

An aerial photograph of the Great Lakes basin in North America, showing the five large lakes (Superior, Michigan, Huron, Erie, and Ontario) and their connecting waterways. The surrounding land is a mix of green and brown, indicating forested and agricultural areas. The text is overlaid in the upper and lower central portions of the image.

Prioritizing Habitat Projects in Areas of Concern Throughout the Great Lakes

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U.S. Environmental Protection Agency
Great Lakes National Program Office
August 1, 2013**













Great Lakes Water Quality Agreement 1972



Great Lakes Water Quality Agreement 2012



| Toxic Substances and AOCs Measures | Progress as of July 2012 |
|--|---|
| 1.1 Number of Areas of Concern in the Great Lakes where all management actions necessary for delisting have been implemented (cumulative) |  |
| 1.2 Area of Concern Beneficial Use Impairments removed (cumulative) |  |
| 1.3 Beneficial Use Impairment delisting project starts at Areas of Concern (cumulative) |  |
| 1.4 Cubic yards (in millions) of contaminated sediment remediated in the Great Lakes (cumulative) |  |
| 1.5 Pollution (in million pounds) collected through prevention and waste minimization projects in the Great Lakes basin (cumulative) |  |
| 1.6 Cumulative percentage decline for the long term trend in average concentrations of PCBs in Great Lakes fish |  |

| Invasive Species Measures | Progress as of July 2012 |
|--|---|
| 2.1 Rate of nonnative species newly detected in the Great Lakes ecosystem (species/year) |  |
| 2.2 Acres managed for populations of invasive species controlled to a target level (cumulative) |  |
| 2.3 Number multi-agency plans established, mock exercises to practice rapid responses carried out under those plans, and/or actual rapid response actions (cumulative) |  |
| 2.4 Number of recreation and resource users (in millions) contacted on best practices that prevent the introduction and spread of invasive species (cumulative) |  |

Nearshore Health and Non-Point Source Pollution Measures

Progress as of July 2012

3.1 Five year average annual loadings of soluble reactive phosphorus from tributaries draining targeted watersheds (percent reduction)



3.2 Percentage of beaches meeting bacteria standards 95% or more of beach days



3.3 Extent (sq. miles) of Great Lakes Harmful Algal Blooms (percent reduction)



3.4 Annual number of days U.S. Great Lakes beaches are closed or posted due to nuisance algae



3.5 Annual volume of sediment deposition in defined harbor areas (Toledo Harbor) in targeted watersheds (millions of cubic yards)



3.6 Acres (in thousands) in Great Lakes watershed with USDA conservation practices implemented to reduce erosion, nutrients and/or pesticide loading under Farm Bill Programs



Habitat and Wildlife Protection and Restoration Measures

Progress as of July 2012

4.1 Miles of rivers reopened for fish passage



4.2 Number of fish passage barriers removed or bypassed



4.3 Number of species delisted due to recovery



4.4 Percent of recovery actions implemented for priority listed species



4.5 Percent of populations of native aquatic non-threatened and endangered species self-sustaining in the wild



4.6 Number of acres of wetlands and wetland-associated uplands protected, restored and enhanced



4.7 Number of acres of coastal, upland, and island habitats protected, restored and enhanced






4.8 Percent of U.S. coastal Great Lakes wetlands assessed



4.9 Number of habitat-related Beneficial Use Impairments removed from the 27 U.S. Areas Of Concern so impaired



| Accountability, Education, Monitoring, Evaluation, Communication, & Partnerships Measures | Progress as of July 2012 |
|---|---|
| 5.1 Improvement in the overall aquatic ecosystem health of the Great Lakes using the Great Lakes 40-point scale |  |
| 5.2 Number of priority LaMP projects that are completed |  |
| 5.3 Number of educational institutions incorporating new or existing Great Lakes protection and stewardship criteria into their broader environment education curricula |  |

Great Lakes Areas of Concern

Great Lakes Basin Boundary



| Legend | |
|--------------------------------------|------------------------------------|
| ■ | U.S. AOCs |
| ◆ | Binational AOCs |
| ■ | Canadian AOCs |
| ▲ | Areas of Concern in recovery stage |
| ★ | Deleted Canadian AOCs |
| ★ | Deleted U.S. AOCs |

UPDATED: FEBRUARY 15, 2013

Beneficial Use Impairments

1. Restrictions on Fish and Wildlife Consumption
2. Tainting of Fish and Wildlife Flavor
3. Degraded Fish and Wildlife Populations
4. Fish Tumors or Other Deformities
5. Bird or Animal Deformities or Reproductive Problems
6. Degradation of Benthos
7. Restrictions on Dredging Activities
8. Eutrophication or Undesirable Algae
9. Restrictions on Drinking Water Consumption or Taste and Odor Problems
10. Beach Closings
11. Degradation of Aesthetics
12. Added Costs to Agriculture or Industry
13. Degradation of Phytoplankton and Zooplankton Populations
14. Loss of Fish and Wildlife Habitat

Remedial Action Plans

- Identify and assess use impairments
- Identify proposed remedial actions and methods to implement
- Document evidence that uses are restored

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DEGRADED FISH AND WILDLIFE POPULATIONS

Listing Guideline: When fish and wildlife management programs have identified degraded fish or wildlife populations due to a cause within the watershed. In addition, this use will be considered impaired when relevant, field-validated, fish or wildlife bioassays with appropriate quality assurance/quality controls confirm significant toxicity from water column or sediment contaminants.

Delisting Guideline: When environmental conditions support healthy, self-sustaining communities of desired fish and wildlife at predetermined levels of abundance that would be expected from the amount and quality of suitable physical, chemical and biological habitat present. An effort must be made to ensure that fish and wildlife objectives for Areas of Concern are consistent with Great Lakes ecosystem objectives and Great Lakes Fishery Commission fish community goals. Further, in the absence of community structure data, this use will be considered restored when fish and wildlife bioassays confirm no significant toxicity from water column or sediment contaminants.

DEGRADATION OF BENTHOS

Listing Guideline: When the benthic macroinvertebrate community structure significantly diverges from unimpacted control sites of comparable physical and chemical characteristics. In addition, this use will be considered impaired when toxicity (as defined by relevant, field-validated, bioassays with appropriate quality assurance/quality controls) of sediment associated contaminants at a site is significantly higher than controls.

Delisting Guideline: When the benthic macroinvertebrate community structure does not significantly diverge from unimpacted control sites of comparable physical and chemical characteristics. Further, in the absence of community structure data, this use will be considered restored when toxicity of sediment-associated contaminants is not significantly higher than controls.

LOSS OF FISH AND WILDLIFE HABITAT

Listing Guideline: When fish and wildlife management goals have not been met as a result of loss of fish and wildlife habitat due to a perturbation in the physical, chemical, or biological integrity of the Boundary Waters, including wetlands.

Delisting Guideline: When the amount and quality of physical, chemical, and biological habitat required to meet fish and wildlife management goals have been achieved and protected.

GLRI Priority AOCs

FY12

- Sheboygan
- White Lake
- Ashtabula
- River Raisin

FY14

- St Clair
- St Marys
- Waukegan Harbor
- Deer Lake
- Manistique

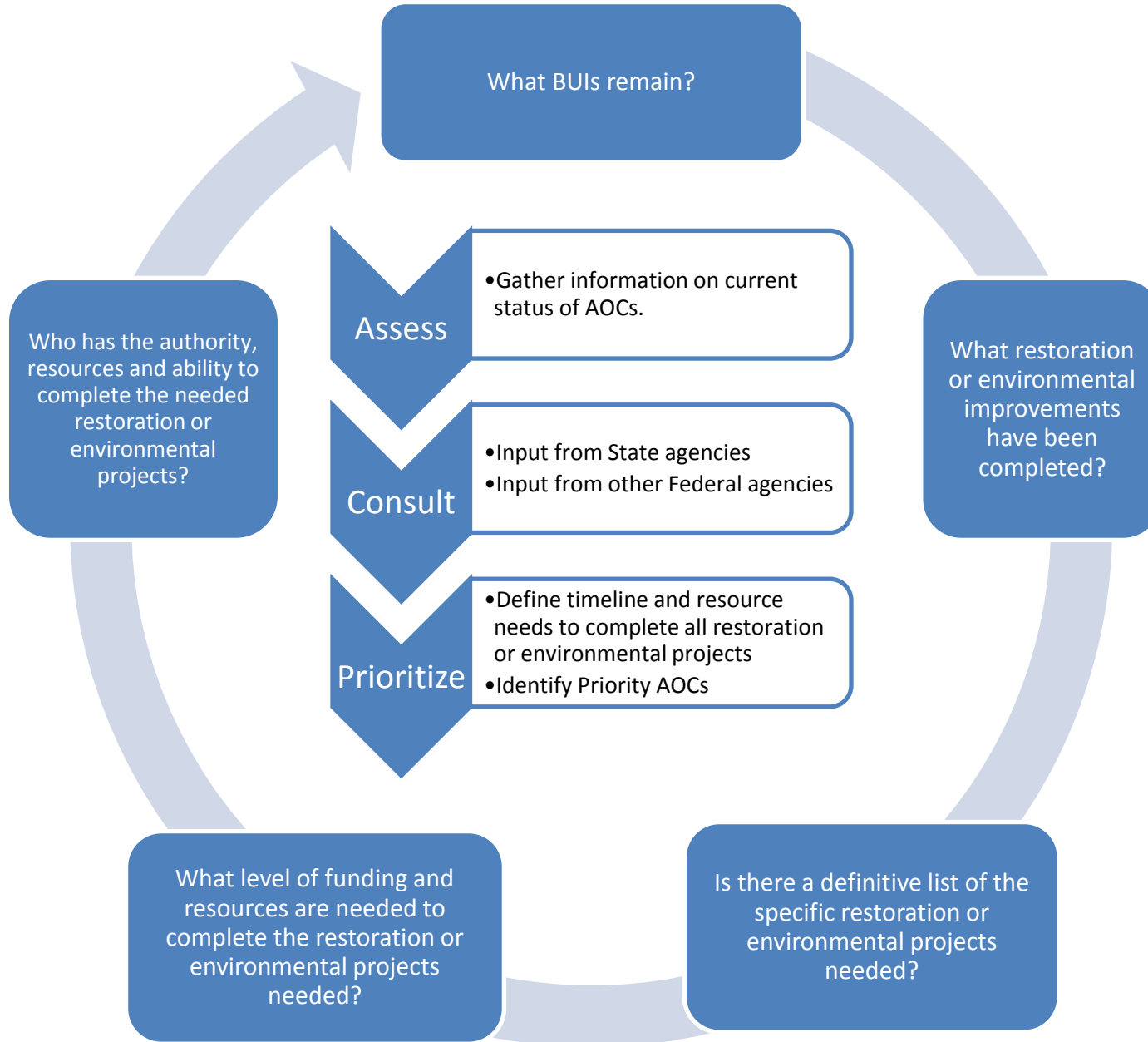
FY16

- Buffalo
- Rochester
- Lower Menominee

FY 17-18

- Detroit
- Clinton
- Muskegon

Process for Identifying Priority Area of Concerns



As of August 31, 2012
Does not include
GLLA

| ALL AOCs | # of projects | \$ Amount |
|----------------------------|---------------|-----------------|
| Illinois | 12 | \$4.5M |
| Indiana | 16 | \$6.4M |
| Michigan | 174 | \$114.4M |
| Minnesota and Wisconsin | 35 | \$22.3M |
| New York | 86 | \$62.2M |
| Ohio | 79 | \$43M |
| Pennsylvania | 12 | \$3.7M |
| Wisconsin | 76 | \$55.1M |
| TOTAL | 490 | \$311.6M |

From: Great Lakes
Accountability
System (GLAS)

HABITAT AND WILDLIFE FOCUS AREA

APHIS

BIA

FHWA

FS

GLFC

NOAA

NPS

USACE

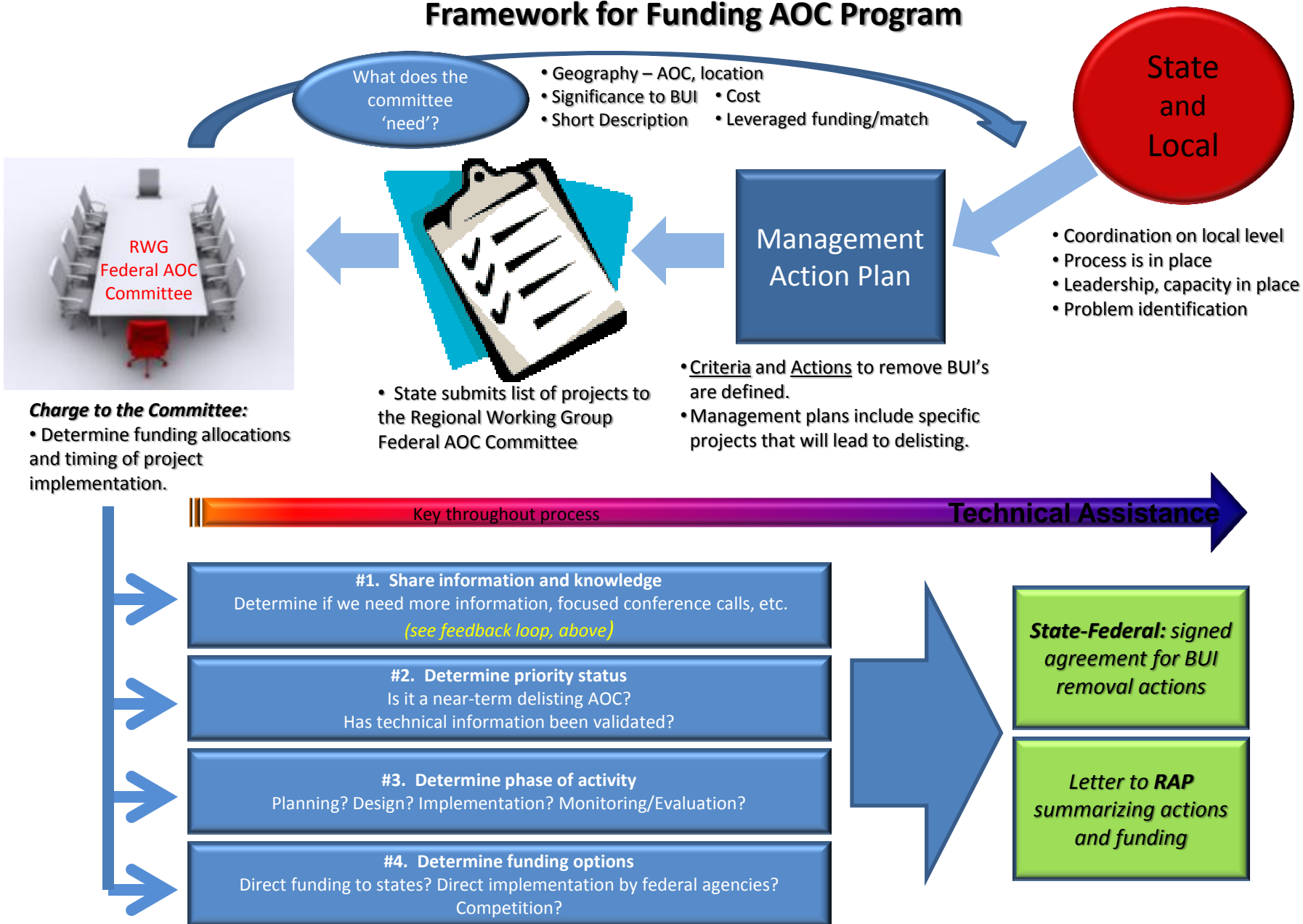
USEPA

USFWS

USGS

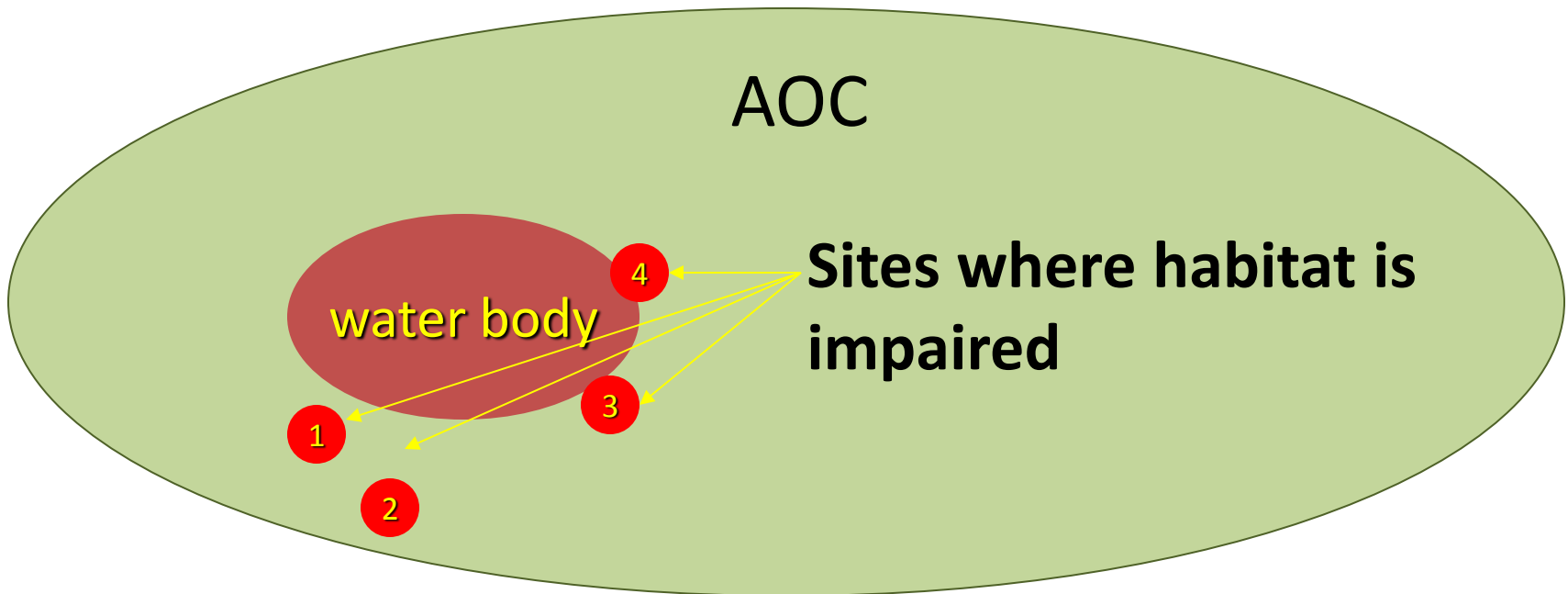


Framework for Funding AOC Program



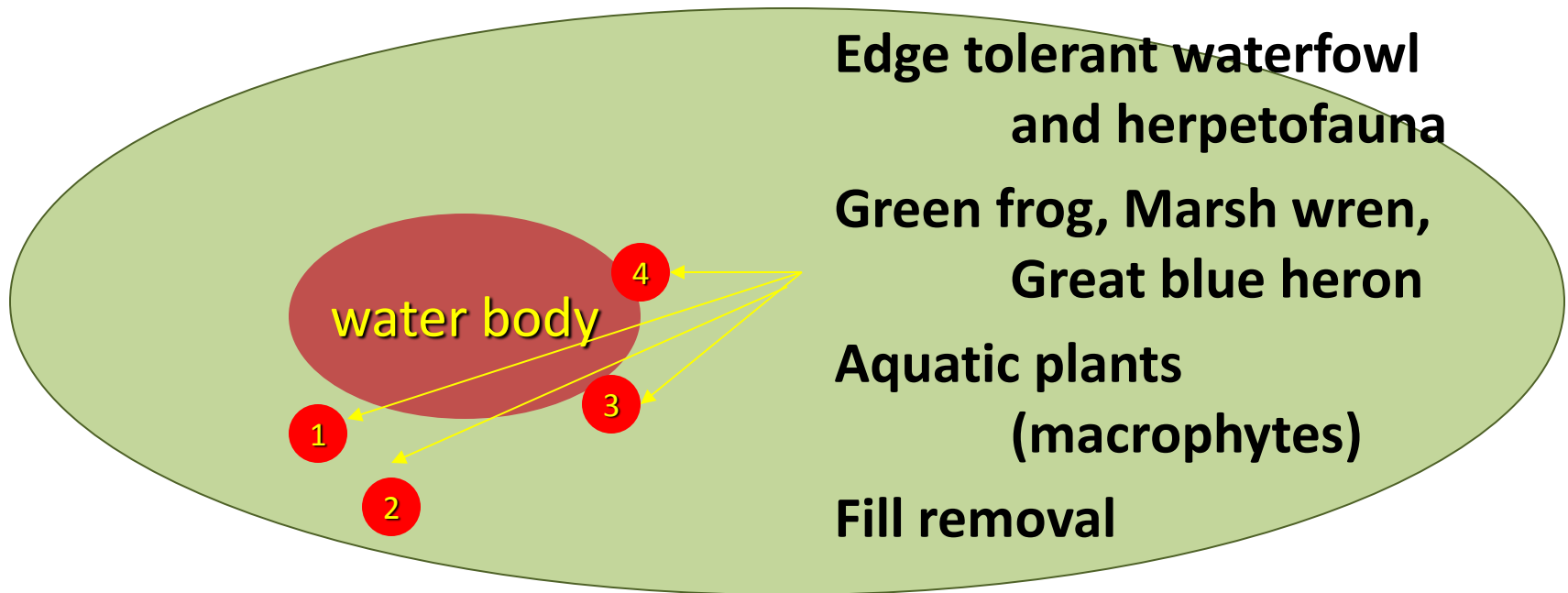
Habitat master plan

- Zero in on the sites that caused the habitat impairments in the AOC



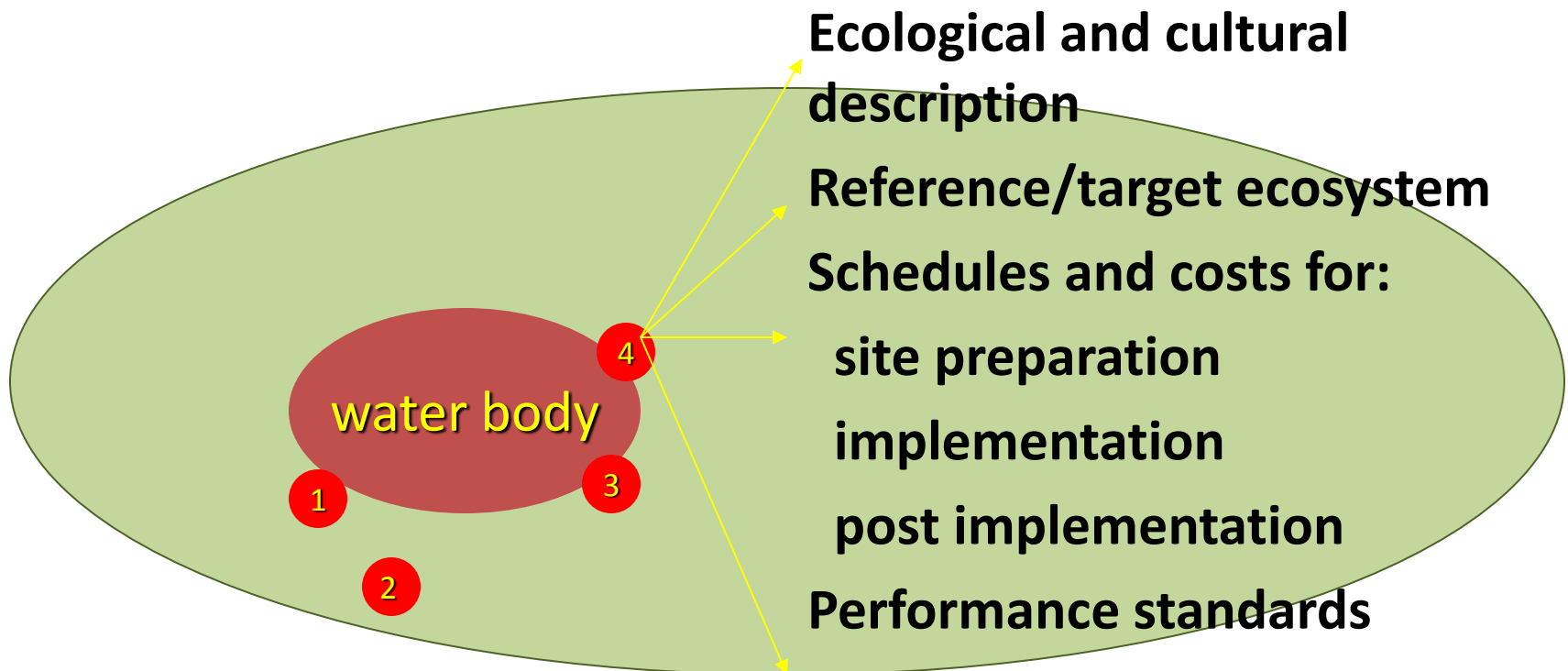
Habitat master plan

- Set habitat targets



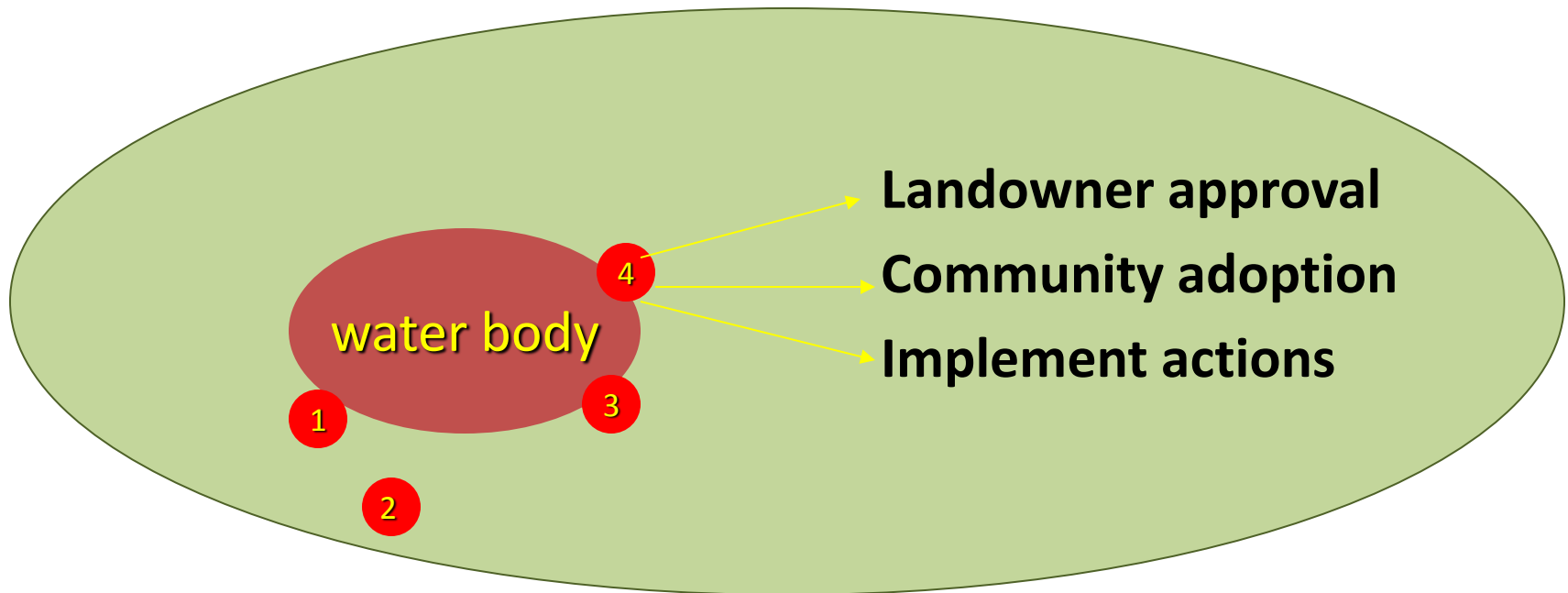
Habitat master plan

- For each site specify the following information:



Habitat master plan

- Master plan review and adoption:

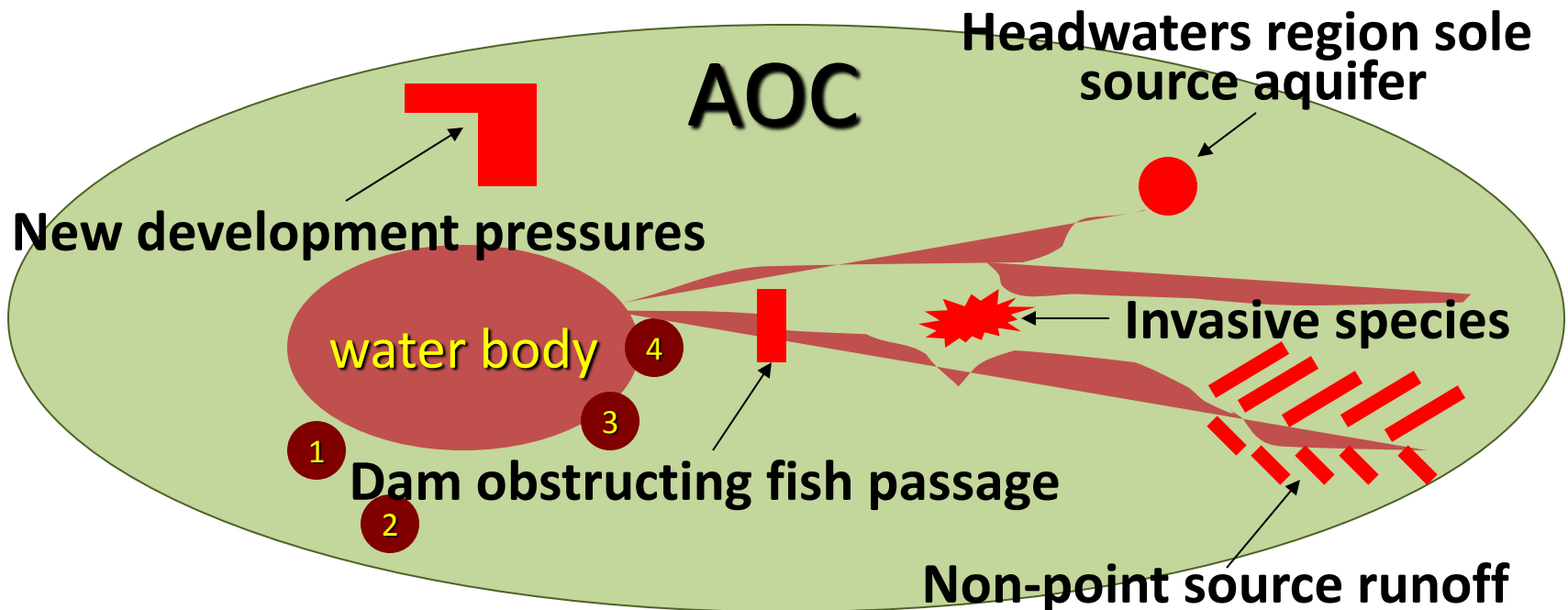


Implementing actions in the sites that caused the BUIs leads to delisting habitat-related BUIs

- ✓ 1 Wetland restoration
- ✓ 2 Floodplain restoration
- ✓ 3 Emergent aquatic restoration
- ✓ 4 South Lakeside and Ruddiman Creek

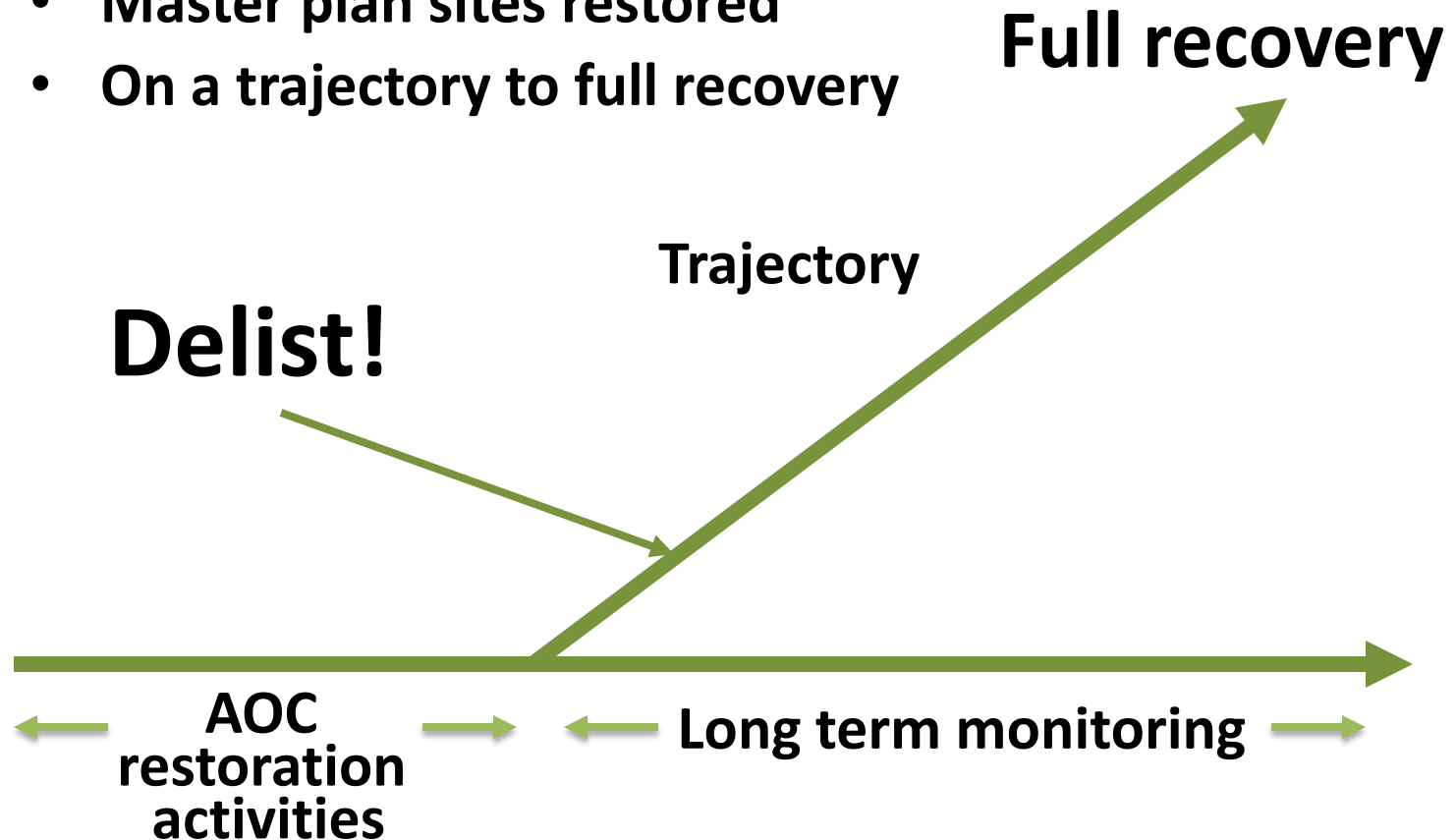
The rest of the AOC

- Implement best management practices/stewardship to prevent further degradation



Habitat restoration timeline

- Sources controlled
- Master plan sites restored
- On a trajectory to full recovery





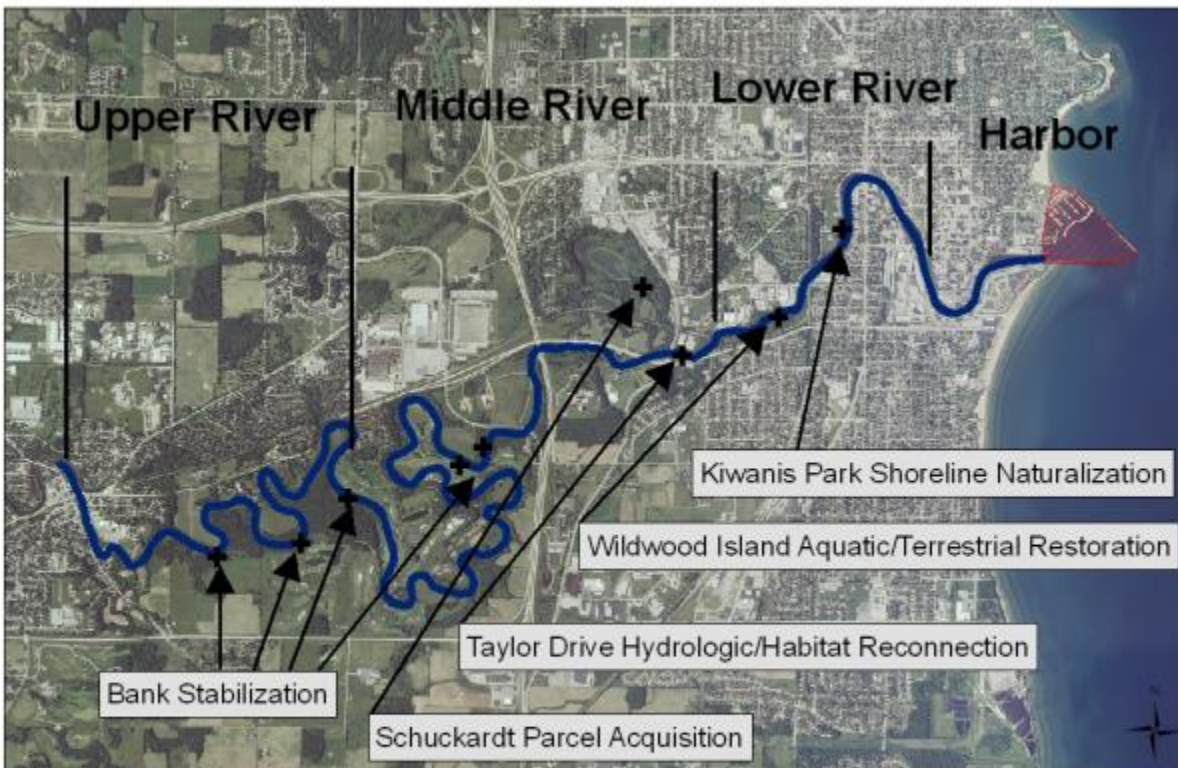


Sheboygan River, WI



All management actions completed

- Total yards sediment removed – 389k CY including Legacy Act and Superfund
- 5 habitat projects completed

TOTAL Expended: **\$80M**

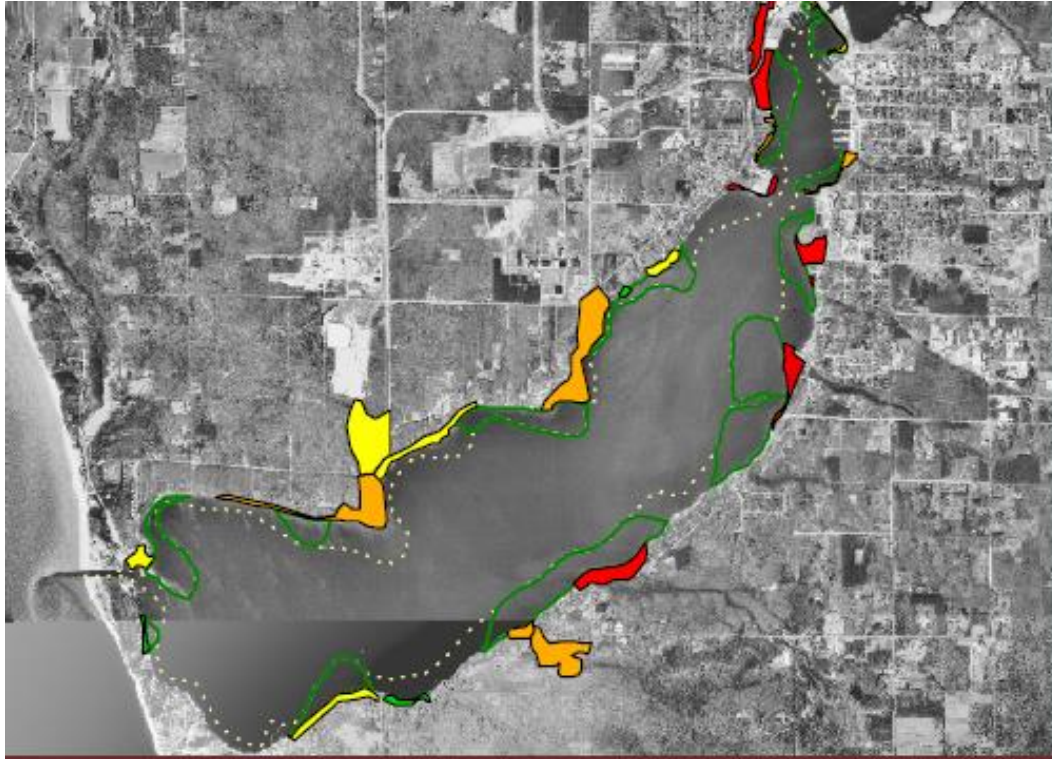


Sheboygan River Area of Concern
Proposed Projects for Delisting Fish and Wildlife Habitat/Populations BUIs (11/5/2010)

 River Reaches
 Outer Harbor

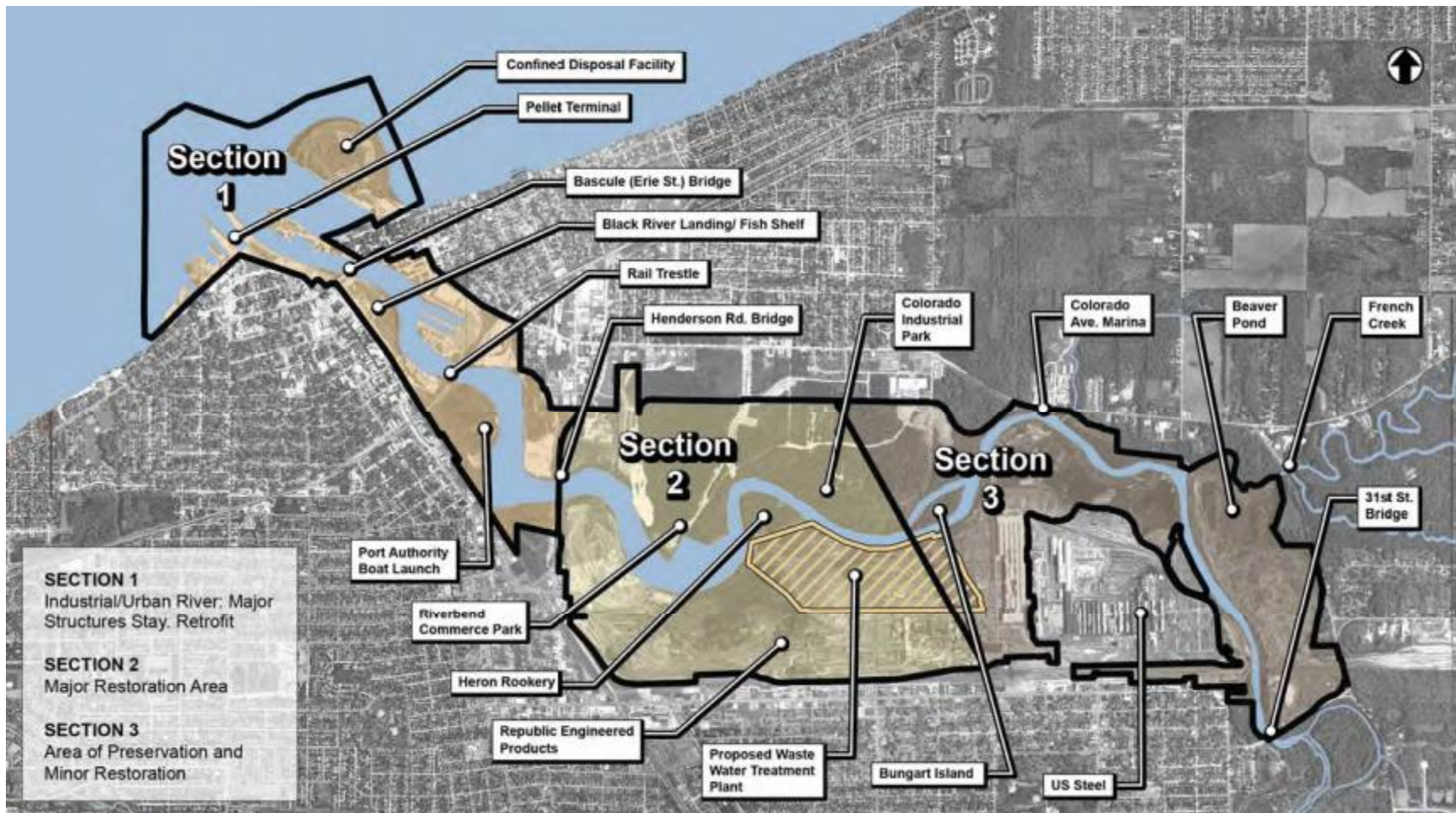
0 1 2 Miles

White Lake, MI



- Management action, habitat restoration, completed – 12/12
- However...due to lower lake levels, potential Aesthetics BUI issue—EPA, State and AOC assessing conditions
- Projecting AOC Management action completed by 9/13

Lower Black River, OH





Muskegon Lake, MI

Cuyahoga River, OH



