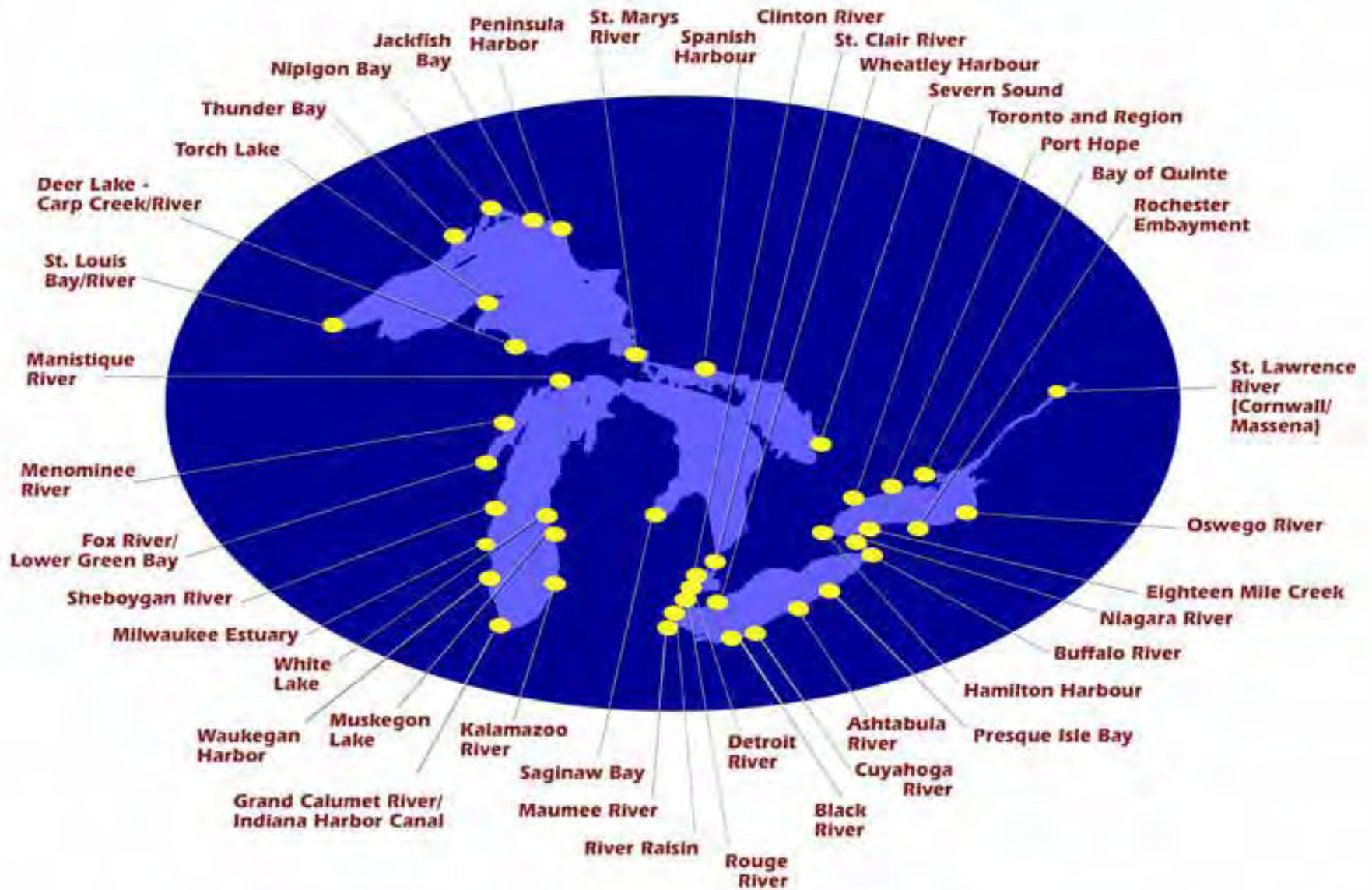


# Hog Island and Newton Creek: Remediation to Restoration

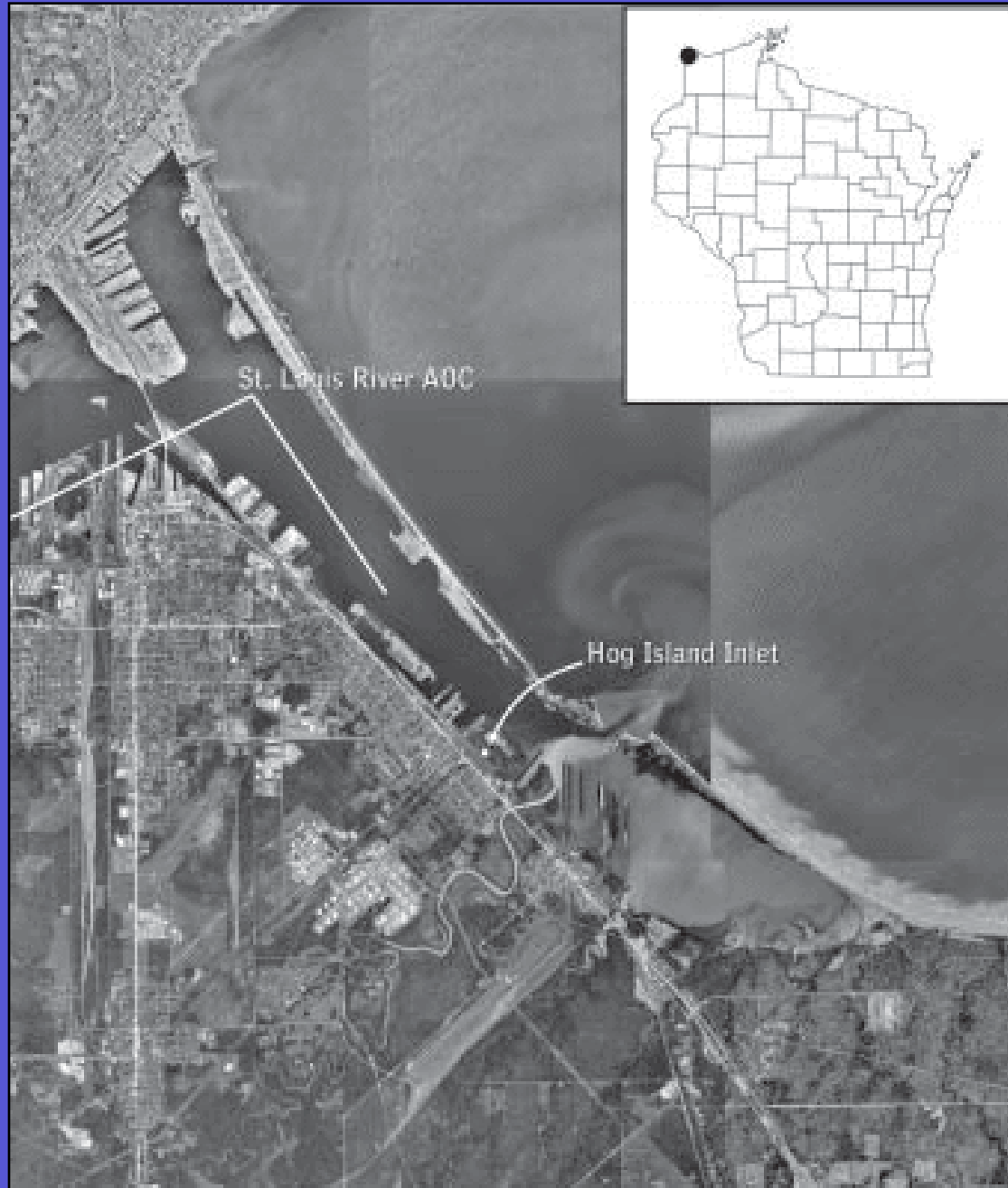


# **Beneficial use impairments (BUIs)**

- **Beach closings**
- **Restrictions on fish and wildlife consumption**
- **Eutrophication or undesirable algae**
- **Restrictions on drinking water consumption or taste and odor**
- **Degradation of fish and wildlife populations**
- **Degradation of aesthetics**
- **Degradation of benthos**
- **Restriction on dredging activities**
- **Loss of fish and wildlife habitat**

# Habitat-related BUIs

- Beach closings
- Restrictions on fish and wildlife consumption
- Eutrophication or undesirable algae
- Restrictions on drinking water consumption or taste and odor
- **Degradation of fish and wildlife populations**
- Degradation of aesthetics
- **Degradation of benthos**
- Restriction on dredging activities
- **Loss of fish and wildlife habitat**





# Great Lakes Legacy Act Sediment Clean Up

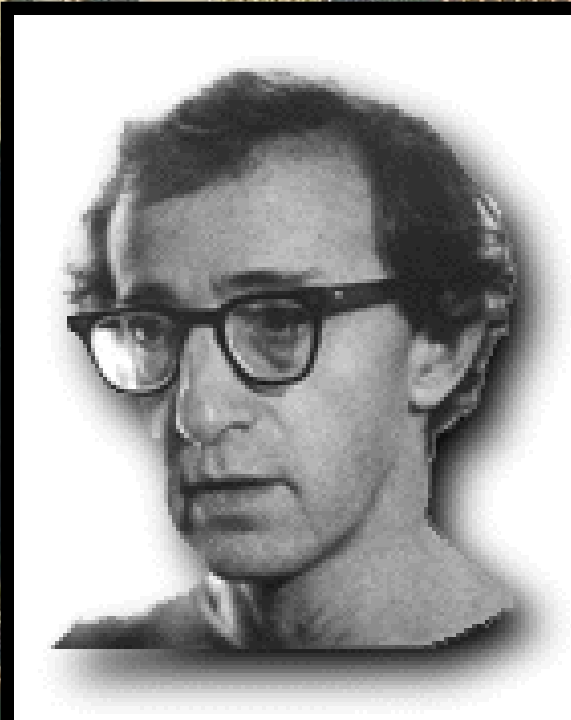


# **Remediation to Restoration**

**it's more than birds and  
bunnies...**

**Engineers.....**





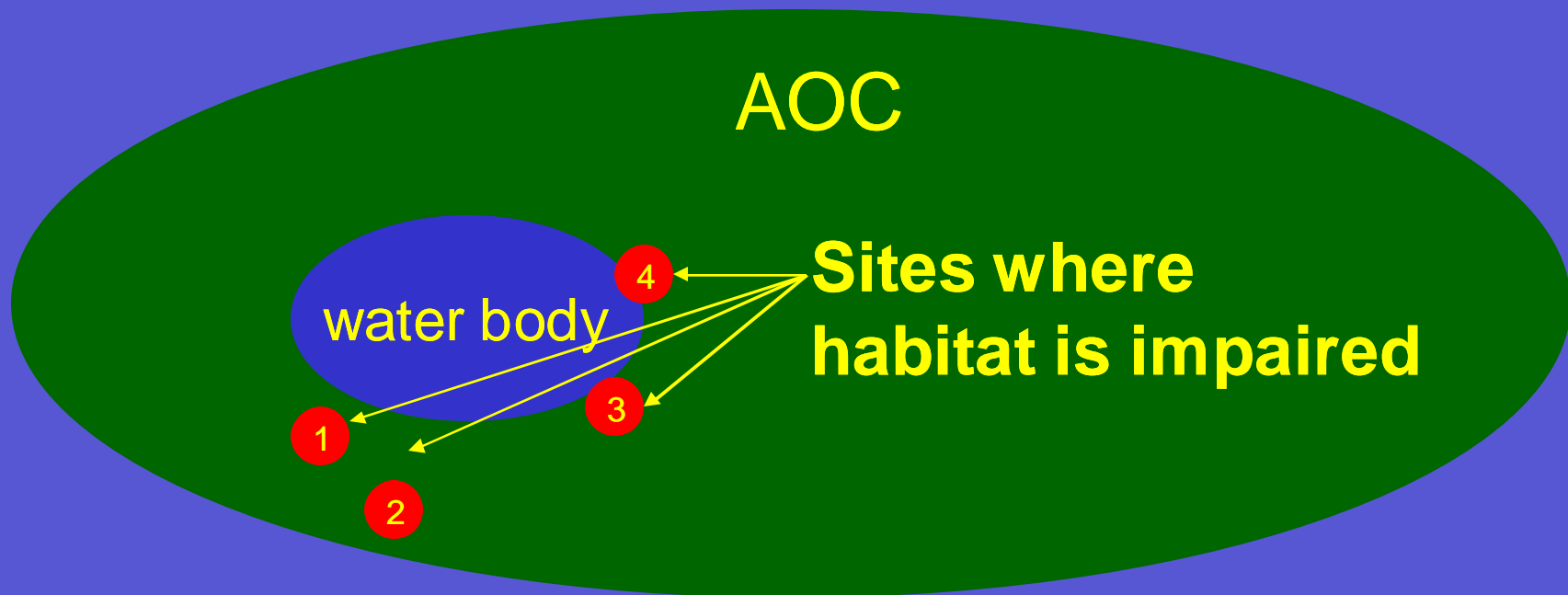
**“Nature and I are two!”**

*Woody Allen*

Slide Courtesy of Liam Heneghan

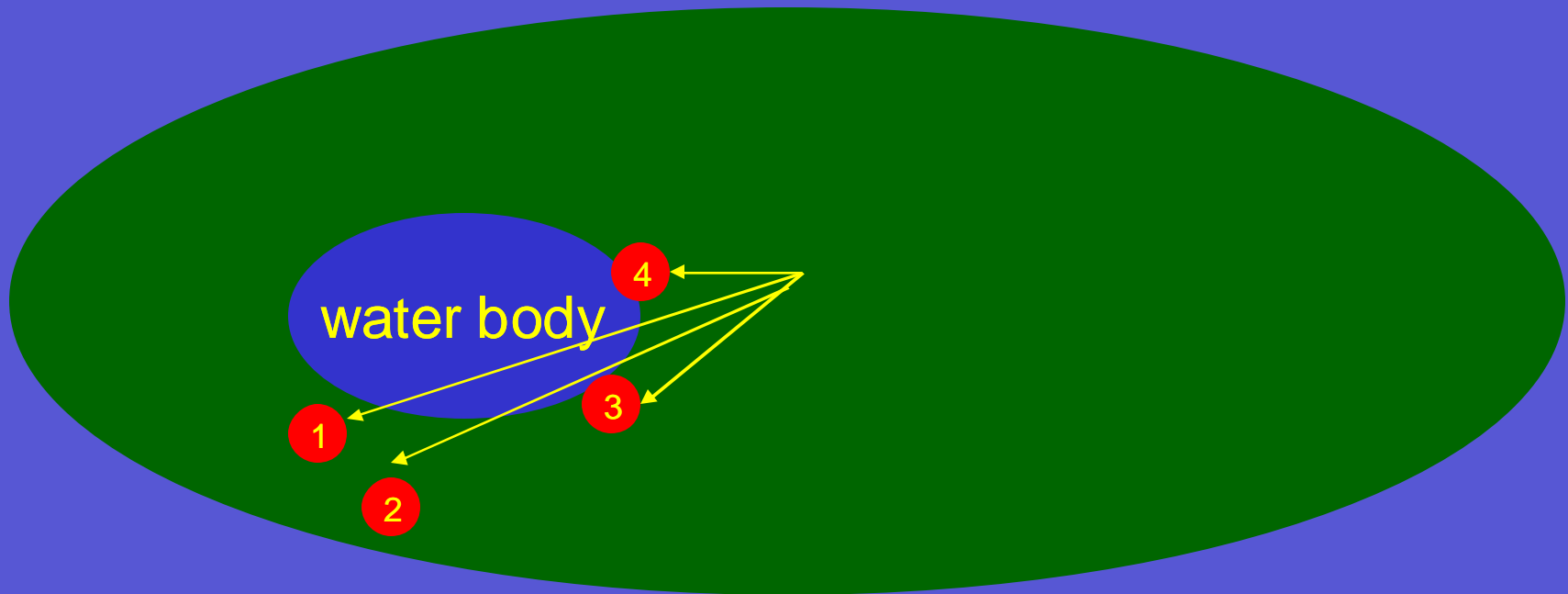
# Ecological restoration master plan

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



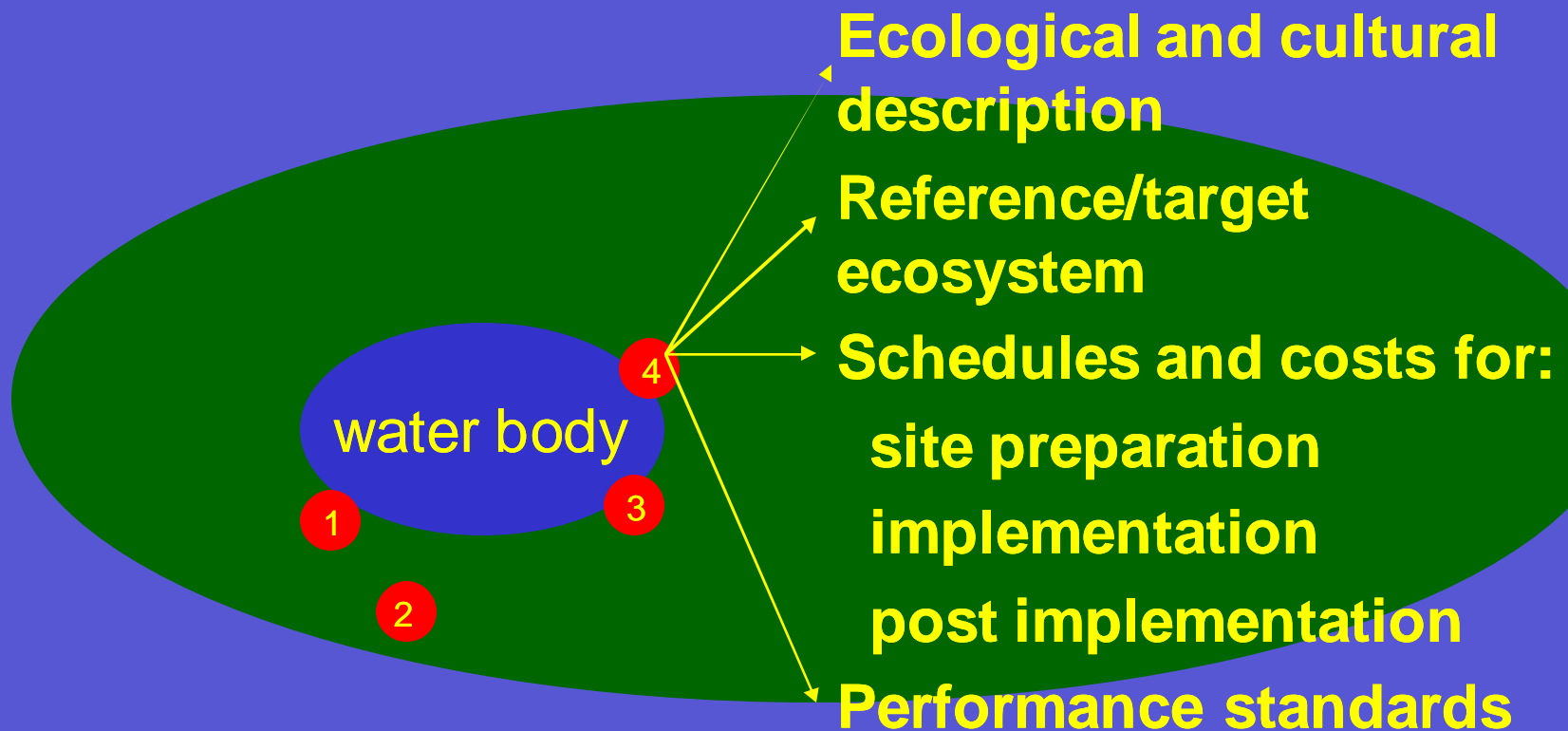
# Ecological restoration master plan

- Set habitat AOC targets



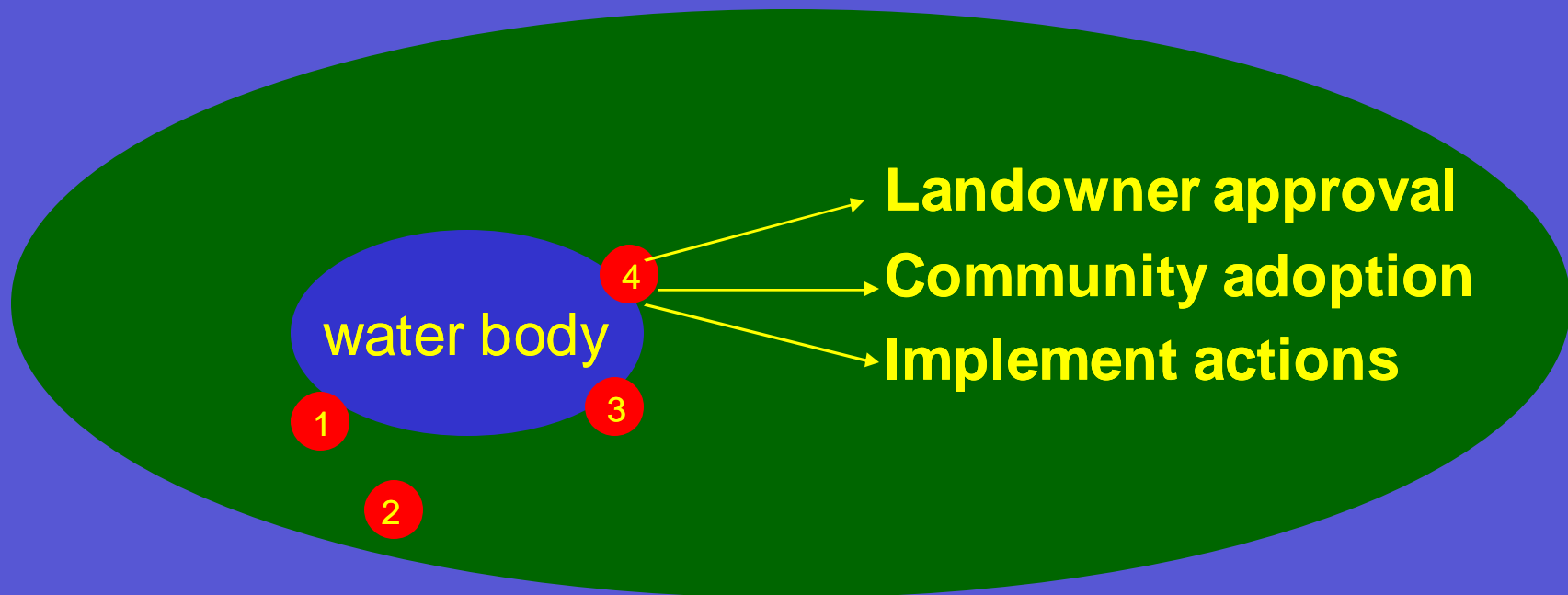
# Ecological restoration master plan

- For each site specify the following information:



# Ecological restoration master plan

- Master plan review and adoption:



# **Hog Island and Newton Creek Ecological Restoration Master Plan**

- **Kickoff Meeting**  
**September 16, 2006**
- **Public Workshops**  
**January, May and July 2007**
- **Final Restoration Plan**  
**September 2007**



## Hog Island: "Pig Out" on Nature!





 Michigan Department of Natural Resources  
**Hog Island  
and  
Newton Creek**  
Ecological Exploration Master Plan  
2012



## Objective C1) Control selected invasive plant species

**Restoration Trajectory:** *Reduce large assemblages of native plant species on Hay Island, Hay Island Inlet, and Navaho Creek, and eliminate the above-ground biomass through the control of invasive species.*



Invasive species management is identified as a major objective for long-term habitat restoration for riparian wildlife along the Hay Island project area. Invasive species management includes habitat assessment, monitoring, active removal, pasture control, and the combination of invasive species management with other types of projects such as stream restoration, wetland restoration, and site remediation. Notable non-native invasive species for control are seed canopy grass (*Phalaris arundinacea*), which occurs in abundance along the length of Navaho Creek, and common reed (*Phragmites australis*), which is present in large stands in the Hay Island Inlet and shoreline. Purple loosestrife is another common species in the project area, but should be carefully monitored to ensure that future restoration does not allow this adjacent area of Superior City watersheds to become isolated.



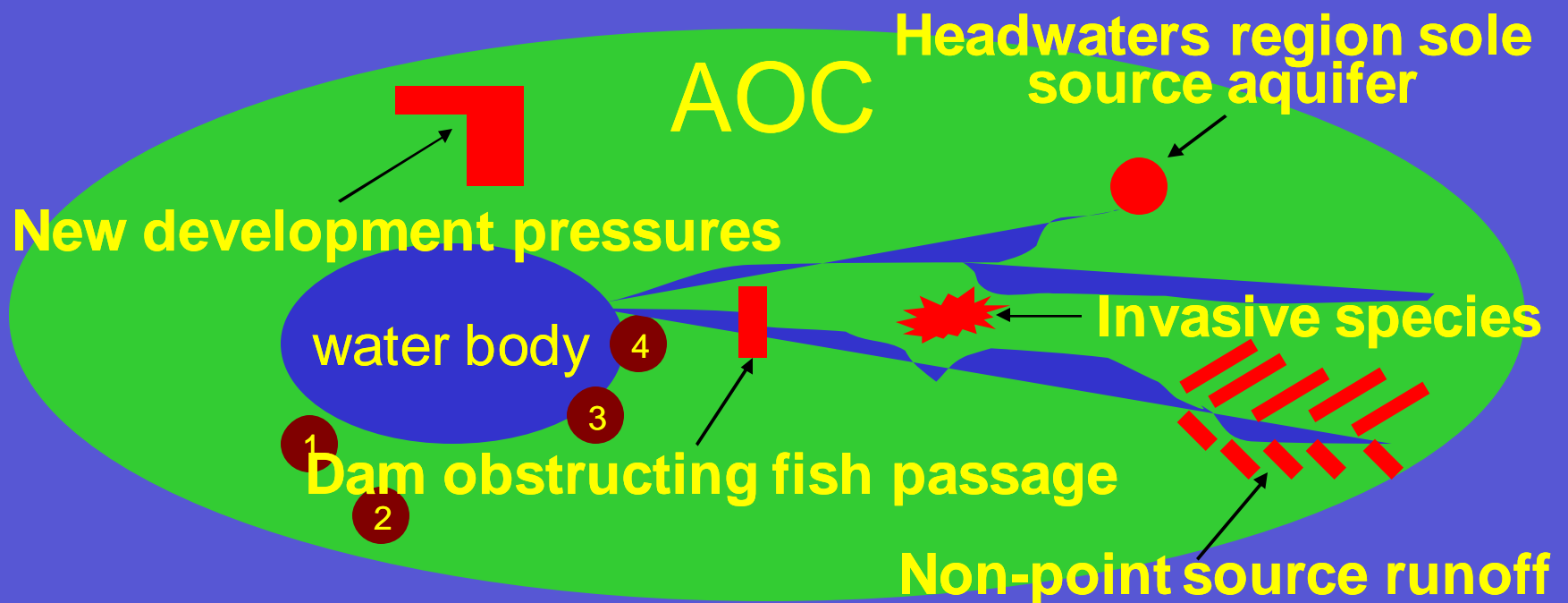
Examples of invasive species: large stands of seed canopy grass (top left), purple loosestrife (top right), and common reed (bottom).



Project area location control location

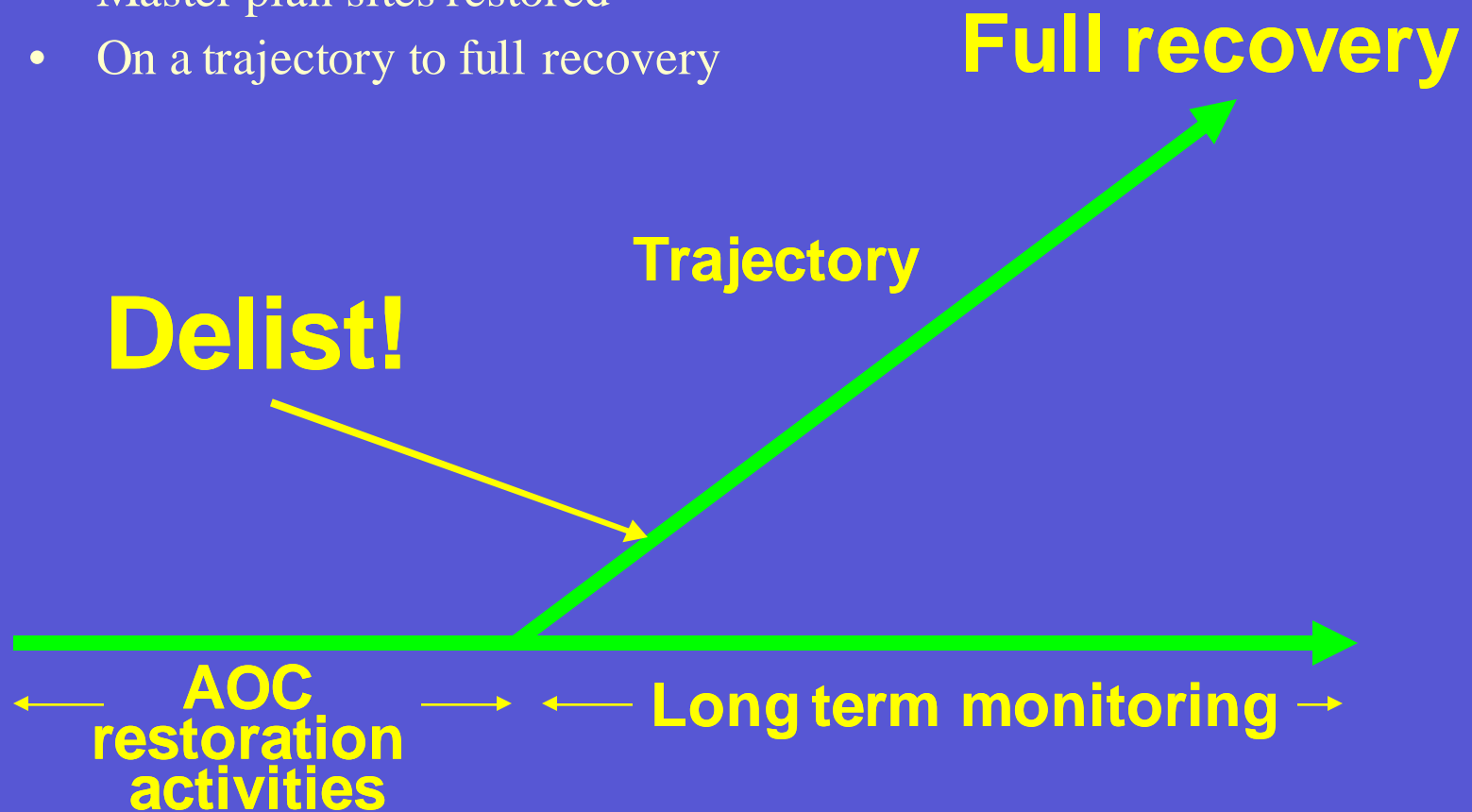
# The rest of the AOC

- Implement best management practices/stewardship to prevent further degradation



# Habitat restoration timeline

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



# Why does this matter?

- **Master plan will verify the targets**
- **For the AOC: could count toward delisting**
- **For the region: improvement in a natural resource amenity**

# **EPA's roles**

- **Remediation to restoration**
- **Ecological restoration master plan development**
- **Finding funding for actions**

# **Criteria to determine GLNPO blueprint funding priorities**

- **Contribution to delisting and agreement by State agencies**
- **Site accessibility**
- **Inclusive Process**
- **Eliminated or controlled sources of pollution**
- **Identified targets and known reference ecosystem**
- **Institutional capacity**

# The Places

- **Hog Island**
- **Muskegon**
- **White Lake**
- **Ashtabula**
- **Black River**

# For more information:

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