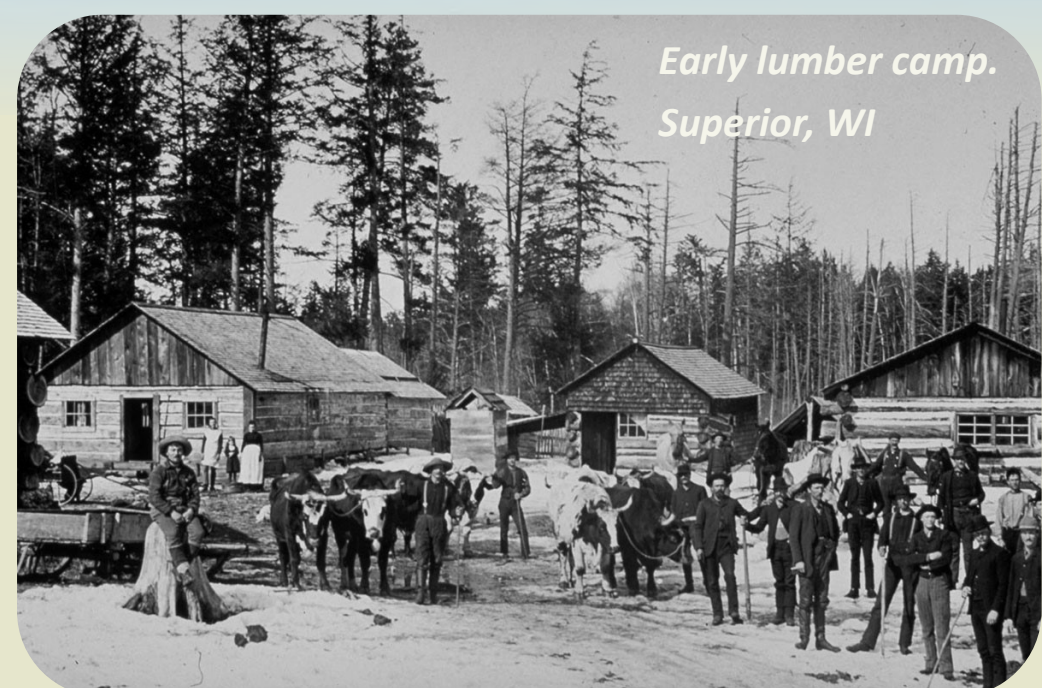
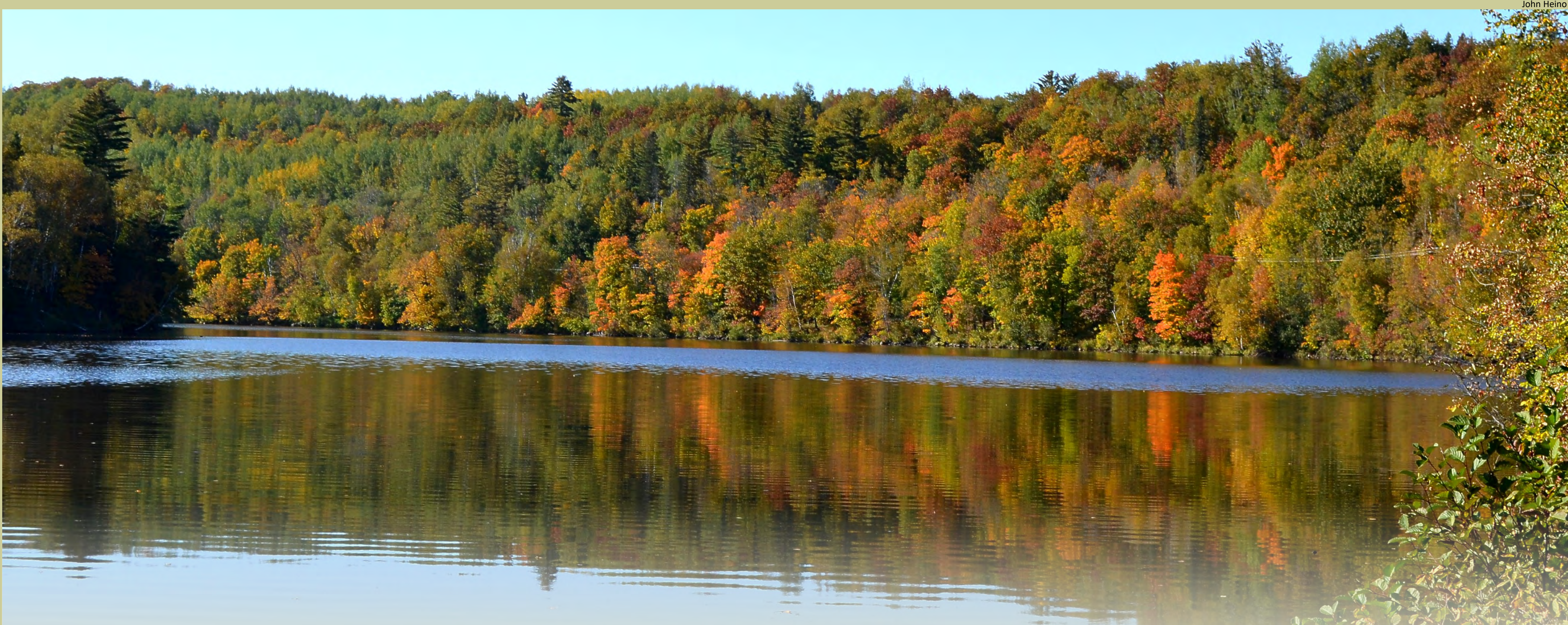
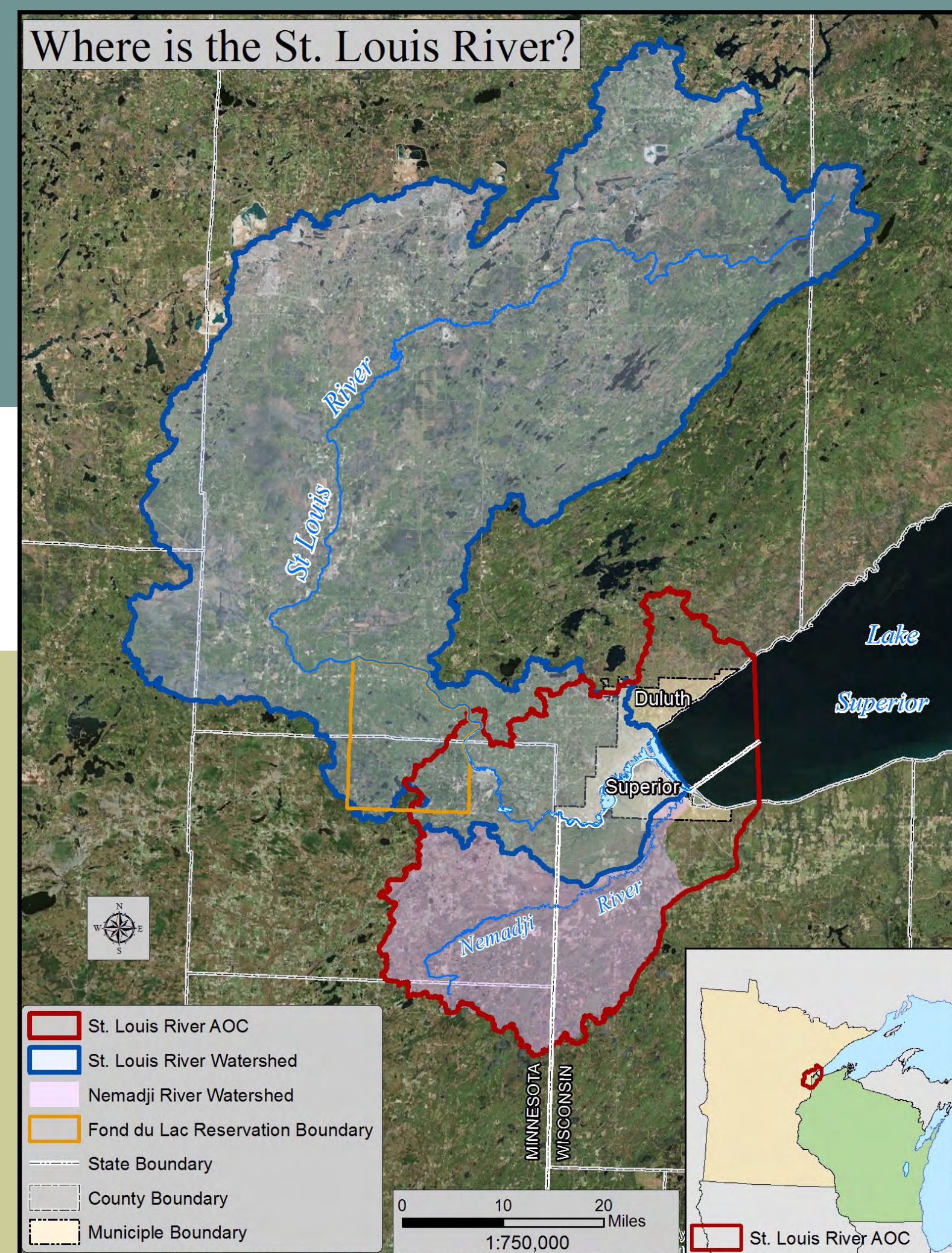


# St. Louis River

## Area of Concern

### What is an Area of Concern?

An Area of Concern (AOC) is a location in the Great Lakes that has experienced extensive environmental degradation. Historical pollution from untreated sewage and unregulated industrial practices has resulted in contaminated sediments and degraded water quality. Additionally, waterfront development in these areas has reduced the quantity and quality of fish and wildlife habitat. The St. Louis River is one of 43 Great Lakes AOCs in the U.S. and Canada.



Early lumber camp.  
Superior, WI



Kathryn Desforge

#### 1800's– Early 1900's

European explorers and French fur traders arrive at the St. Louis River's pristine waters, long after they were first paddled and fished by the Ojibwe.



Scum on the river, 1950's

#### Late 1800's - Mid 1900's

Industry develops in the Duluth Superior Harbor. A lack of environmental regulations leads to discharge of sewage, toxic contaminants, grain dust, wood waste, and other industrial byproducts directly into the river.

#### 1972

The Great Lakes Water Quality Agreement is signed by the US and Canada, establishing a commitment to resolve water quality issues in the Great Lakes Basin. The Clean Water Act is passed by Congress, which establishes goals to make the nation's waters fishable and swimmable.



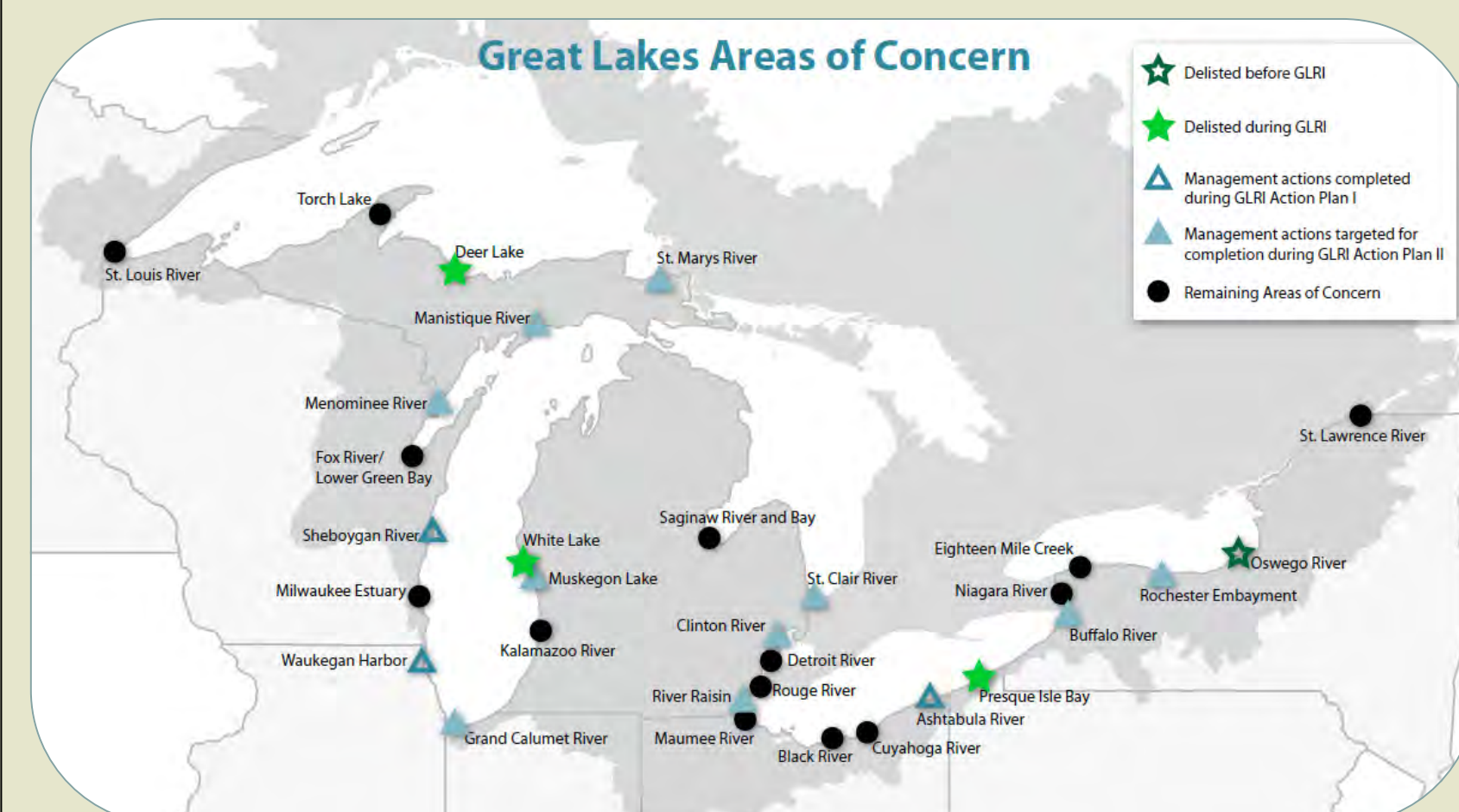
Superior Wastewater Treatment Plant

#### 1978

Wastewater treatment facilities are improved in Superior, Wisconsin and Duluth, Minnesota.

#### 1987

Great Lakes Water Quality Agreement is amended to identify "Areas of Concern" that require special attention for cleanup and restoration.



#### 1989

A citizen advisory group was formed to develop a plan to address problems. This group later evolved into the St. Louis River Alliance.



WDNR



#### 2010

The Great Lakes Restoration Initiative (GLRI) begins, providing significant federal funding to address impairments.

## Important Moments in St. Louis River History

# Why is the St. Louis River an Area of Concern?

Since the mid-1800's, the St. Louis River has been re-shaped and degraded by manufacturing, logging, sawmilling, and shipping practices prior to modern environmental policies and regulations. These practices eventually led to the St. Louis River becoming one of the Great Lakes' most polluted waterways.

## Nine specific impairments are identified:

### Fish Consumption Advisories

Contamination has resulted in fish consumption advisories based on polychlorinated biphenyls (PCBs) and mercury. Next steps to remove this impairment include addressing contaminated sediments and monitoring fish tissue for contaminants. The AOC goal is for consumption advisories in the St. Louis River to be no more restrictive than the larger region.



### Loss of Fish and Wildlife Habitat

Development and contamination have reduced the quantity and quality of habitat in the AOC. The next steps to remove the impairment include restoring aquatic, wetland, dune, tributary, and upland habitat and addressing invasive species. The AOC goal is to restore aquatic habitat, clean up contamination, and restore and protect additional shoreline and upland habitat.



### Degraded Sediment-Dwelling Organisms

Alteration and contamination of bottom sediments has resulted in degraded communities of benthic (sediment-dwelling) organisms. The next steps to remove this impairment include cleaning up contaminated sediments and restoring aquatic habitat. The AOC goal is for communities of benthic organisms within restored sites to be approximately the same as in comparable un-impacted sites.

### Restrictions on Dredging Activities

Contamination has resulted in special handling requirements of dredge materials that contain toxic pollutants. The next steps to remove this impairment include completing contaminated sediment remediation projects, and developing a bi-state approach to inform partners and the public about restrictions on dredging, if any remain. The AOC goal is to understand and communicate the extent of contamination and for contaminated sites to be cleaned up or sealed off.



### Beach Closings and Body Contact Restrictions

Bacteria and toxic pollution in the river has resulted in swimming and body contact advisories in some locations. The next steps to remove this impairment include addressing bacterial sources at beaches due to human activities and completing contaminated sediment remedies at three sites with body contact restrictions. The AOC goal is to remove no-swimming and warning signs at contaminated sites and address beach closures due to wastewater pollution.



### Degraded Fish and Wildlife Populations

✓ **Impairment Removed!**

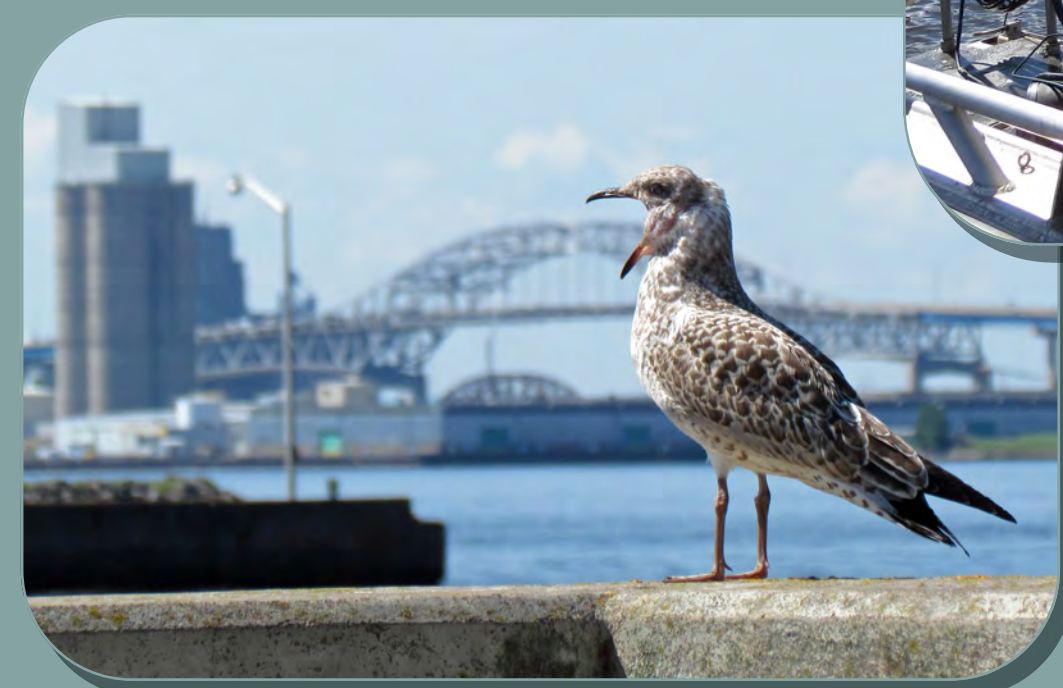
All six management actions required to remove this impairment were completed. Projects included habitat restoration for Piping Plover at Wisconsin Point and Common Tern at Interstate Island. Several other efforts to restore the river and estuary have been underway for decades, including remediation of contaminated sediment, water quality improvements, and restoration of fish and wildlife habitats. Studies were also completed to determine the area's improved capacity to support healthy fish and wildlife populations.



### Excessive Sediments and Nutrients

✓ **Impairment Removed!**

Lack of appropriate sewage treatment prior to the 1980's resulted in elevated nutrients in the St. Louis River. Extensive logging and removal of shoreline vegetation resulted in increased erosion in the Nemadji River and increased sediment in the St. Louis River. Monitoring confirmed that water quality improvements were achieved after better wastewater treatment facilities were built and land uses were better managed. Nutrient and sediment monitoring data confirmed that water quality is no longer restricting habitat or recreation, so this impairment was removed.



### Fish Tumors and Deformities

✓ **Impairment Removed!**

Removal of this impairment comes after years of sampling to learn whether fish tumors and other deformities are more common in the AOC. The diet based study confirmed that the tumor rate was not significantly different between the river and Lake Superior. Further, the St. Louis River AOC tumor rates were lower than other studied sites in the Great Lakes.

### Degradation of Aesthetics

✓ **Impairment Removed!**

A history of unregulated pollution in the industrial port caused the aesthetic qualities of the river to be degraded. The Clean Water Act and other environmental regulatory programs resulted in improvements in aesthetics and the removal of this impairment. The AOC goal of no persistent occurrences of oils, films, chemical residues, scums, discoloration, or obnoxious odors in the river has been met.

## Celebrating Success!

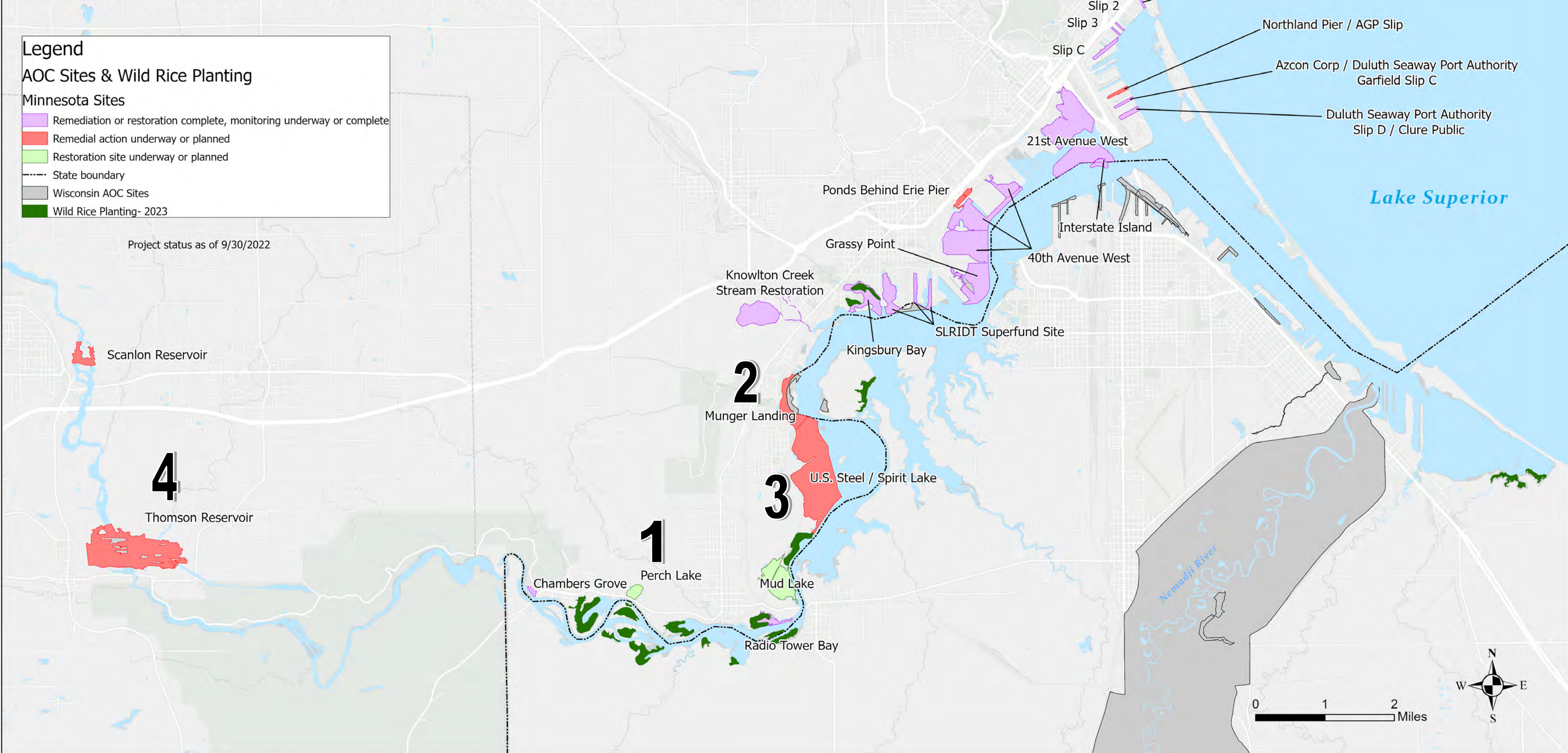
The St. Louis River AOC is on the road to recovery, with four impairments removed. After the remaining five impairments meet their targets and are removed, then the St. Louis River can be removed from the list of most polluted sites on the Great Lakes. AOC partners have a goal to achieve delisting by 2030.

# What's happening in the AOC? Minnesota Project Highlights

Today, the St. Louis River continues to be an important resource for business and industry, as well as a place for recreation and public enjoyment. The Minnesota Pollution Control Agency and Minnesota Department of Natural Resources have been working with local, state, tribal and federal partners for more than 30 years to address pollution and habitat loss in this area.



## St. Louis Area of Concern Remediation and Restoration Sites in Minnesota



## 1 Perch Lake

Perch Lake was once a bay of the St. Louis River Estuary. The construction of U.S. Highway 23 nearly eliminated this connection, drastically reducing the flows that flushed sediment from the lake and returned nutrients to it. The goal of this project is to improve flows between the lake and the St. Louis River, restore deep water and fish spawning habitat, and restore hemi-marsh and coastal marsh wetland habitats.

Dredging is substantially complete and the hemi-marsh has been created. Seeding and construction of openings to restore flow connections are planned for 2023.



MNDNR

## 2 Munger Landing

Beginning in 2022, contaminated sediment was hydraulically dredged and transported for three miles by pipe to Hallett Dock 7. There, the sediment was dewatered in geotubes and the water was treated in a sophisticated on-site treatment system.

The contaminants of concern at this bi-state site are polychlorinated biphenyls (PCBs), mercury and dioxins. About 750 cubic yards of sediment and soil classified as hazardous under the Toxic Substances Control Act have been mechanically excavated and will be transported to an out-of-state hazardous waste landfill.

By the time dredging is completed in 2023, about 100,000 cubic yards of contaminated sediment and soil will be removed and disposed of in a solid waste landfill. Eight acres of aquatic habitat will be restored, a sandy kayak launch will be constructed, and the boat launch and parking areas will be restored by Spring 2024.



U.S. Army Corps of Engineers

WDNR

Silt curtains contain material from the Munger Landing dredging operation (shown above). Contaminated sediment dredged from the Munger Landing project site is placed in geotubes (shown at right) so the drained wastewater can be treated before the dried sediment is disposed of in a permitted landfill.



## 3 Spirit Lake / U.S. Steel

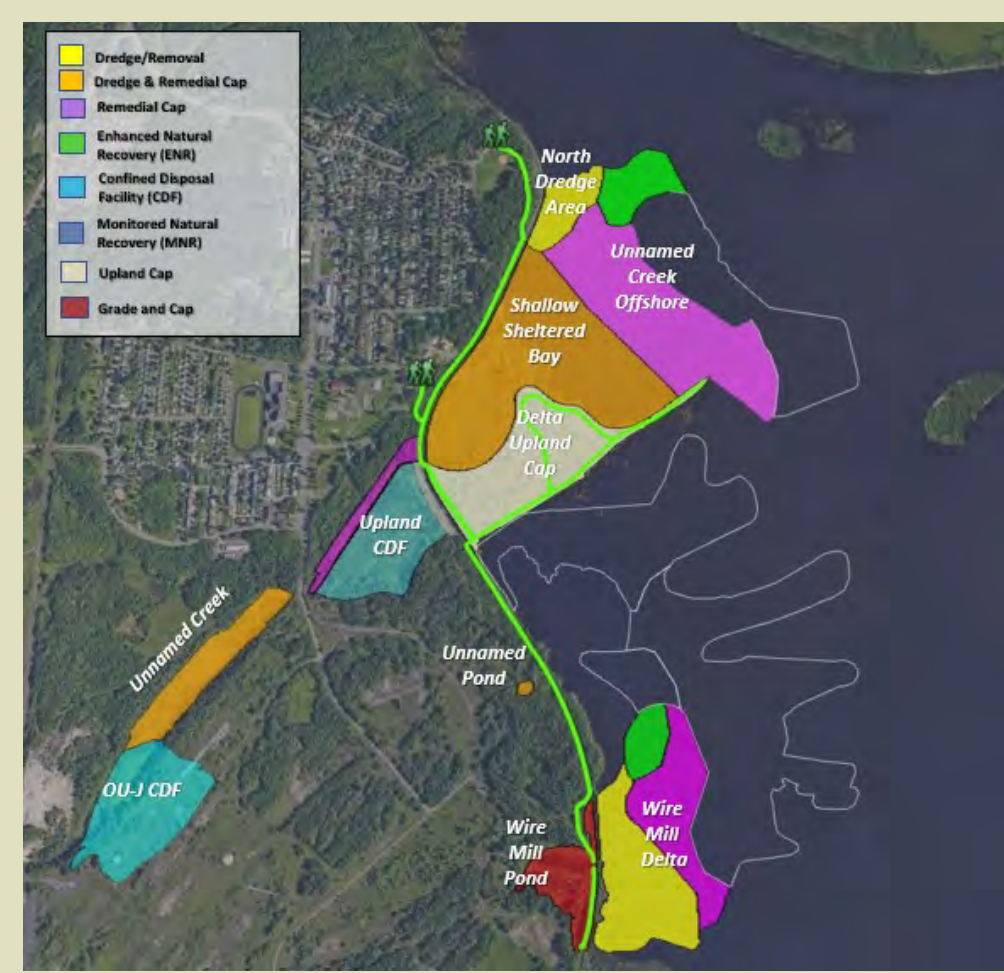
The U.S. Environmental Protection Agency and U.S. Steel are partners addressing sediment contamination and lost aquatic habitat along the west shore of Spirit Lake, adjacent to the U.S. Steel Duluth Works Superfund site. This is the largest, most complex and most expensive Area of Concern project in MN and will wrap up three years of construction in 2023.

A variety of remedies were completed, which included dredging about 1,300,000 cubic yards of impacted materials from multiple aquatic locations and placing the material in two on-site contaminated sediment disposal facilities. Remedial caps were constructed on over 100 acres of the aquatic and land portions of the site which sealed off approximately 850,000 cubic yards of impacted materials.

By the time final site restoration is completed, nearly 138 acres of aquatic habitat will be restored. Trails, fishing platforms, and paddle sports landings will also be constructed.



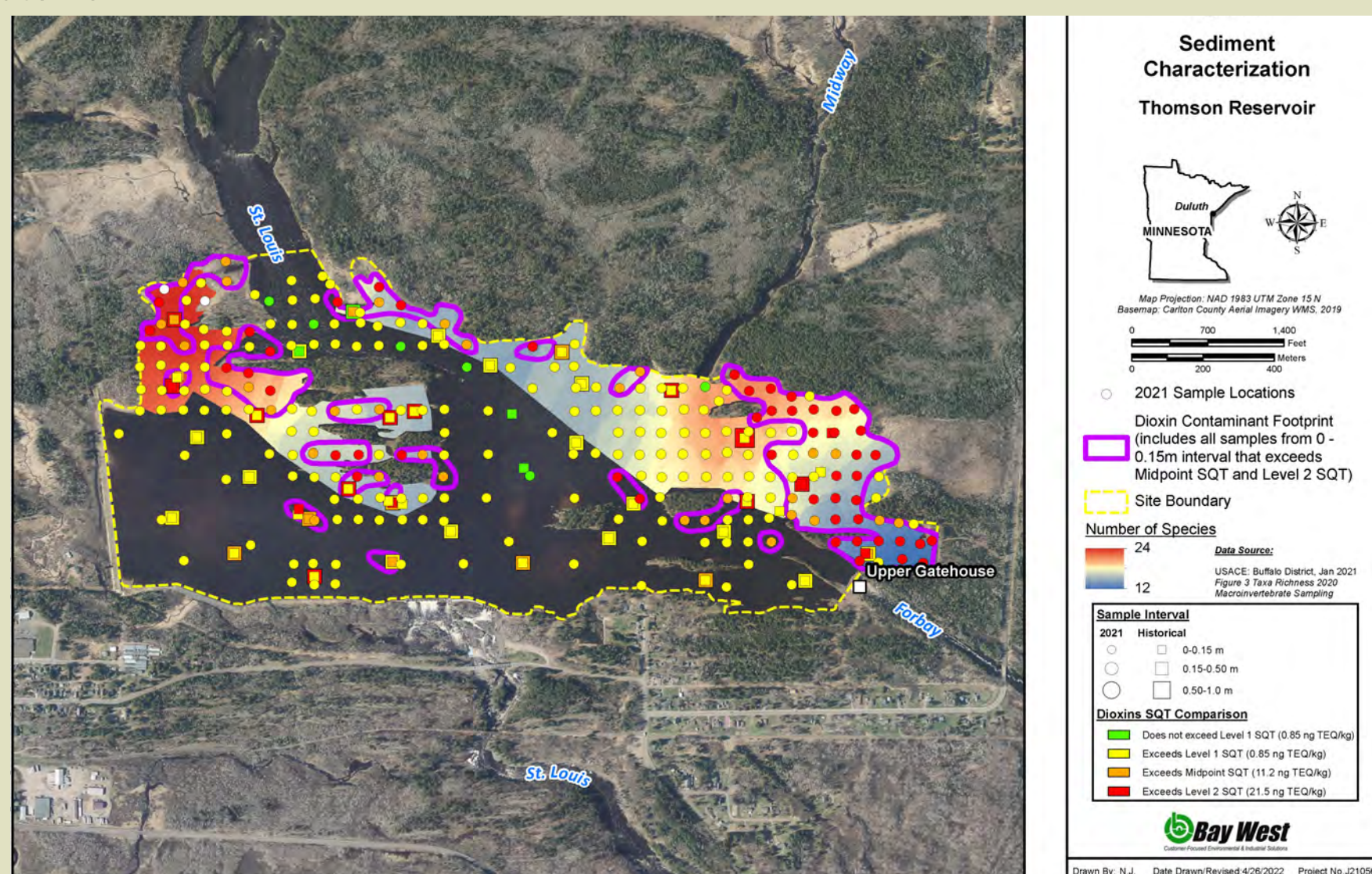
U.S. EPA



U.S. EPA

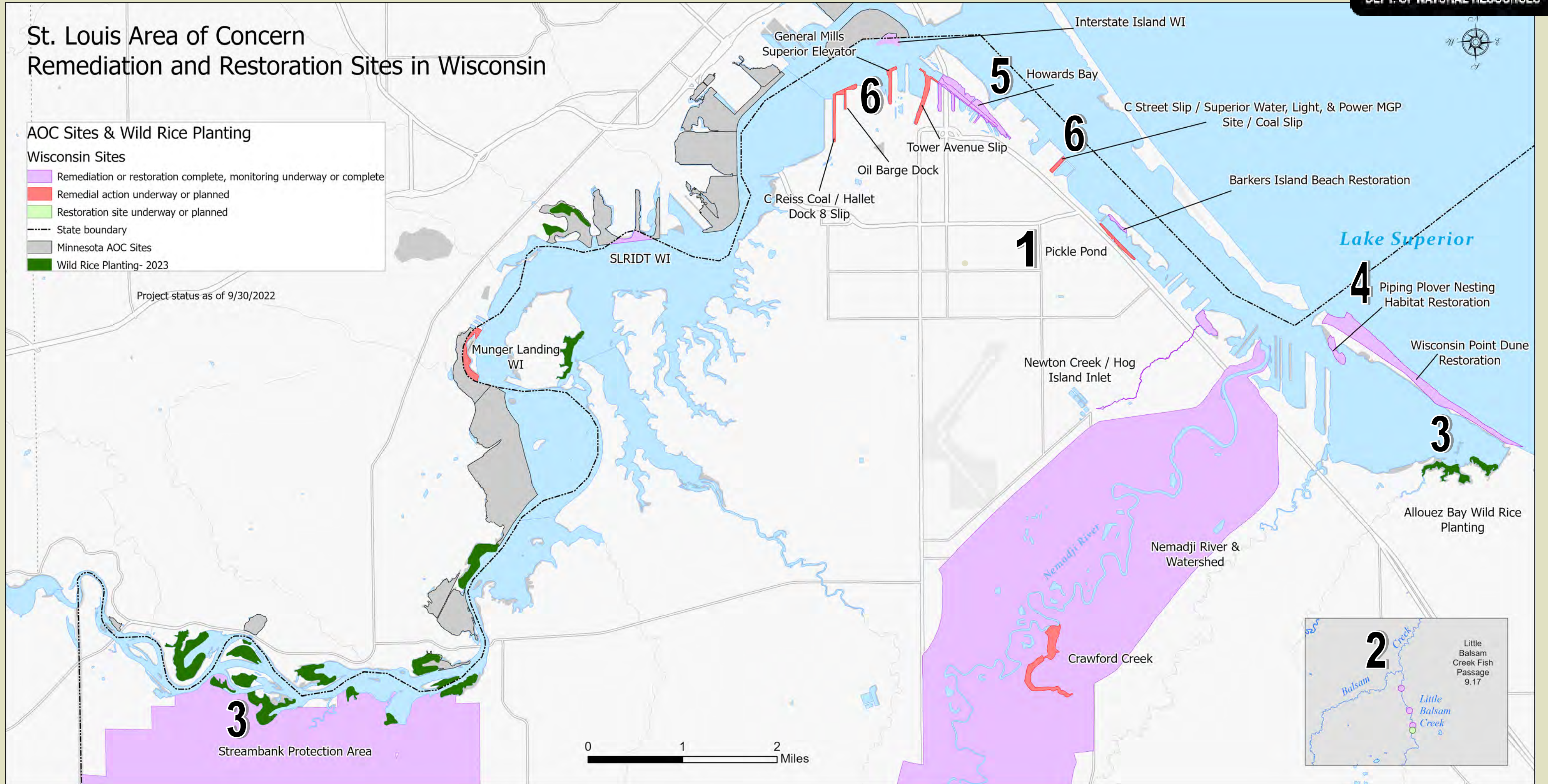
## 4 Thompson Reservoir

This reservoir is used by Minnesota Power to generate hydroelectric energy. About 245,000 cubic yards of sediment has been contaminated with dioxins and furans as a result of historical upstream wood pulp and paper manufacturing. Engineering design is underway for a remedy that will apply an activated carbon amendment to the 76-acre remedial footprint. Project design, environmental and cultural reviews, permitting and contracting will be conducted in 2023. Construction is planned for late 2023 - late 2024.



# What's happening in the AOC? Wisconsin Project Highlights

Today, the St. Louis River continues to be an important resource for business and industry as well as a place for recreation and public enjoyment. The Wisconsin DNR has been working with Minnesota and our local, state, tribal and federal partners for more than 30 years to address pollution and habitat loss in this area.



## 1 Pickle Pond Restoration

Construction in 2023 will restore Pickle Pond to a diverse aquatic and upland habitat area along the Superior waterfront. The project includes contaminated sediment removal, habitat restoration, invasive species control, and stormwater management. The pond was created when a rail line was built along the waterfront and over the decades, pollution and sediment have been trapped here, reducing the habitat quality. Areas of the pond will be deepened to increase fish habitat, and clean sediments will be used to create a wetland complex. The City of Superior, WDNR and adjacent landowners will create and maintain native plant communities around the pond and install stormwater infrastructure to prevent degradation of the new habitat.



## 4 Piping Plover Habitat

Piping plover are a shorebird species that are listed as state and federally endangered. In the early 20th century, the St. Louis River supported at least 12 breeding pairs, but no nesting pairs have been observed recently. Piping plovers need wide barren beaches to nest and raise their young. A habitat restoration project was completed in 2019 at the Wisconsin Point Bird Sanctuary to create 14 acres of open sand and cobble beach suitable for piping plover nesting and foraging habitat. New land was created with clean dredge material from the Duluth-Superior Harbor, which must be dredged for commercial shipping navigation. This is a great example of beneficial use of dredge material to restore critical habitat for an endangered species. Habitat establishment and maintenance efforts are underway through 2024: native dune grass plantings, cobble added to the beach, predator fencing monitored, and management of unwanted woody debris and vegetation.



## 2 Little Balsam Creek Fish Passage

A field inventory of 159 stream crossings was conducted in the AOC and has prioritized Little Balsam Creek to re-connect 5.07 miles of class 1 trout waters. Little Balsam Creek has four crossings that are not passable to fish and other aquatic organisms. The barriers restrict fish movement if water velocity is too high or if fish cannot jump up a perched culvert, preventing them from reaching the best spawning habitat within the stream. Re-connecting the stream will contribute to removing the loss of fish and wildlife habitat impairment. Three of the culvert replacements were completed in 2019. Phase two is underway at the Gandy Dancer State Trail crossing and completion is anticipated in 2023.



## 5 Howards Bay

Howards Bay is an industrial embayment important for Great Lakes commerce. It's home to a large grain terminal and the only U.S. shipyard on Lake Superior. A history of industrial use polluted sediments in the bay. A dredging project was completed to remove contamination and provide a deeper channel for vessels entering the grain terminal and shipyard. To make efficient use of private and public funds Fraser Shipyards, City of Superior, Wisconsin DNR, and the U.S. EPA partnered to address environmental problems and meet maritime needs with a single project. The U.S. Army Corps of Engineers participated as the design and construction contractor and completed the project in 2021, removing 118,700 cubic yards of sediment. Much of this material was used to improve a closed landfill cap in Superior. The bay will now continue to serve commerce while providing cleaner habitat for fish, migratory waterfowl and other aquatic life.



## 3 Manoomin (Wild Rice) Restoration

Manoomin (the Ojibwe name for wild rice) was once abundant in the St. Louis River, but has been reduced to a few remnant stands in the estuary. Restoration work as part of the AOC has been ongoing since 2015 and includes annual seeding, vegetation management, and protection from being eaten by geese until wild rice beds become self-sustaining. A team of federal, state, local and tribal governments along with other partners are implementing a restoration plan that includes restoration in both MN and WI sheltered bays. The goals include seeding over 100 acres each year in the back bays of the St. Louis River estuary and Allouez Bay. Seed availability and acres seeded varies each year based on the rice crop available for restoration. Sites are seeded multiple times until a seed bank is established and the site can sustain natural re-seeding each year. AOC restoration will continue through 2026 as part of the longer term effort to restore hundreds of acres of wild rice in the estuary.



## 6 Superior Slips

Over a century of heavy industrial activities in the Port of Superior have led to environmental degradation of sediment in areas of the harbor. Sediment in four slips (C Street Slip, General Mills Slip, Oil Barge Dock, and Tower Avenue Slip) contaminated with metals, mercury, organotin, polycyclic aromatic hydrocarbons, and other compounds are targeted for cleanup by 2026. The current activities include investigating and characterizing the nature and extent of sediment contamination, developing and evaluating alternatives for remediating sediment contamination, and development of a recommended alternative to address contamination. Public information and input opportunities will be available in 2023.

