

Wildwood Island PCB Assessment for Disposal

Quality Assurance Project Plan

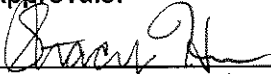
EPA Grant Funding Source: GLRI
Grant #: GLRI-00E00876-0 sub-5

Project Coordinator: Name: Stacy Hron
Affiliation: Wisconsin DNR
Address: Plymouth Service Center

Principal Investigators: Jim Killian

Prepared: 04/30/2012
Revision #: 0

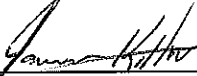
Approvals:



Stacy Hron, Project Coordinator

Date:

6-22-12



Jim Killian, Water and Sediment Resource Specialist

6/26/12



Vic Pappas, Great Lakes Program Supervisor

6-25-12



Donalea Dinsmore, WDNR Great Lakes Quality Assurance Coordinator

6/25/2012

T. Kevin O'Donnell, GLNPO Project Manager

Louis Blume, GLNPO Quality Manager

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TABLE OF CONTENTS

Distribution List.....	3
Executive Summary.....	4
A. Project Organization	4
Problem Definition/Background:.....	4
Project Objectives.....	5
Project/Task Description and Schedule	5
Special Equipment or Supplies	5
Personnel, Special Training Requirements or Certifications	6
Documentation and Records.....	6
Report	6
B. Measurement/Data Acquisition.....	7
Sample Process Design (Experimental Design).....	7
Sampling Methods	10
Sample Handling and Custody Requirements	11
Analytical Requirements	11
Data Acquisition Requirements (Non-direct Measurements).....	12
Quality Control Requirements	12
Data Management.....	12
C. Assessment/Oversight.....	12
Assessments and Response Actions	12
Reports to Management.....	13
D. Data Validation and Usability.....	13
Reconciliation with Data Quality Objectives	13

Distribution List

Stacy Hron (electronic copy)

Jim Killian (electronic copy)

Donalea Dinsmore will place the approved, electronic version of this QA Plan in SWIMS associated with the project records where it is accessible to all staff working on the project. She will also provide a copy to GLNPO for inclusion in GLNPO's QA Track.

T. Kevin O'Donnell, GLNPO Project Manager

Executive Summary

The engineering design for the Wildwood Island Restoration and the Taylor Drive and Indiana Ave stream bank projects addresses the phragmites and reed canary grass infestations by specifying excavation of the entire root structure. This material requires special disposal because of the presence of the invasive species as well as the possibility that depositional areas may contain PCBs transported from the Sheboygan River remediation sites upstream. This sampling and analysis plan was developed in response to the design and given the project time constraints, used an adaptive management approach. These materials were assessed considering NR 347 requirements, sediment guidelines, and the overall remediation and betterment goals for the Sheboygan River.

A. Project Organization

Stacy Hron, Sheboygan River AOC Coordinator (Project Manager), Wisconsin DNR – Stacy is the DNR coordinator for the restoration projects. She is responsible for managing the grant and assuring that the restoration projects are implemented on schedules and meet specifications. She provides coordination between partners, contractors, and stakeholders involved in the project.

Jim Killian, Water and Sediment Resources Specialist, Wisconsin DNR – Jim is the principle investigator for the project and is responsible for designing the sampling plan to meet the regulatory requirements, leading the field work, and assessing the results.

Ron Arneson, Laboratory Liaison, Wisconsin DNR – Ron is responsible for contracting for laboratory services that meet the needs of the project and regulatory requirements.

Donalea Dinsmore, Quality Assurance Coordinator - Donalea is responsible for assuring that quality assurance documentation is appropriate for the project and providing the QA Plan to GLNPO.

Problem Definition/Background:

The Sheboygan River AOC habitat restoration projects are located downstream of the primary source of PCB contamination in the river from the former Tecumseh Product Co. Habitat restoration projects include stabilizing Wildwood Island to address extreme erosion issues, invasive species management, bank stabilization, and preserving and enhancing habitat on the island. The engineering design included excavation of soil within the root zone of invasive species infestations and replacing the soils with clean material that would promote native vegetation. The design also included placing log cribs on the upstream head of the island to provide stabilization. At the Taylor Drive/Indiana Avenue project area, the engineering design proposed a similar mechanism for dealing with the invasives. Although the excavated material will require special disposal because of the invasive species, proper disposal must also consider potential chemical contaminants.

Areas with *Phragmites australis* (phragmites) will be excavated to 3 feet to remove all rhizomes. Areas with *Phalaris arundinacea* (reed canary grass) will be excavated to 2 feet.

During spring or flood events, the island complex may be inundated, creating depositional areas that contain PCB-contaminated sediment that has been transported downstream from the more contaminated areas upstream. The island “soils” to be removed are assessed as sediments (fluvial deposits) and the requirements of NR 347 are applied to their characterization. The sample results will be supplied to the disposal facility for compliance with their operational permit.

In the context of the overall PCB remedy, TSCA level material (concentrations of PCBs greater than 50 mg/Kg) were removed as part of the Superfund remediation project.. PCB-contaminated sediments with concentrations below 10 mg/Kg but above 1 mg/Kg in the river are being removed through a Legacy Act betterment project. The sample results for this project will be viewed in this context.

Project Objectives

The project objective is to obtain representative samples of the fluvial material that will be disposed in conjunction with the island restoration to determine appropriate disposal options in a timeframe that allow the project team to evaluate results and disposal options without impeding the overall progress on the island restoration. Initial areas screened included one foot below surface of the soil and the in-stream sediments present on the upstream end of the island in the area of log crib placement. This depth was extended to 2 feet in areas with *Phalaris arundinacea* and analyses were extended to include leaching tests associated with environmental material disposal for landfills. The timing of the project was constrained by the need to obtain samples early in the growing season while the area had better accessibility as well as the overall requirement to complete the habitat restorations during 2012. Laboratory work needed to be complete no later than four weeks following sampling.

Project/Task Description and Schedule

Mobilization for field sampling was scheduled as soon as possible but no later than mid-April to consider the following:

- Two to three days needed for sampling event
- Weather
- Site accessibility –
 - plant growth
 - water levels and conditions
 - identified parking and access to the river
- Availability of field assistants (one or two) in Sheboygan
- Availability of a boat for transporting equipment to and around the island
- Arrangements for laboratory services – PCBs and TCLP metals, VOCs and semi-volatiles

Special Equipment or Supplies

Standard sampling equipment available to the sediment section to include:

- Petit Ponar dredge
- Stainless steel hand-driven soil auger (3 inch diameter)
- 5 inch Tree spade
- GPS device with accuracy to 3 meters (<10')
- Stainless steel bowl and scoop spoons for homogenizing sample
- Styrofoam coolers for sample transport
- Disposable gloves
- Field notebook

- Small boat with person floatation devices
- Sample containers (glass jars from laboratory) with labels
- Permanent markers or pens
- Alconox™ wash, deionized water
- Ice

Personnel, Special Training Requirements or Certifications

At least one staff member on site was HAZWOPER trained.

In addition to being qualified to perform the analyses, the laboratory performing the work must be able to meet the sample turn-around requirements and be one of the following:

1. A laboratory under contract to EPA for Legacy Act work
2. Wisconsin State Laboratory of Hygiene
3. Wisconsin-certified laboratory for the parameters in question

Documentation and Records

Field data is recorded in principle investigator's field notebook includes:

- Sample location (latitude and longitude)
- Site and sample descriptions
 - Soil description
 - Water content
 - Parent material encountered
 - Notable colors and smells
- Sample identifier (unique sample ID)
- Sample collection date, time, and collector

Sample labels will be formatted to include: PROJECT, YEAR, SAMPLE TYPE, SAMPLE ID (example ID: WW12_SED02)

Chain of custody documents will be supplied by the laboratory and used as part of sample transmittal. "Normal" chain of custody will be applied to standard laboratory analyses. The laboratory will supply electronic data deliverables appropriate for upload into SWIMs. A level 4 analytical report is not required for this project.

The project will be set up in SWIMS and project related documentation will be stored there. All sample results will be uploaded to SWIMS according to standard Water Division procedures.

Report

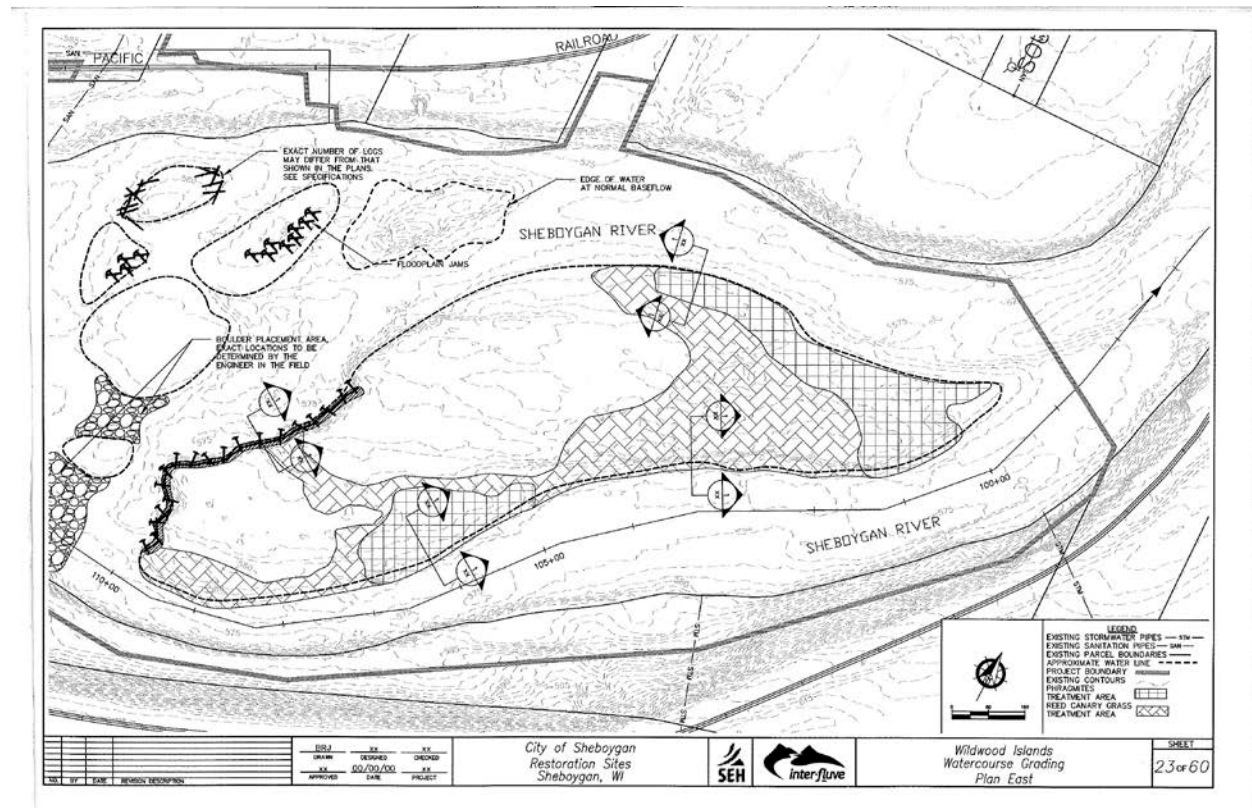
The project manager will write a report that summarizes the results, estimates the volume of material for disposal and provides recommendations for addressing the material. The reports of sample results will be made available to the disposal facility.

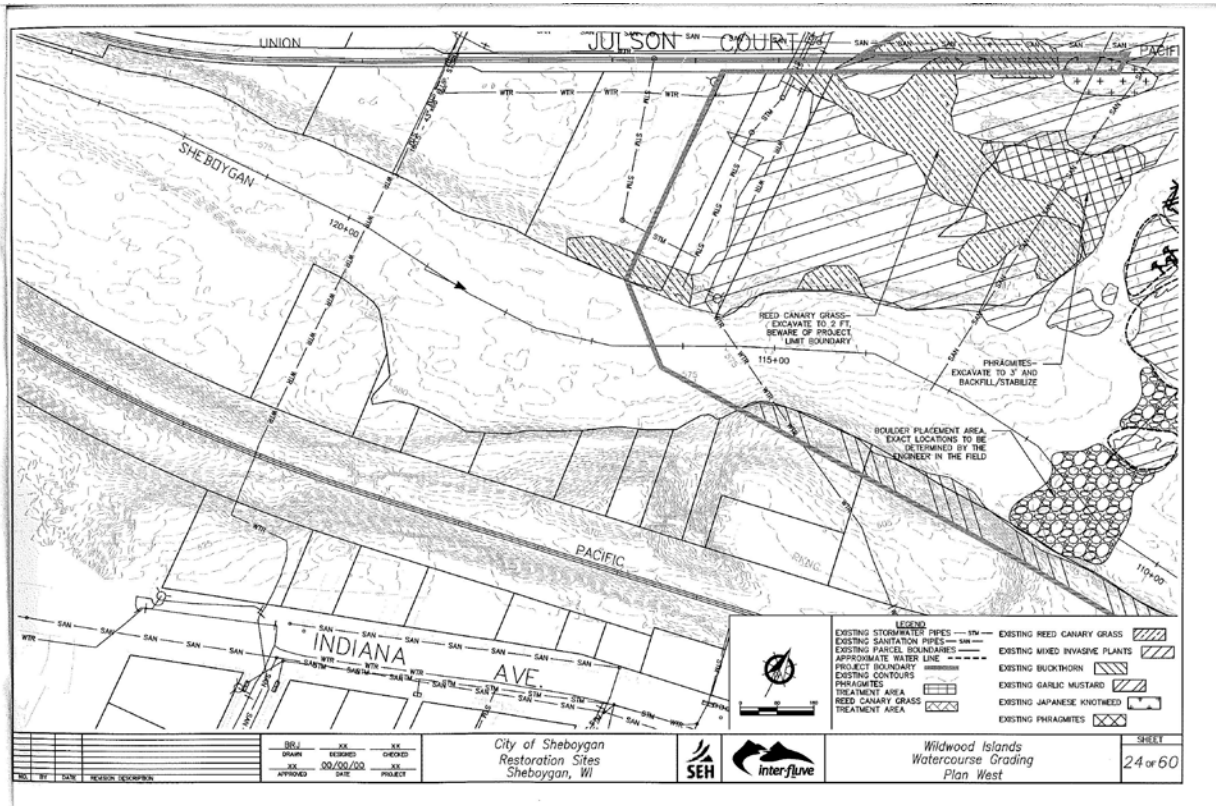
B. Measurement/Data Acquisition

Sample Process Design (Experimental Design)

Based on the volume of material potentially slated for removal and site characteristics, the principle investigator determined that 19 distinct sample locations would be necessary to properly characterize the depositional material for waste disposal requirements. Two sediment samples were also necessary because of bank stabilization work that will take place along the upstream end of Wildwood Island. There were a total of 21 preliminary samples taken on 3/29/12 and 4/3/12. These sites included ten sites on Wildwood Island, five sites on the Sheboygan River floodplain northwest of Wildwood Island, and four sites at the northeast corner of the intersection of Taylor Dr./ Indiana Avenue (see attached maps).

[wildwood_map_SEH.pdf](#)



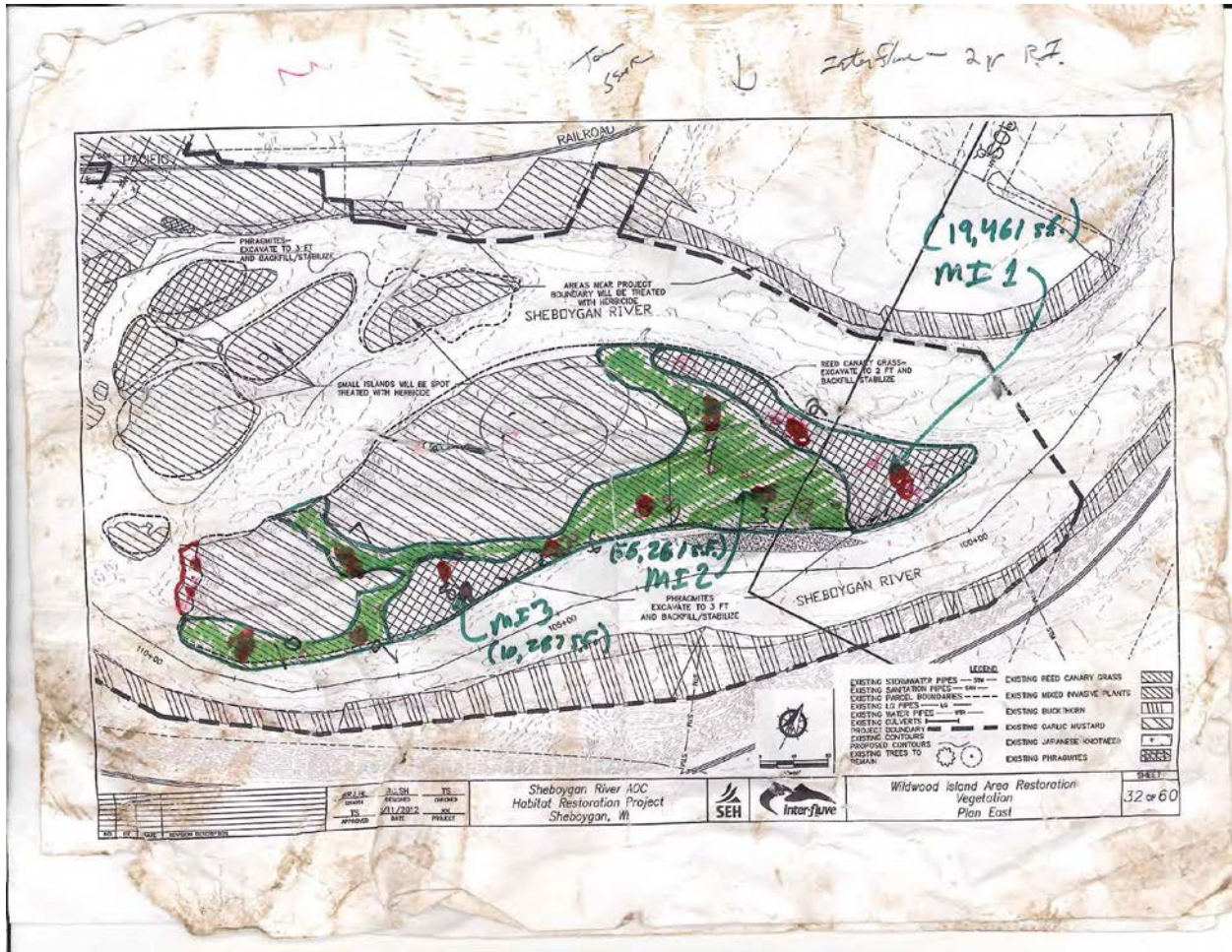


These distinct sampling sites were chosen within the bounds of the prescribed excavation and confirmed by comparison of land elevations to seasonal flood elevation information. Sample sites were adjusted in field based on site topography. A Garmin 60CSx GPS was used to mark exact sample location.

Nine of the original sites within the two foot excavation areas were sampled at a depth of 12-24 inches on 5/3/12. These samples will determine the extent of contamination and determine correct volumes for disposal.

A total of 28 soil samples and 2 sediment samples were taken from 3/29/12 to 5/3/12.

.../Documents/QAPP/Sheboygan/Wildwood Island PCBs/WildwoodSamplingMap.pdf



Sampling Methods

The preliminary sampling was conducted at a 19 sites to a depth of 12 inches in areas that are to be excavated. Two additional sediment grabs were taken adjacent to the northwest shoreline of Wildwood Island at a depth of 8 inches. A secondary sampling effort of 12-24 inches was conducted in the two foot excavation areas at nine previous sample sites.

Preliminary samples were taken on 3/29/12 and 4/3/12 using a 3" diameter hand-driven soil bucket auger. A composite of three 0-12 inch cores was taken at each site within one meter of the sample point. Any surface detritus was scraped away with a shovel prior to augering. The soil cores were mixed by hand in stainless steel equipment and transferred into sealed, sterilized glass sample jars supplied by Northern Lakes Service, INC. Samples were immediately placed in cooler of ice. Sample jars are labeled in the following format: PROJECT, YEAR, SAMPLE TYPE, SAMPLE ID. Example: WW12_SOIL01. The secondary sampling effort used the corresponding site identification with a "B" added to the SAMPLE ID. Example: WW12_SOIL01B.

Sediment samples taken in the river bed material occurred on 4/10/12. These samples were taken 3-8 ft from the bank of Wildwood Island. At each sample location three grab samples were taken within one meter of the sample point. Samples were taken to 0-8 inches and composited and jarred in the same manner as previously described. The equipment used to take grab samples was a Petit PONAR grab sampler, 6"x 6" opening. A shovel was used to probe areas to check for soft sediment deposits. Equipment was cleaned prior to and between samples. Sample labeling, handling, shipping, and chain of custody was carried out as described previously.

Secondary sampling at a depth of 12-24 inches occurred on 5/3/12 at five sites on Wildwood Island, two sites on the Sheboygan River floodplain northwest of Wildwood Island, and two sites at the northeast

corner of the intersection of Taylor Dr./ Indiana Ave. A total of nine secondary samples were taken in the *Phalaris arundinacea* excavation areas. One site, WW12_SOIL03B was relocated approximately 30ft southwest of the original site (WW12_SOIL03) to ensure the sample was inside the two foot excavation bounds. This location was recorded with GPS equipment. All other secondary samples were taken within one meter of the preliminary sample cores.

A 1-1.5 ft diameter hole was excavated to a depth of 12 inches (see attached photos). Soil was carefully removed and soil at a depth of 12 inches was exposed. A three inch hand-driven soil bucket auger was used to core in the center of this excavation to 24 inches. The sample consisted of the single soil core representing 12 -24” depth. This material was then mixed, jarred, and labeled as previously described. Samples were held and delivered to the laboratory as previously described.

Sample Handling and Custody Requirements

Samples were transported to the WDNR Service Center, Plymouth, WI under the chain of custody (form supplied by the laboratory). Samples were packaged according to shipping instructions and sealed in coolers. Coolers were held in locked WDNR building until delivery service could transport samples to Northern Lakes Service, INC, Crandon, WI. Note that this project does not require enforcement-level of chain of custody. Normal sample handling practices were carried out by the laboratory upon delivery.

Analytical Requirements

The laboratory liaison issued bids for the analytical work with the required turn-around time. Northern Lake Services, Inc. in Crandon, Wisconsin, a Wisconsin-certified environmental laboratory was contracted to perform the analyses. As part of the contract, the laboratory is required to provide standard operating procedures and current control limits. Laboratory SOPs were submitted to the Quality Assurance Coordinator and are available upon request of other project team members.

Project Requirements

<u>Analysis</u>	<u>Maximum Detection Level</u>
Total PCBs as Aroclors	0.5 mg/Kg
Solids, Percent	1%
TCLP (see test list below)	
Metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	20% of regulatory limit
VOCs (1,1-Dichloroethene, 1,2-Dichloroethane, 1,4-Dichlorobenzene, Benzene, Chloroform, Carbon Tetrachloride, Chlorobenzene, Methyl ethyl ketone, Vinyl Chloride)	20% of regulatory limit
Semi-volatiles (Pyridine, o-Cresol, m/p-Cresol, Hexachloroethane, Nitrobenzen, 1,4-Dichlorobenzene, Hexachlorobutadiene, 2,4,6-Trichlorophenol, 2,4,5-Trichlorophenol, 2,4-Dinitrotoluene, Hexachlorobenzene, Pentachlorophenol)	20% of regulatory limit
Organochlorine Pesticides (Gamma-BHC, Heptachlor, Heptachlor Epoxide, Endrin, Methoxychlor, Chordane, Toxaphene)	20% of regulatory limit

Data Acquisition Requirements (Non-direct Measurements)

The project team used topographic maps provided by SEH associated with the engineering design that identified the potential excavation areas to determine tentative sampling locations. These maps are directly relevant to the project.

Quality Control Requirements

Field duplicates were not implemented for this project. Each surface sample was a composite of three surface grabs taken in a one meter area to ensure representativeness. Variance in the compositing procedure will not be considered in the disposal decision.

Standard laboratory quality control procedures required by the DNR Laboratory Certification Program are sufficient for this project (method blanks, LCS, duplicates and spikes). Laboratory-derived control limits are also acceptable for the intended purpose of the data.

Data Management

The laboratory's standard data management practices are sufficient for this project. The laboratory liaison handled the data upload from the laboratory using standard practices. Project records are stored in SWIMS. More information is found in the Documentation and Records section of the QAPP.

C. Assessment/Oversight

Assessments and Response Actions

Prior to mobilizing for field sampling, the lead investigator tentatively identified sampling locations based on the topographic maps supplied by the project manager. During field work, the actual sampling locations were evaluated to assure that the samples would be taken well within the excavation areas based on the locations of the phragmites or reed canary grass. If not, sample locations would be moved.

Note: WW12_SOIL03B site was moved to be well within the *Phalaris arundinacea* removal site to assure that it was located in an 24 inch excavation depth area, also taking into account an adequate transition for excavation depths. The site was moved approximately 30 feet southwest. The new site was recorded with GPS equipment.

Given the time constraints for completing the project, the laboratory was instructed to provide preliminary results to the project manager, who then discussed them with the principle investigator and staff involved in the Sheboygan River remediation and restoration work. Based on these results, the team would assess whether additional analytical testing was needed to meet disposal requirements and whether the overall design for the habitat restoration met the goals for the project.

Note: Based on this assessment, the laboratory was instructed to reserve sample s for TCLP analyses and ultimately, the project team chose samples that were analyzed for the suite of TCLP parameters needed for disposal confirmation testing. At some locations, samples were collected at deeper depths to determine whether the habitat restoration excavation plan could or should be adjusted to more completely remove PCB-contaminated materials above 1 mg/kg. Two TCLP samples were held for longer than the recommended 14 day hold time. However, they only exceeded the holding period by a portion of a day.

Reports to Management

The project manager (Stacy Hron) will confer with Office of the Great Lakes managers when results become available to determine implications for the project and options to proceed. Communications to managers may include cost estimates associated with various options and assess the availability of funding to handle any increased disposal costs.

The project manager will also summarize the findings in a memo provided to GLNPO grant managers on the status of this assessment and its implications for the overall Sheboygan habitat restoration projects, options for handling the material and the effect on the grant budget and project progress.

D. Data Validation and Usability

Per the laboratory certification requirements, the laboratory adds qualifiers to results that show excursions from the method or internal control limits. Any data qualifiers associated with the data will be reviewed to determine if data interpretation will be affected. Total PCBs will be derived by summing all of the detected Aroclors. The project team will review the sample results to identify any patterns or anomalies in the results beyond what would be expected for a floodplain in this type of setting.

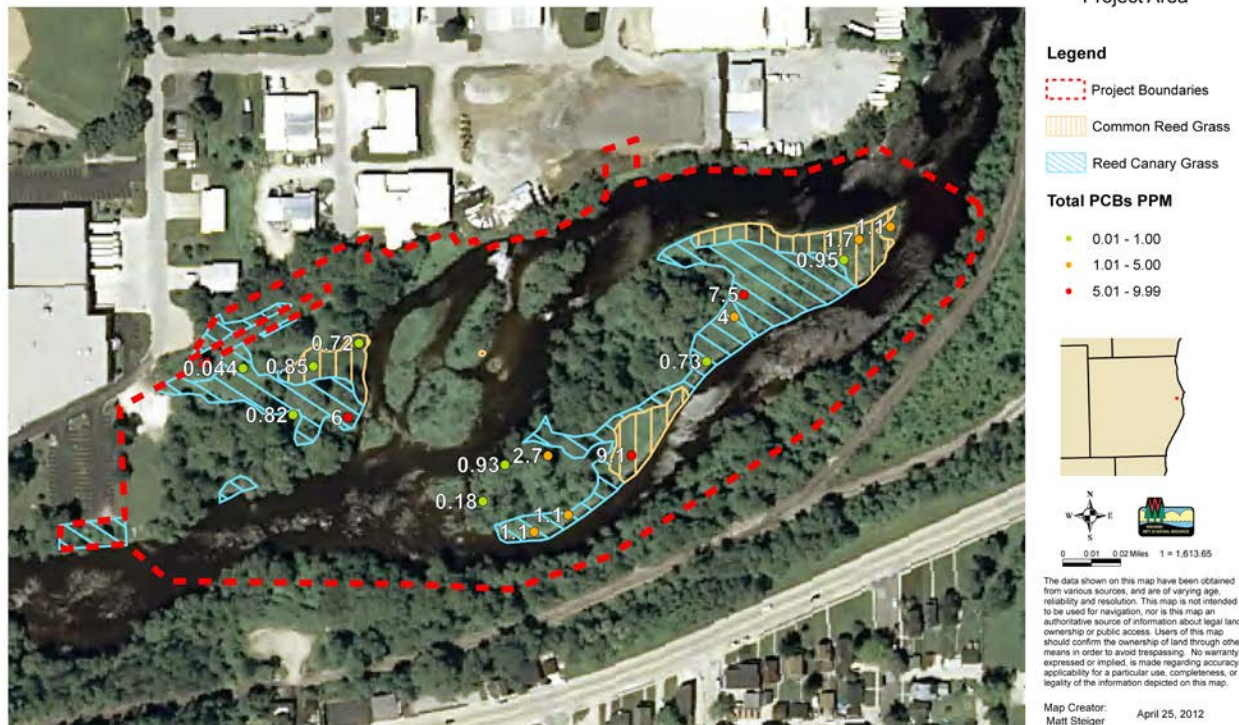
Reconciliation with Data Quality Objectives

PCB results will be used to determine the estimated amount of material that will require disposal at a licensed landfill and the costs associated with the options to proceed. Based on this assessment, the project manager will work with Office of the Great Lakes and GLNPO managers to identify appropriate funding to address the disposal and work the design team at SEH to finalize the project specifications for the restoration areas. The project team will review the results to assure that the analyses will meet the requirements for sending the affected material to a licensed landfill.

[Wildwood PCBs 2012 results.pdf](#)

Sheboygan River AOC Total PCB Concentration, 0-12" Soil Core
03/29/2012 and 04/03/2012

Wildwood Island Complex
Project Area



Appendix A – Laboratory Control Limits

[Arsenic-tot.rec-\(tc-550\)-qcprint.pdf](#) [Arsenic-tot.rec.ext-\(tc-560\)-qcprint.pdf](#)
[Barium-tot.rec-\(tc-650\)-qcprint.pdf](#) [Barium-tot.rec.ext-\(tc-660\)-qcprint.pdf](#)
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[PEST-44DDD-\(tc-9120\)-qcprint.pdf](#) [PEST-44DDT-\(tc-9090\)-qcprint.pdf](#) [PEST-DDE-\(tc-9100\)-qcprint.pdf](#)
[PEST-Aldrin-\(tc-9030\)-qcprint.pdf](#)
[PEST-AlphaBHC-\(tc-9040\)-qcprint.pdf](#)
[PEST-AlphaChlordane-\(tc-achlor-pst\)-qcprint.pdf](#)
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[PEST-GammaBHC-Lindane-\(tc-9070\)-qcprint.pdf](#)
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[Solids-tot.on.sol-\(tc-3842\)-qcprint.pdf](#)