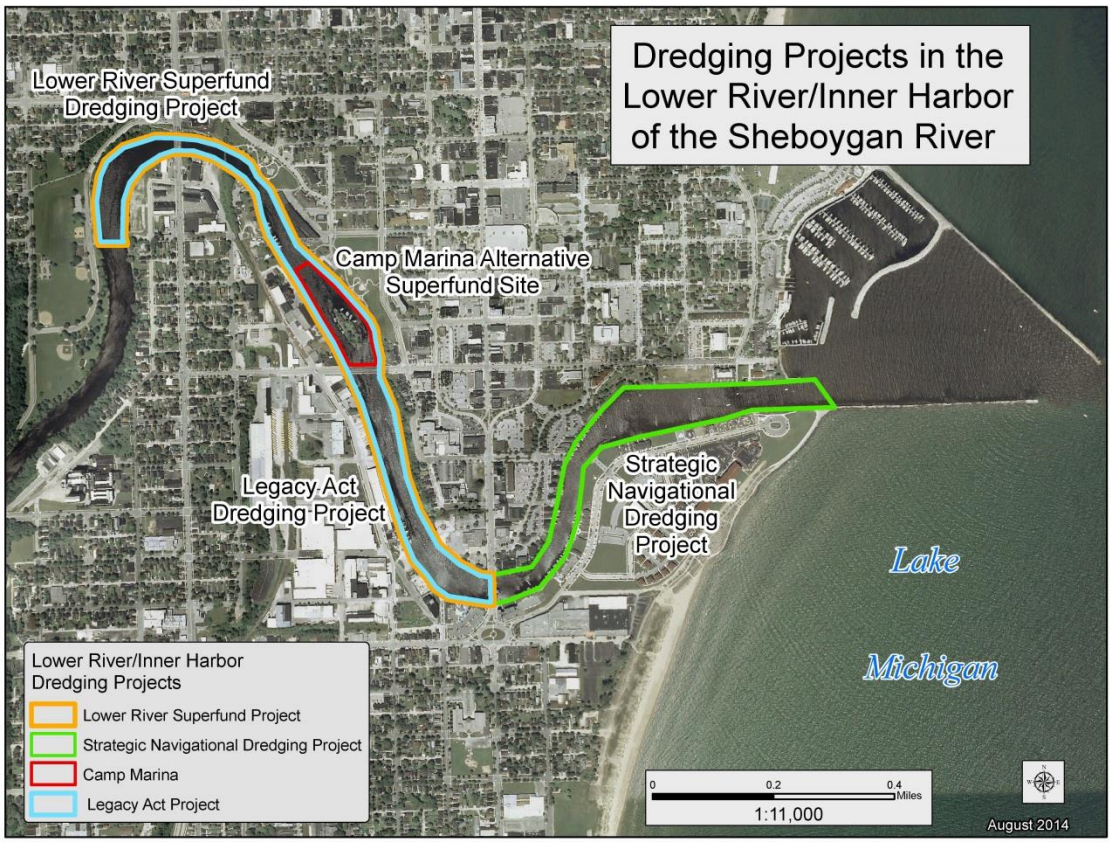

Figure 2. Sediment remediation projects during 2011-2012 along parts of the lower Sheboygan River and inner harbor. (WDNR map)

CAMP MARINA ALTERNATIVE SUPERFUND SITE

The Wisconsin Public Service Corp. Camp Marina Superfund site (former coal gasification plant) was split into two separate actions, the upland portion and river portion. While the upland portion of the site was cleaned up in 2002, the river section was dredged in 2011 removing approximately

23,000 cubic yards of PAH-contaminated sediment (Picture 5) from the Camp Marina site (Figure 2). This was considered a Superfund Alternative or emergency action due to the lower river remediation of the Sheboygan River and Harbor Superfund (labeled "Lower River Superfund Dredging Project" in Figure 2). This project to clean up PCB contamination would expose PAH contamination from Camp Marina during dredging operations, so the two projects were coordinated to address these areas at the same time.

Picture 5. Dredging contaminated sediment at Camp Marina. (Photo taken by Stacy Hron, WDNR)

SHEBOYGAN RIVER AND HARBOR SUPERFUND

The Sheboygan River and Harbor Superfund site included the lower 14 miles of the river from the Sheboygan Fall Dam downstream to the Inner Harbor, therefore, remediation of PCB contaminated sediment was done in segments to maintain proper source control before moving work downstream. The upper river extends from the Sheboygan Falls Dam and to the Waelderhaus Dam four miles downstream. The middle river encompasses a segment between the Waelderhaus Dam in Kohler downstream to the Canadian and Northwestern railroad bridge in Sheboygan. The lower river segment extends from the railroad bridge to the Pennsylvanian Avenue Bridge located three miles downstream (see Figure 1).

Tecumseh Products Company and Pollution Risk Services entered into multiple consent agreements to do cleanup work. The upper river work was done in two phases. Phase I included remediation of soils, groundwater, and adjoining riverbank soils of the former Tecumseh Plant and was completed in 2004. Phase II included hydraulic dredging of approximately 20,700 cubic yards of sediments and formerly armored areas which began in 2006 and was completed in 2007. The Superfund goal of removing at least 88% of the PCB mass within soft sediment deposits in the upper river segments was attained. The other goal was to meet a surface weighted average concentration (SWAC) of 0.5 ppm in sediments and to continue to monitor that there has been a significant reduction documented in SWAC concentrations.

The Record of Decision for the Superfund project did not require sediment removal in the middle river based upon sediment characterization measurements completed in 2009. The middle river section contained fewer areas of soft sediment deposition due to its location below dams and how the river channel is configured. The middle river is to be monitored for natural recovery.

A separate consent agreement was reached between US EPA, Tecumseh, and Pollution Risk Services in which remediation of the lower river and inner harbor segments (labeled "Lower River Superfund Project" in Figure 2) removed approximately 63,700 cubic yards of PCB-contaminated sediment during 2011-2012. This was significantly more than had been in the Superfund design for these sections based mainly on interpretation of data and re-dredge after confirmation sampling. The focus of this project was on eliminating risks to human health from exposure to PCB's. A scour model was developed on behalf of the US Army Corps of Engineers, which EPA utilized as part of the decision making process. As a result, under Superfund, significant PCB contamination could be left at depth with the determination that it would not become available through scour over time. However, it was clear that the Superfund alternative, although addressing human health risks, would not resolve overall environmental or dredging restriction objectives of the DNR or the community.

LEGACY ACT DREDGING PROJECT

Because objectives for environmental restoration and dredging restrictions under the AOC program were not being met by Superfund, a local dredging workgroup formed. As a result, the state and local officials and leaders decided to pursue Great Lakes Legacy Act funding through the EPA Great Lakes Restoration Initiative. Working with the Great Lakes National Program Office (GLNPO), additional sediment characterization occurred in the lower river and inner harbor. As part of this characterization work, it was determined that the river segment below 8th street did not have significant enough PCB contamination to warrant action under the Legacy Act program. DNR submitted a Legacy Act application to GLNPO on behalf of the dredging workgroup in late 2011. A Legacy act agreement was initially signed in April of 2012 by many of the partners on the dredging workgroup. A team was formed to work on the feasibility study and the remedial design for the Legacy Act project.

In 2012, The Great Lakes Legacy Act (GLLA) project was implemented and removed approximately 160,000 cubic yards of PCB- and PAH-contaminated sediment in the lower river between Kiwanis Park and the 8th Street Bridge (Figure 2). The project reached its overall objective of removing PCB's to surface weighted average concentrations (SWAC) near 1.09 ppm and for removing PAH's to concentrations near 2.98 ppm (CH2M Hill, 2013). More than 8,500 cubic yards of dredge spoils from this area, containing more than 50 ppm PCB's, were trucked out of state for disposal to a landfill that could accept waste under the Toxic Substance Control Act. Sand cover was used in targeted areas after post dredging sampling of the river to further reduce SWAC associated with dredging residuals (Picture 6). While the Legacy Act Dredging Project addressed the

contamination remediation and environmental restoration goals, it also added the benefit of satisfying navigational needs above 8th Street Bridge.

Picture 6. Application of clean sand cover. (Photo taken by Stacy Hron, WDNR)

STRATEGIC NAVIGATIONAL DREDGING PROJECT

During the investigation stage of the Legacy Act project, sediment below the 8th Street Bridge were found to have much lower levels of contamination than were previously thought to exist in this area. U.S. EPA sampled the harbor in 2010 (U.S. ACE, 2012) and obtained 40 borings and analyzed PCBs. The maximum value of PCBs was 9.74 ppm and only 2.3 percent of the samples were greater than 5.0 ppm (Figure 3). The dredge workgroup sought a solution to dredging this part of the inner harbor to meet navigational needs of the community and to address BUI removal dredging restrictions. Great Lakes Restoration Initiative dollars along with funding from the city, county, and state (DNR and Department of Transportation) were used to retain the US Army Corps of Engineers in a design for a Strategic Navigational Dredging Project (Figure 2). Sediments in the lower portion of the river between the 8th Street Bridge and the outer harbor were dredged in 2012 and removed approximately 170,000 cubic yards of sediment.

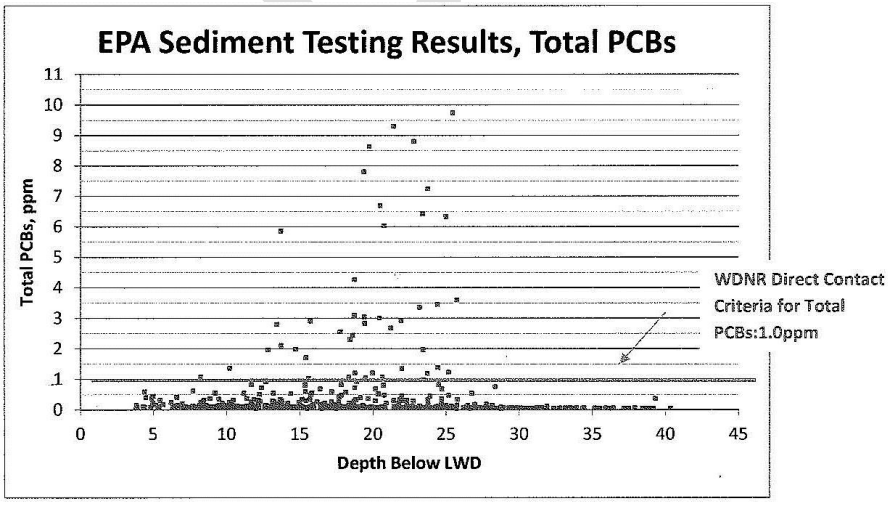

Figure 3. Graph of PCB levels of samples obtained for Sheboygan Harbor Improvement Project (U.S. ACE, 2012)

Assessment of Restoration - Attainment of Goals and Targets

The following is a summary of delisting targets developed in 2008 for the removal of the Restrictions on Dredging BUI and the fulfillment of these goals:

1) **All remediation actions for contaminated sediments are completed and monitored according to the approved remediation plans**

The Superfund projects conducted by Tecumseh, Pollution Risk Services and Wisconsin Public Service Corporation have been completed. Additional evaluation of this work and compliance with requirements under Superfund will continue for some time. Monitoring of fish and sediment will be required by EPA of the responsible parties to ensure that remedial objectives are continuing to be met. EPA conducts 5 year reviews for this purpose.

Contaminant levels have been monitored consistently both prior to and after completion of the dredging projects to determine the degree of contamination in the sediment and to design remediation that targets most of the contamination that was present. Continued monitoring by the Superfund responsible parties will continue to track trends in contamination levels following remediation. Post dredging sampling confirmed that remediation actions for contaminated sediment have met the goals of the approved remediation plans. In support of this statement, maps that depict residual contamination levels can be found in Appendix A.

2) **A dredging alternatives plan is developed that includes an evaluation of remaining dredging restrictions, priority areas for navigational use, and priority areas where dredging is needed for utilities and other purposes**

It was not anticipated in 2008 that the Sheboygan AOC would receive AOC priority status and extremely significant funding from the Great Lakes Restoration Initiative. This delisting target anticipated that significant sediment contamination would remain at depth and that a dredge alternatives plan would be needed to focus on dredging priorities with limited opportunity or funding to address many of the dredging restrictions. However, more funding led to additional remediation actions that eliminated the need for a dredging alternatives plan.

The formation of a dredging workgroup and a series of public informational efforts provided by local, state, and federal agencies resulted in identifying needs beyond the scope of Superfund remediation work. The workgroup worked with agency staff to develop solutions and eventually led to a Great Lakes Legacy Act Betterment action. While this targeted significant contamination, it also addressed public navigation needs in the lower river. In addition, a Strategic Navigational Dredging Project was also designed in consultation with the local communities to address water depths in the federally authorized navigational channel below 8th street. The dredging workgroup

agreed that dredging should create depths in the river of at least 10 feet between 14th Street Bridge and 8th Street Bridge and of at least 15 feet below the 8th Street Bridge. Navigational depths are included in bathymetry maps using USCOE water depth data from 2013 (Appendix A) and these maps document that water depths for public navigation agreed upon with the local communities have been met. Although dredging depths were not extended to the fully authorized federal navigational depths in some areas, there was consensus from the local communities that these depths were adequate for their needs. It should be noted that dredging to remove contamination in the lower river areas near Camp Marina and the lower river below Pennsylvania Avenue resulted in the creation of significantly deeper areas in some portions of the river. It should also be noted that the dredging projects were adjusted to insure adequate water depth under the 8th Street Bridge. Debris removal in one of the bays at the Pennsylvania Avenue Bridge occurred to allow for barge traffic. This work has improved navigation under this bridge structure. Plans for dredging were evaluated to make sure they addressed sediment deposition at the 8th street public boat launch.

Because of the success of the Sheboygan dredging work group in securing action and funding in 2011 and 2012, a dredging alternatives plan will be replaced by a technical memorandum (Appendix A) discussing where dredging may be restrained or prevented for navigation or construction purposes. The technical memorandum also includes a site map of utilities, post-dredging contaminant levels, and water depths taken following dredging activities in 2012.

Recommendation

Based upon the completion of the necessary contaminated remediation projects, the continued monitoring as necessary under the Superfund program, and review of the data and technical memorandum developed by CH2M Hill (in lieu of the dredging alternatives plan), the Wisconsin Department of Natural Resources recommends the removal of the Restrictions on Dredging Activities BUI for the Sheboygan River Area of Concern. All management actions established to meet the BUI delisting targets have been completed.

The removal recommendation was shared and discussed with several external partners. Support for this BUI removal was provided by the city of Sheboygan, Sheboygan County, and Sheboygan River Basin Partnership (Appendix B).

References

CH2M HILL. 2013. Great Lakes Legacy Act Dredging-Sheboygan River Remedial Action Oversight.

CH2M HILL. 2014. Sheboygan River Area of Concern, Sheboygan, Wisconsin – Restrictions on Dredging Beneficial Use Impairment Mapping Technical Memorandum.

United States Army Corps of Engineers (U.S. ACE). 2012. Low Hazardous Waste Exemption Request for Sheboygan Harbor, Wisconsin Strategic Dredging Project.

United States Environmental Protection Agency (U.S. EPA). 2013. EPA Proposes No Further Action; Seeks Comments SAS Fact Sheet.
http://www.epa.gov/region05/cleanup/campmarina/pdfs/campmarina-fs-201306.pdf

United States Environmental Protection Agency (U.S. EPA). 2014. Kohler Company Landfill NPL Fact Sheet. EPA ID #WID006073225.
http://www.epa.gov/R5Super/npl/wisconsin/WID006073225.html

United States Environmental Protection Agency (U.S. EPA). 2014. Sheboygan Harbor and River NPL Fact Sheet. EPA ID #WID980996367.
http://www.epa.gov/region5/superfund/npl/wisconsin/WID980996367.html

Wisconsin Department of Natural Resources (WDNR). 1989. Sheboygan River Remedial Action Plan. Madison, Wisconsin.

Wisconsin Department of Natural Resources (WDNR). 1995. Sheboygan River Remedial Action Plan. Madison, Wisconsin.

Wisconsin Department of Natural Resources (WDNR). 2008. Delisting Targets for the Sheboygan River Area of Concern: Final Report.

Appendix A

Contents:

- Technical memorandum from CH2M Hill
- General site map of utilities
- Map set one of water depths
- Map set two of post-dredge conditions

Sheboygan River Area of Concern, Sheboygan, Wisconsin—Restrictions on Dredging Beneficial Use Impairment Mapping Technical Memorandum

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The purpose of this technical memorandum is to support the removal of the Restrictions on Dredging Beneficial Use Impairment (BUI) in the Sheboygan River Area of Concern (AOC), following the recently performed Superfund, Great Lakes Legacy Act, and strategic navigation dredging projects. Maps and supporting documentation are presented to assist the Wisconsin Department of Natural Resources (WDNR) with dredging restrictions BUI documentation for the Sheboygan River AOC. The work was conducted for the U.S. Environmental Protection Agency (EPA) Great Lakes National Program Office under Contract No. EP-R5-11-09 and as specified in the Statement of Work dated April 2014.

Objective

Dredging within the project reach of the Sheboygan River AOC was completed in 2012 and early 2013 through the EPA Superfund, Great Lakes Legacy Act, and strategic navigation dredging projects. As a result, WDNR believes that the AOC BUI related to "Restrictions on Dredging" has been satisfied and needs to be fully documented. Information regarding the removal of dredging restrictions (removal of the BUI) needs to be shared with the community at large, along with the following interested parties:

- Sheboygan River Community Advisory Committee
- Sheboygan River Fish and Wildlife Technical Advisory Committee
- Sheboygan River AOC stakeholders (riparian landowners, tenants, businesses, etc.)
- Elected officials
- Local government staff

Maps and documentation generated as part of this task order will be used to aid in the discussions with stakeholders regarding the removal of the Restrictions on Dredging BUI.

Approach

This technical memorandum identifies and discusses potential areas where dredging may be restrained or prevented for navigation or construction purposes due to the presence of contamination, utilities, structures, etc.

The following documents were referenced in the preparation of this memorandum:

- Final Superfund Dredging Reports prepared by Pollution Risk Services (PRS)
- Final Legacy Act Investigation and Dredging Reports prepared by CH2M HILL (2011, 2013) and Ryba-Terra Contracting (2012)
- U.S. Army Corps of Engineers Hydrographic Survey Data collected in November 2013 (USACE 2013)
- Wisconsin statewide one-call underground utility-locating service, performed in June 2014

Post-Superfund Project Residuals

The following subsection summarizes dredging activities performed within the Sheboygan River, and Superfund dredging activities performed by Pollution Risk Services beginning in 2004. The information provided has been derived from all known final Superfund dredging reports as referenced herein.

Upper River

For the purposes of the Sheboygan River Superfund Project, the Sheboygan River starting at the Sheboygan Falls Dam and proceeding downstream to the conflux with Lake Michigan was sectioned into the Upper River, the Middle River, and the Lower River and Inner Harbor segments. The Upper River segment includes the former Tecumseh facility and extends 4 miles from Sheboygan Falls Dam downstream to the Waelderhaus Dam. The Upper River consists of discrete soft sediment deposits and non-soft sediment areas, which include a mix of soft sediment, rocks, cobbles, and bare river bottom. Polychlorinated biphenyl (PCB) contamination was primarily found in the soft sediments. Remedial design (RD) and remedial action (RA) work at the Superfund site was implemented by PRS in phases in order to achieve proper source control prior to initiating down river work. Phase I RA work for the Upper River was performed in 2004 and included the former Tecumseh Plant soils, groundwater, and adjoining riverbank soils. Phase II RA work for the Upper River was performed in 2006 and 2007 and included hydraulic dredging of the near-shore sediments, armored areas, and soft sediment deposits. Armored areas refer to 1,200 square yards of contaminated sediments that were “armored” in place by Tecumseh in 1990 (Blasland, Bouck and Lee, Inc. 1995).

During 2006 and 2007, sediment was removed from all nine armored area remedial management units (RMUs) and 122 soft sediment RMUs. The soft sediment RMUs and armored area RMUs removed in 2006/2007 contained the majority of the PCB mass within the Upper River. This RA removed 20,728 cubic yards of sediment and 552 pounds of PCBs for a total mass removal percentage of 94.1 percent. Not all soft sediment deposits were removed. Deposit DEP20B-46 was not removed due to close proximity to the Riverbend Dam and the 50-foot setback. In addition, dredging was not conducted in Deposits 21 through 25 and 27 through 33. The rationale for not removing sediment from these deposits was based on the areas having low PCB concentration with limited PCB mass. Undredged RMUs remaining after 2006/2007, since the PCB mass removal objective had already been exceeded, are noted as zero volume and mass removed in Table 1 of the *Sheboygan River and Harbor Superfund Site Phase II—Upper River Sediment Removal Final Construction Documentation Report* (PRS 2007).

Following dredging in the Upper River, post-dredge sediment samples were collected in 2007 and again in 2012 as part of the first 5-year review. The sediment sampling results for both years are presented in the *Sheboygan River and Harbor Superfund Site Upper River Sediment Monitoring Report* (PRS 2013). All former armored areas and soft sediment deposits were sampled, including the 11 soft sediment deposits that were not dredged. Remaining PCB concentrations in the Upper River sediments as measured in 2007 shortly after dredging operations ranged from nondetect with a detection limit at 0.017 milligrams per kilogram (mg/kg) PCBs to a maximum of 19 mg/kg PCBs. Generally the sample results above 5 mg/kg PCBs were found in the deposits that have not been dredged. Remaining PCB concentrations in the Upper River sediments as measured in 2012, 5 years after dredging was completed, ranged from nondetect with a detection limit at 0.1 mg/kg PCBs to a maximum of 5.1 mg/kg PCBs. The maximum concentration of PCBs in the deposits that had not been dredged was 2.5 mg/kg PCBs.

Middle River

The Middle River segment extends 11 miles from the Waelderhaus Dam downstream to the Canadian and Northwestern railroad bridge (which is located slightly downstream of the Taylor Drive Bridge).

The Middle River consists of discrete soft sediment deposits and non-soft sediment areas, which include a mix of soft sediment, rocks, cobbles, and bare river bottom. Due to the hydrodynamics of this reach, the areas of soft sediment are shallower and more widely scattered than the Upper River. Information collected during the remedial investigation indicated PCB concentrations ranging from nondetect to 8.8 parts per

million (ppm). During the predesign sampling investigation in 2009, 54 deposits were encountered in the Middle River that met the criteria to be sampled for PCBs. The PCB results and summary statistics for the Middle River are provided in Table 2 of the *Sheboygan River and Harbor Superfund Site Lower River Pre-Design Investigation Report* (PRS 2009). In the Middle River deposits, 22 of 30 samples were greater than or equal to 0.5 mg/kg PCBs. As shown in Table 2, only two sample results exceeded 4 ppm: Deposit 26 was 14 mg/kg PCBs, and Deposit 14/15/16 was 10 mg/kg PCBs. No sample results exceeded 26 mg/kg PCBs. A figure showing the deposit locations is located in Volume 2 of the *Sheboygan River and Harbor Superfund Site Lower River Pre-Design Investigation Report* (PRS 2009). The highest concentrations were within approximately 1.5 miles from Waelderhaus Dam. In accordance with the Record of Decision (EPA 2000), no sediment removal occurred in the Middle River segment of the Sheboygan River.

Lower River and Inner Harbor

The Lower River segment extends from the Canadian and Northwestern railroad bridge downstream 3 miles to the Pennsylvania Bridge. The Inner Harbor extends from the Pennsylvania Bridge downstream to the Outer Harbor, which is defined as the area formed by two breakwalls on Lake Michigan. Although PRS conducted predesign sampling, dredging, and post-dredging sampling within the Lower River, and remedial investigation sampling in the Inner Harbor, subsequent sampling and dredging activities were completed by other parties, as described in later sections of this memorandum. For that reason, results of PRS's activities in the Lower River and Inner Harbor are not included here. Great Lakes Legacy Act and strategic navigation dredging projects that were conducted within the Lower River and Inner Harbor are described in the following sections.

Map Development Approach and Data Summary

The following subsections describe the approaches used in the development of each map set, as well as the data sources displayed.

General Site Map

A site figure of the AOC (Figure 1) presents the locations of public utilities, bridges, dams, public parks, and boat access locations. The Wisconsin statewide utility-locating one-call service was contacted to identify where underground public utilities cross the river. The information from the utility locate was combined with previously known information to identify several utilities located within the AOC. Overhead electric lines that cross the river are not shown on the map.

The following utilities were identified through the Wisconsin one-call service for the area of the Sheboygan River AOC:

- Alliant Energy
- AT&T Distribution
- Charter Communications
- City of Sheboygan
- ExteNet System
- Kohler Company
- Qwest Communications Corp QTC
- School District of Sheboygan Falls
- Sheboygan Falls Utilities
- Thomas G Belot Private Line
- Town of Sheboygan
- Village of Kohler
- Windstream
- Wisconsin Public Service Corp (Integrys)

Map Set One—Water Depths below Low Water Datum

Map Set One depicts the water level depth below Low Water Datum as 1-foot incremental color-gradated contours. Low Water Datum is represented as 577.5 feet above mean sea level (amsl) at Rimouski, Quebec and correlates to the same datum used to represent water levels reported during dredging activities in 2013. Water depth data shown on Map Set One stretches from the upstream extent of Kiwanis Park to the Sheboygan Harbor (approximately 2.25 miles) and uses two sets of water depth data. Within the area from Kiwanis Park to the upstream extent of the 14th Street Bridge, the water depth information depicted

represents conditions immediately following dredging completed on December 12, 2012, as provided by dredging contractor (Ryba-Terra Contracting). The remaining portion from the 14th Street Bridge to the Sheboygan Harbor represents the survey results collected on November 19, 2013, by the Lake Michigan Office of the U.S. Army Corps of Engineers. Water depth data depicted within Map Set One can only be considered representative of the general river conditions at the time of the respective surveys and represents the latest hydrographic survey information available at this time.

Map Set Two—Post-dredge Sediment Conditions

Map Set Two represents total PCB and total polycyclic aromatic hydrocarbon sediment concentrations following dredging activities in 2012. Sample concentrations illustrated within circle symbols represent the post-dredge surface sediment concentration, while the rectangle symbol presents analytical results of in situ surface and subsurface sediments. Concentrations presented within areas designated as receiving sand cover placement represent the sediment surface prior placement of a 6-inch clean sand cover material. Sand cover material was analyzed before application within the river to ensure that nondetect levels of chemicals of concern were present. No additional analytical analysis of the sand cover material was performed once placed into the river because of pre-placement sampling activities.

Concentrations presented upstream of the 8th Street Bridge were collected during the 2012 Great Lakes Legacy Act Sheboygan River project following dredge activities and represent post-dredge conditions at the time sampled. Concentration data presented downstream of the 8th Street Bridge to the mouth of the Sheboygan River were collected during investigation sampling in 2010. The investigation sampling goal was to characterize sediments prior to the navigational dredging performed in 2012. No post-dredge confirmation samples were collected following dredge activities downstream of 8th Street Bridge. Therefore, post-dredge surface sediment concentrations were determined by comparing the hydrographic survey data elevations collected by the Lake Michigan Office of the U.S. Army Corps of Engineers in 2013 (see Map Set One) to the equivalent elevation and respective concentration for each sample location collected in 2010.

References

Blasland, Bouck and Lee, Inc. 1995. *Alternative Specific Remedial Investigation Report, Sheboygan River and Harbor (ASRI).* October.

CH2M HILL. 2011. *Final Remediation Investigation Report, Lower River and Inner Harbor of the Sheboygan River, Sheboygan, Wisconsin*. June.

CH2M HILL. 2013. *Cleanup Validation Report, Great Lakes Legacy Act Dredging – Sheboygan River, Remedial Action Oversight*. August.

Pollution Risk Services (PRS). 2007. *Sheboygan River and Harbor Superfund Site Phase II—Upper River Sediment Removal Final Construction Documentation Report*. November.

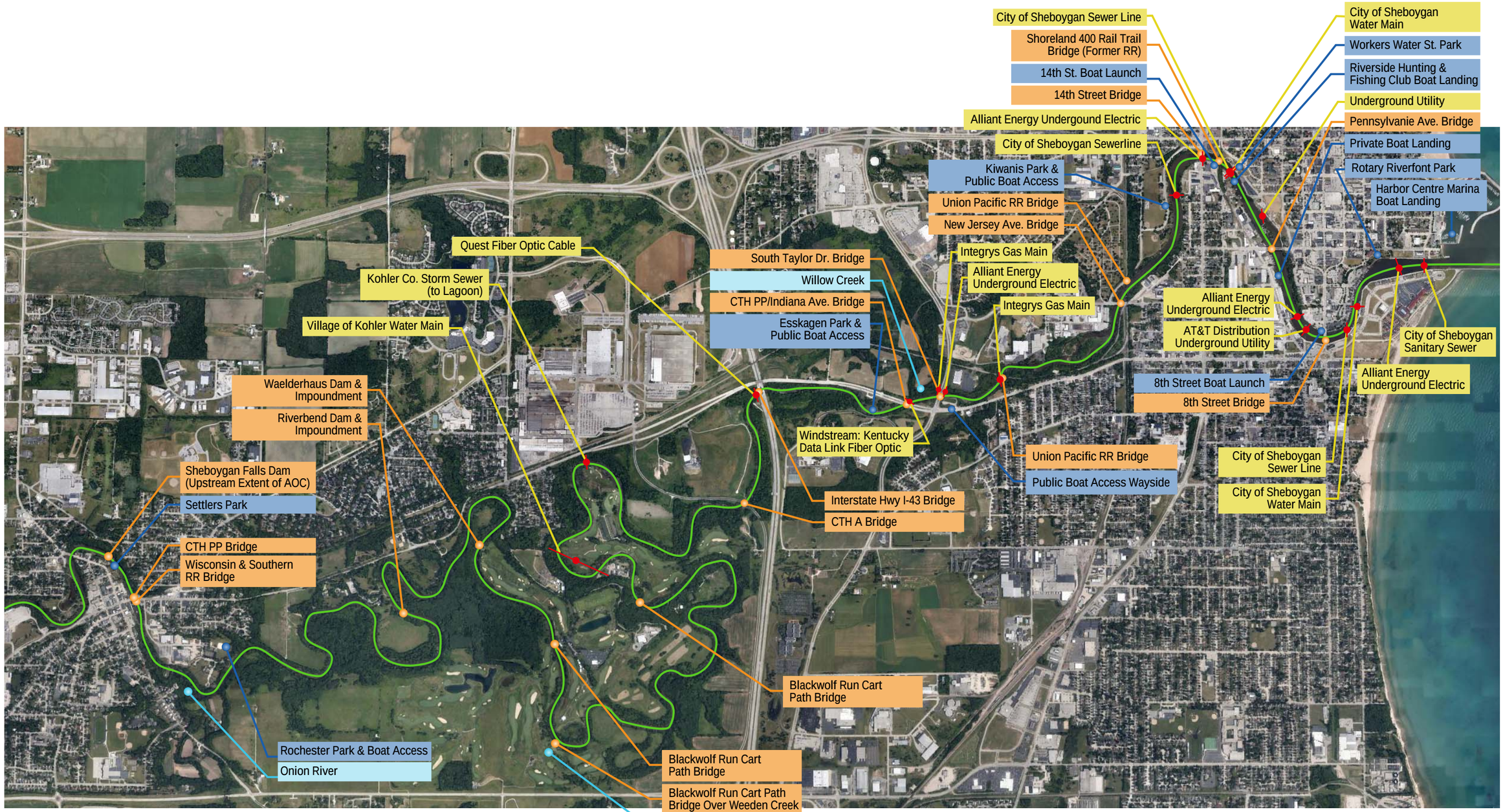
Pollution Risk Services (PRS). 2009. *Sheboygan River and Harbor Superfund Site Lower River Pre-Design Investigation Report.* Updated March 2010.

Pollution Risk Services (PRS). 2013. *Sheboygan River and Harbor Superfund Site Upper River Sediment Monitoring Report.* January.

Ryba-Terra. 2012. Hydrographic Survey. December 16.

U.S. Army Corps of Engineers. 2013. *Condition of Channel – Nov 2013, Lake Michigan Area Office, Sheboygan Harbor, Wisconsin*. November.

U.S. Environmental Protection Agency (EPA). 2000. *Superfund Record of Decision Sheboygan River and Harbor Sheboygan, Wisconsin.* May.



LEGEND

- Sheboygan River
- Underground Utility Crossing
- Infrastructure (Bridges & Dams)
- Public Parks and Boat Access
- Waterway

FIGURE NUMBER
Figure Title
Caption

WATER DEPTHS BELOW LOW WATER DATUM

N

0 100 200 300

1"= 50'

WORKERS WATER STREET PARK

N WATER ST

N 14TH STREET

KIWANIS PARK RD

LEGEND

WATER DEPTHS BELOW LOW WATER DATUM (LWD)

-2'
-3'
-4'
-5'
-6'
-7'
-8'
-9'
-10'
-11'
-12'
-13'
-14'
-15'
-16'
-17'
-18'
-19'

GENERAL NOTES

1. THE INFORMATION DEPICTED ON THIS MAP FROM 14TH STREET BRIDGE TO THE HARBOR REPRESENTS THE RESULTS OF SURVEYS MADE ON NOVEMBER 19, 2013 BY THE LAKE MICHIGAN OFFICE OF THE ARMY CORPS OF ENGINEERS (ACOE). INFORMATION DEPICTED FROM KIWANIS PARK TO 14TH STREET BRIDGE REPRESENTS RESULTS OF SURVEYS PERFORMED ON DECEMBER 16, 2012 BY RYBA-TERRA CONTRACTING. WATER DEPTH DATA SHOWN CAN ONLY BE CONSIDERED TO REPRESENT THE GENERAL CONDITIONS AT THE TIME SURVEYS WERE PERFORMED.
2. GRID SYSTEM IS ON LAMBERT PROJECTION, WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NORTH AMERICAN DATUM 1983, US SURVEY FOOT.
3. WATER DEPTHS ARE IN FEET AND ARE REFERRED TO LOW WATER DATUM, 577.5 FEET ABOVE MEAN WATER LEVEL AT RIMOUSKI, QUEBEC (INTERNATIONAL GREAT LAKES DATUM 1985).
4. NOAA GAUGE LOCATED AT MILWAUKEE, WI WAS USED TO DETERMINE THE WATER LEVEL.

CH2MHILL®

WATER DEPTHS BELOW LOW WATER DATUM

N

0 100 200 300

1"= 50'

N COMMERCE ST

N 9TH ST

PENNSYLVANIA AVENUE

GENERAL NOTES

1. THE INFORMATION DEPICTED ON THIS MAP FROM 14TH STREET BRIDGE TO THE HARBOR REPRESENTS THE RESULTS OF SURVEYS MADE ON NOVEMBER 19, 2013 BY THE LAKE MICHIGAN OFFICE OF THE ARMY CORPS OF ENGINEERS (ACOE). INFORMATION DEPICTED FROM KIWANIS PARK TO 14TH STREET BRIDGE REPRESENTS RESULTS OF SURVEYS PERFORMED ON DECEMBER 16, 2012 BY RYBA-TERRA CONTRACTING. WATER DEPTH DATA SHOWN CAN ONLY BE CONSIDERED TO REPRESENT THE GENERAL CONDITIONS AT THE TIME SURVEYS WERE PERFORMED.

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LEGEND

WATER DEPTHS BELOW LOW WATER DATUM (LWD)

-2'
-3'
-4'
-5'
-6'
-7'
-8'
-9'
-10'
-11'
-12'
-13'
-14'
-15'
-16'
-17'
-18'
-19'

NAVIGATION CHANNEL LIMITS

CH2MHILL®

WATER DEPTHS BELOW LOW WATER DATUM

GENERAL NOTES

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N

0 100 200 300

1"= 50'

S 8TH STREET

LEGEND

WATER DEPTHS BELOW LOW WATER DATUM (LWD)

-2'
-3'
-4'
-5'
-6'
-7'
-8'
-9'
-10'
-11'
-12'
-13'
-14'
-15'
-16'
-17'
-18'
-19'

NAVIGATION CHANNEL LIMITS

CH2MHILL®

WATER DEPTHS BELOW LOW WATER DATUM

PENNSYLVANIA AVENUE

N

0 100 200 300

1"= 50'

GENERAL NOTES

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LEGEND

WATER DEPTHS BELOW LOW WATER DATUM (LWD)

- -2'
- -3'
- -4'
- -5'
- -6'
- -7'
- -8'
- -9'
- -10'
- -11'
- -12'
- -13'
- -14'
- -15'
- -16'
- -17'
- -18'
- -19'

NAVIGATION CHANNEL LIMITS

CH2MHILL®

WATER DEPTHS BELOW LOW WATER DATUM

LEGEND

WATER DEPTHS BELOW
LOW WATER DATUM (LWD)

-2'
-3'
-4'
-5'
-6'
-7'
-8'
-9'
-10'
-11'
-12'
-13'
-14'
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-17'
-18'
-19'

NAVIGATION
CHANNEL LIMITS

N

0 100 200 300

1"= 50'

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4. NOAA GAUGE LOCATED AT MILWAUKEE, WI WAS USED TO DETERMINE THE WATER LEVEL.

CH2MHILL®

POST DREDGE SEDIMENT CONDITIONS

N

0 100 200 300

1"= 50'

WORKERS WATER STREET PARK

N WATER ST

N 14TH STREET

KIWANIS PARK RD

LEGEND

COLOR CHART

POLYCYCLIC AROMATIC HYDROCARBON (PAH) CONCENTRATIONS (ppm)

- < 18
- 18 - 45
- 45 - 100
- 100 - < 129
- = OR > 129

POLYCHLORINATED BIPHENYL (PCB) CONCENTRATION (ppm)

- < 1
- 1 - 5
- 5 - 10
- 10 - 25
- 26 - < 50
- = OR > 50

SYMBOLS

- NO DREDGE AREA
- SHORELINE LIMITS
- SAND COVER PLACEMENT EXTENT
- NAVIGATION CHANNEL LIMITS

SURFACE SEDIMENT CONCENTRATIONS (SEE COLOR CHART)

- PAH CONCENTRATIONS (LEFT SIDE)
- PCB CONCENTRATIONS (RIGHT SIDE)

SHORELINE SEDIMENT CONCENTRATIONS (SEE COLOR CHART)

- 0 FEET
- 2 FEET
- 3 TO 6 FEET

PAH CONCENTRATIONS (LEFT SIDE)
PCB CONCENTRATIONS (RIGHT SIDE)

NOTE:
MEASUREMENTS REPRESENT DEPTH BELOW SEDIMENT AT TIME OF SAMPLING IN 2012.

GENERAL NOTES

1. SAMPLE LOCATIONS UPSTREAM OF 8TH STREET BRIDGE CONDITIONS FOLLOWING DREDGING ACTIVITIES AND PRIOR TO SAND COVER PLACEMENT. SAMPLES WERE COLLECTED AS PART OF THE 2012 POST DREDGE CONFIRMATION SAMPLING EFFORTS.
2. SAMPLE LOCATIONS DOWNSTREAM OF 8TH STREET BRIDGE REPRESENT CONDITIONS FOLLOWING DREDGE ACTIVITIES AND WERE COLLECTED AS PART OF THE 2010 INVESTIGATION SAMPLING.

CH2MHILL®

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POST DREDGE SEDIMENT CONDITIONS

N

0 100 200 300

1"= 50'

N COMMERCE ST

N 9TH ST

PENNSYLVANIA AVENUE

SEDIMENT RESULTS DEPICTED WITHIN SAND COVER AREA REPRESENT CONCENTRATIONS PRIOR SAND COVER PLACEMENT

SEDIMENT RESULTS DEPICTED WITHIN SAND COVER AREA REPRESENT CONCENTRATIONS PRIOR SAND COVER PLACEMENT

GENERAL NOTES

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LEGEND

COLOR CHART

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SYMBOLS

- NO DREDGE AREA
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- SAND COVER PLACEMENT EXTENT
- NAVIGATION CHANNEL LIMITS

SURFACE SEDIMENT CONCENTRATIONS (SEE COLOR CHART)

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- PCB CONCENTRATIONS (RIGHT SIDE)

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- 2 FEET
- 3 TO 6 FEET

PAH CONCENTRATIONS (LEFT SIDE)
PCB CONCENTRATIONS (RIGHT SIDE)

NOTE:
MEASUREMENTS REPRESENT DEPTH BELOW SEDIMENT AT TIME OF SAMPLING IN 2012.

CH2MHILL®

POST DREDGE SEDIMENT CONDITIONS

SEDIMENT RESULTS DEPICTED WITHIN SAND COVER AREA REPRESENT CONCENTRATIONS PRIOR SAND COVER PLACEMENT

LEGEND

COLOR CHART

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PCB CONCENTRATIONS (RIGHT SIDE)

NOTE:
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N

0 100 200 300

1"= 50'

SEDIMENT RESULTS DEPICTED WITHIN SAND COVER AREA REPRESENT CONCENTRATIONS PRIOR SAND COVER PLACEMENT

S 8TH STREET

GENERAL NOTES

1. SAMPLE LOCATIONS UPSTREAM OF 8TH STREET BRIDGE CONDITIONS FOLLOWING DREDGING ACTIVITIES AND PRIOR TO SAND COVER PLACEMENT. SAMPLES WERE COLLECTED AS PART OF THE 2012 POST DREDGE CONFIRMATION SAMPLING EFFORTS.
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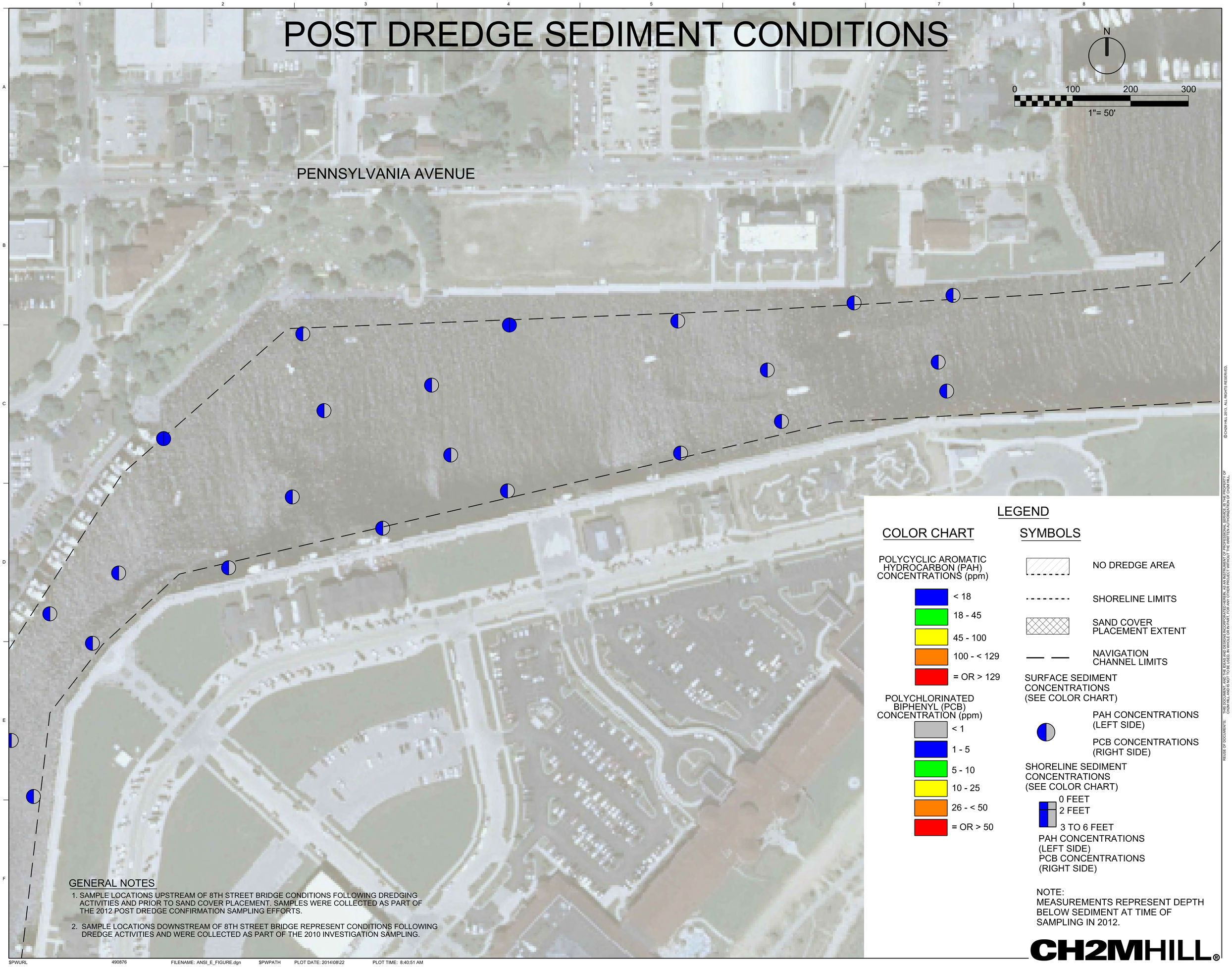
POST DREDGE SEDIMENT CONDITIONS



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PAH CONCENTRATIONS (LEFT SIDE)
PCB CONCENTRATIONS (RIGHT SIDE)

NOTE:
MEASUREMENTS REPRESENT DEPTH BELOW SEDIMENT AT TIME OF SAMPLING IN 2012.

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Appendix B

Contents:

- Sheboygan River Basin Partnership letter of support
- City of Sheboygan letter of support
- Sheboygan County letter of support

Sheboygan River Basin
PARTNERSHIP

Improving the Health of our Rivers and Lakes

September 8, 2014

Ms. April Marcangeli, AOC Coordinator
Wisconsin Department of Natural Resources
1155 Pilgrim Rd
Plymouth, WI 53073

Dear Ms. Marcangeli:

The Sheboygan River Basin Partnership is pleased to join the Wisconsin Department of Natural Resources (WDNR) in initiating the process to remove the Restrictions on Dredging Beneficial Use Impairment (BUI) from the Sheboygan River Area of Concern (AOC).

The Sheboygan River AOC community has partnered with many local, state and federal agencies, non-governmental organizations, business groups, community leaders, and volunteers over the past several years to clean up toxic sediments in the AOC.

In 2010, the EPA selected the Sheboygan River AOC as a priority AOC focused on BUI removal and since then four dredging projects have effectively removed over 400,000 cubic yards of contaminated sediment from the river. These included two Superfund projects, a Great Lakes Legacy Act dredging project, and a navigational dredging project designed by the Army Corps of Engineers.

The goals for removing contamination and achieving public navigational depths set out by the community have been met. We concur that the dredging restrictions impairment has been adequately addressed and we are prepared to celebrate the removal of this BUI.

We appreciate all that WDNR, EPA, and many partners, including the Sheboygan River Basin Partnership, have done to help achieve this goal.

Sincerely,

John E. Nelson

John E. Nelson, President
Sheboygan River Basin Partnership

Sheboygan River Basin Partnership
P.O. Box 3 Sheboygan Falls, WI 53085-0003

SHEBOYGAN COUNTY

Adam N. Payne
County Administrator

September 14, 2014

Ms. April Marcangeli, AOC Coordinator
Wisconsin Department of Natural Resources
1155 Pilgrim Road
Plymouth, WI 53073

Dear Ms. Marcangeli,

Sheboygan County supports the Wisconsin Department of Natural Resources (WDNR) efforts to remove the Restrictions on Dredging Beneficial Use Impairment (BUI) from the Sheboygan River Area of Concern (AOC).

Many local, state and federal agencies, non-governmental organizations, business groups, community leaders, and volunteers have partnered over the past several years to clean up toxic sediments in the AOC.

In 2010, the EPA selected the Sheboygan River AOC as a priority AOC focused on BUI removal and since then four dredging projects have effectively removed over 400,000 cubic yards of contaminated sediment from the river. These included two Superfund projects, a Great Lakes Legacy Act dredging project, and a navigational dredging project designed by the Army Corps of Engineers.

The goals for removing contamination and achieving public navigational depths set out by the community have been met. We concur that the dredging restriction impairment has been adequately addressed.

We appreciate all that WDNR, EPA, and the many other partners have done to help achieve this goal, and we're proud to be part of such a successful team.

Sincerely,

Adam Payne, County Administrator

cc: Roger TeStroete, Sheboygan County Board Chairman
Aaron Brault, Sheboygan County Planning & Conservation Director

Telephone (920) 459-3103
Facsimile (920) 459-3144

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508 New York Avenue - Room 311
Sheboygan, WI 53081-4126

Adam.Payne@SheboyganCounty.com
www.sheboygancounty.com