

Measuring Success: Development of Restoration Targets in the Saginaw Bay/River Area of Concern

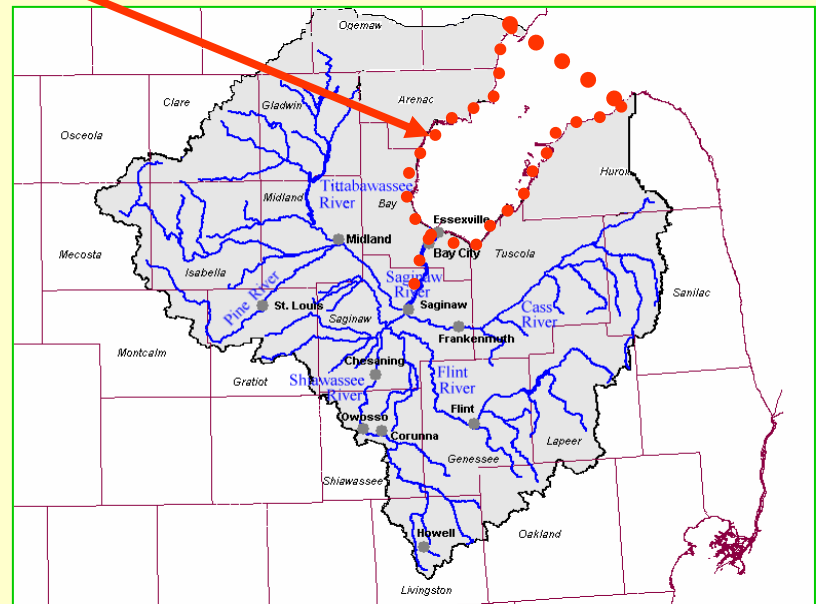
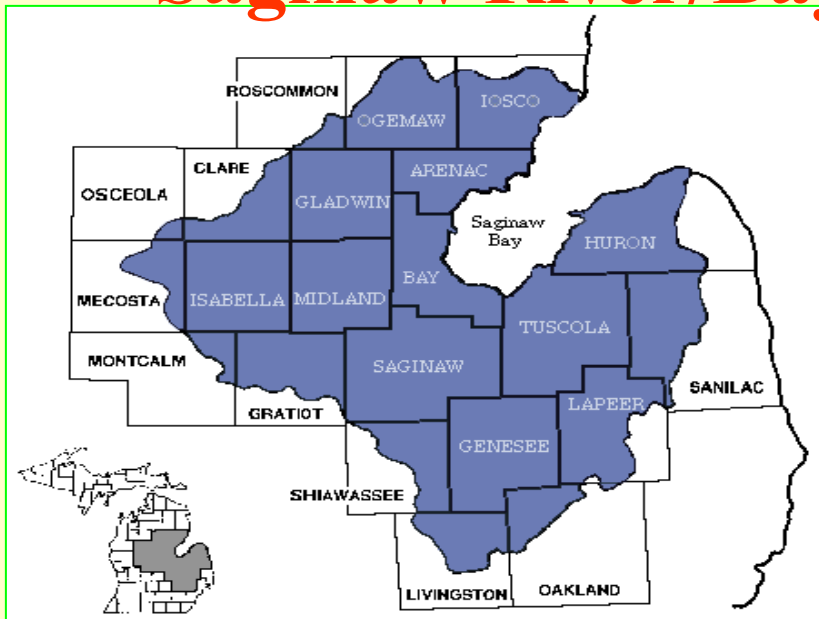


June 6, 2003 - Westin Hotel

Detroit, Michigan

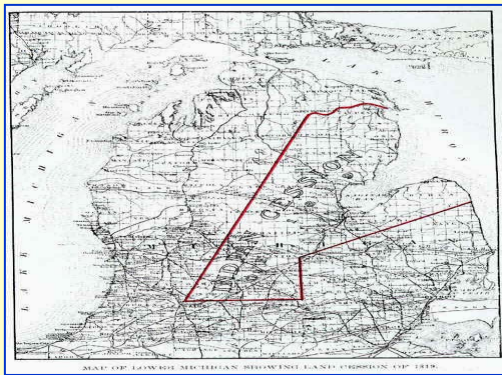


Saginaw River/Bay Area of Concern



SAGINAW BAY WATERSHED

180 Years of Development Impacting River and Bay



Settlement
1820

Lumbering
1850-1890



Urbanization
1860-1900

Rapid Growth &
Industrialization
1900-1960



12 BENEFICIAL USE IMPAIRMENTS (BUIs)

- Restrictions on Fish and Wildlife Consumption
- Tainting of Fish & Wildlife
- Degradation of Fish/Wildlife Populations
- Degradation of F&W Habitat
- Bird and Animal Deformities
- Degradation of Benthos Organisms
- Restrictions on Dredging
- Eutrophication
- Restrictions on Drinking Water
- Beach Closings
- Degradation of Aesthetics
- Degradation of Phytoplankton

RAP Timeline

- 1988 – First RAP completed (600 pages)
 - Cited 12 Beneficial Use Impairments
 - Summarized Water Quality Data
 - Outlined 100 Remedial Actions including 37 priority actions
- 1994 RAP Update
 - Suggested that 2/3 of 100 Actions had been implemented, at least partially
 - Discussed maturation of RAP process and new actions
 - Ecosystem Approach

RAP Timeline (continued)

- **2000** *Measures of Success: Addressing Environmental Impairments in Saginaw River and Saginaw Bay*
 - Celebrate Accomplishments
 - Establish Targets and Measures
 - Identify and Reiterate Restoration Actions Needed
 - Set Stage for Delisting or Recovery Designation
- **2002** *Targeting Environmental Restoration in the Saginaw River/Bay Area of Concern (RAP Update)*
 - Conduct Scientific Review to Determine if Targets are **REASONABLE, ACCURATE, and ACHIEVABLE**
 - Assess Status of Existing Conditions

MEASURES OF SUCCESS - 2000 (Development of Restoration Targets)

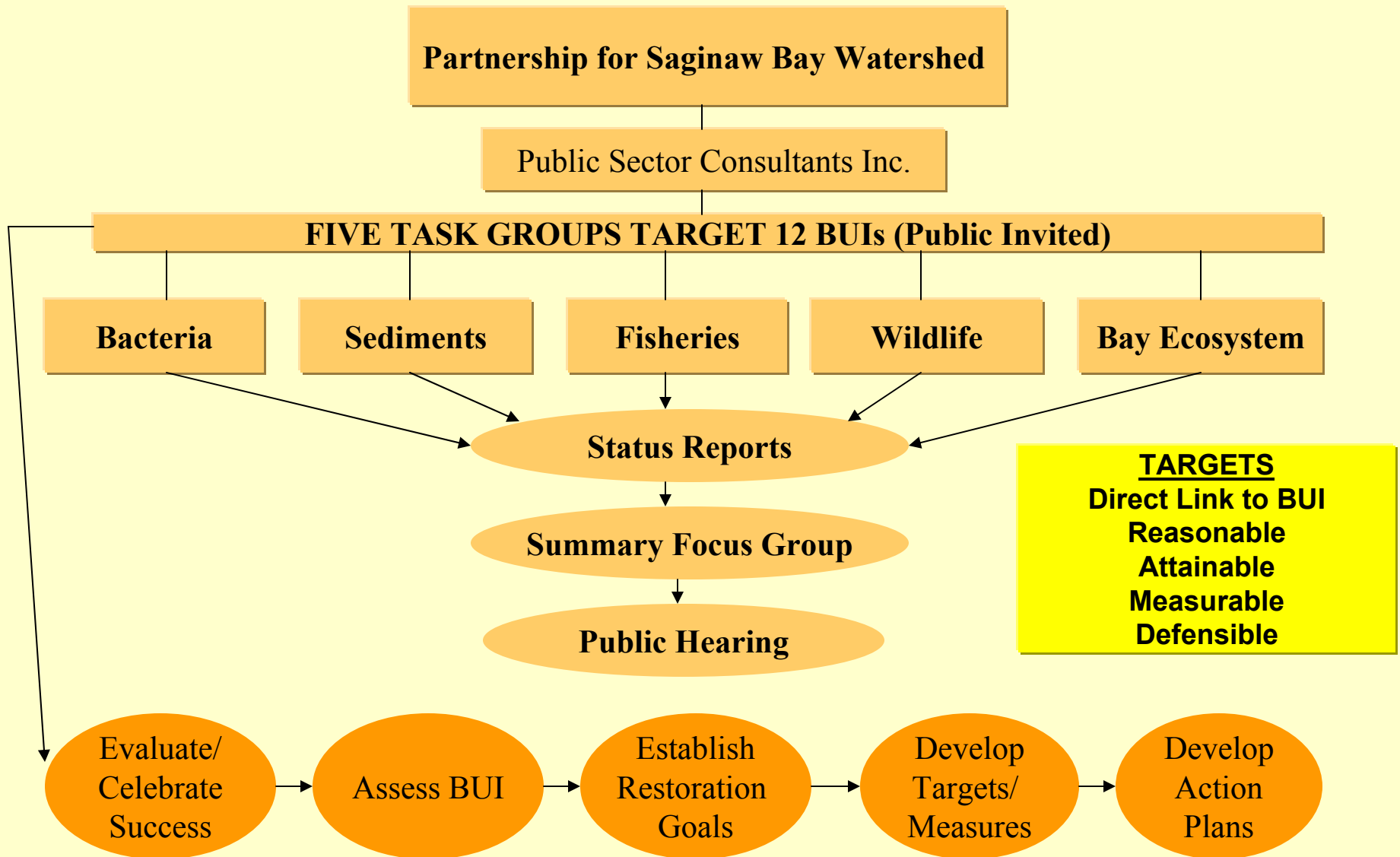
Facilitated by



For The Partnership for the Saginaw Bay
Watershed

Funding provided by *Dow/PIRGIM Settlement* through Saginaw Bay Watershed Initiative Network (WIN) & the *Great Lakes Environmental Collaborative* through the Bay Area Community Foundation

Organizational Framework



Development of TARGETS In 2000

Represents collective thoughts of technicians, public officials, stakeholders, and watershed citizens to establish reasonably attainable, measurable conditions that, if achieved, will indicate restoration of previously impaired beneficial use; or alternatively, demonstrate that all reasonable remedies within the AOC have been exhausted.

Examples of Regulatory Criteria and Guidelines

Bacteria

State Water Quality Standards
Total Body Contact
-Single Event
-30 day standard

Sediments

Economics *
Dredging/Disposal
No Longer Poses
Additional Costs

*Comprehensive
Assessment Needed

Fisheries

State Water Quality Standards
D.O. 5 mg/l (River)
Caged-Fish Studies
Consumption Advisories
Statewide Growth Rates

Wildlife

USFWS Bald Eagle Recovery Plan
Statewide Wetland Restoration Goal

Bay Ecosystem

GLWQA Annex 3
15 ug/l ttl phosphorus
N:P Ratio 29:1

BACTERIA

Goal

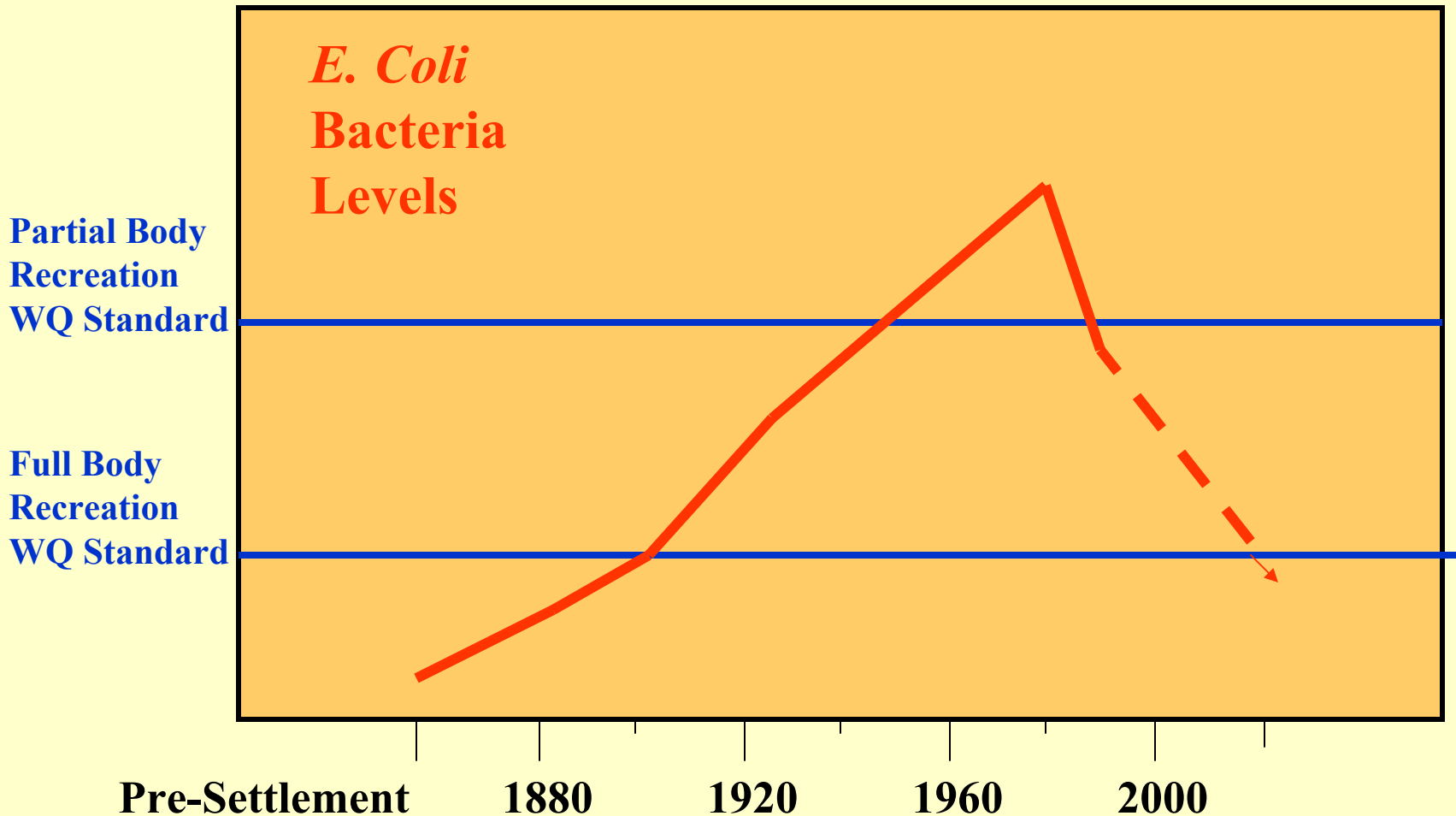
- Eliminate health risks associated with human wastes that have previously impaired uses (e.g., swimming, boating, and fishing)

Targeted Condition

- 3 yrs of tests indicate *E. coli* levels meet WQS for full-body recreation in river
- No more than 3 *E. Coli* test results above WQS per year lasting longer than 2 days in the bay

HISTORICAL PERSPECTIVE

Health Risks - Saginaw River



BACTERIA

Next Steps

- Monitor levels in river
- Eliminate known SSOs & inadequately treated CSOs*
- Monitor beaches*
- Publicize results
- Review results for actions needed

Emerging Issue

- Storm water management
 - Illicit Connection Detection/Elimination
 - Repair/Replace Failed Septic Systems
(required in 2003)

*Underway

CONTAMINATED SEDIMENTS

Goal

- No environmental impairments to the river or bay due to contaminated sediments

Targeted Condition

- Contaminated sediments no longer impose additional costs to remove and/or confine navigational dredge spoils

CONTAMINATED SEDIMENTS

Next Steps

- Document improvements to river from ongoing dredging*
- Economic analysis of navigational dredging costs
- Identify further hotspots for dredging

*Underway

Emerging Issues

- Evaluate remediation requirements at CDF

FISHERIES (Populations)

Goal

- Sustainable fish production in river and bay at historical levels for important species

Targeted Condition

- Walleye - Increase abundance in Bay
- Yellow Perch - Sustained harvest of 750,000 lbs/yr of larger sized individuals
- Lake Sturgeon - Documented evidence of natural reproduction

FISHERIES

Next Steps

- Monitor River D.O.
- Regulation of dams*
- Investigate fish passage
- Public information on critical role of habitat
- GIS to inventory habitat in coastal wetlands
- Monitor walleye and yellow perch harvest*
- Initiate lake sturgeon recovery plans
- Establish baseline toxic measures
- Caged-fish studies*
- Survey for tainting

*Underway

WILDLIFE

Contaminants

Goal

- Eliminate impairments to wildlife caused by toxic chemicals

Targeted Condition

- Bald eagle reproduction equal to or greater than other areas of Lake Huron shoreline
- Herring gull egg PCB levels in bay not higher than other areas in Lake Huron



Brian Morin

Adult Herring Gull



John Struger

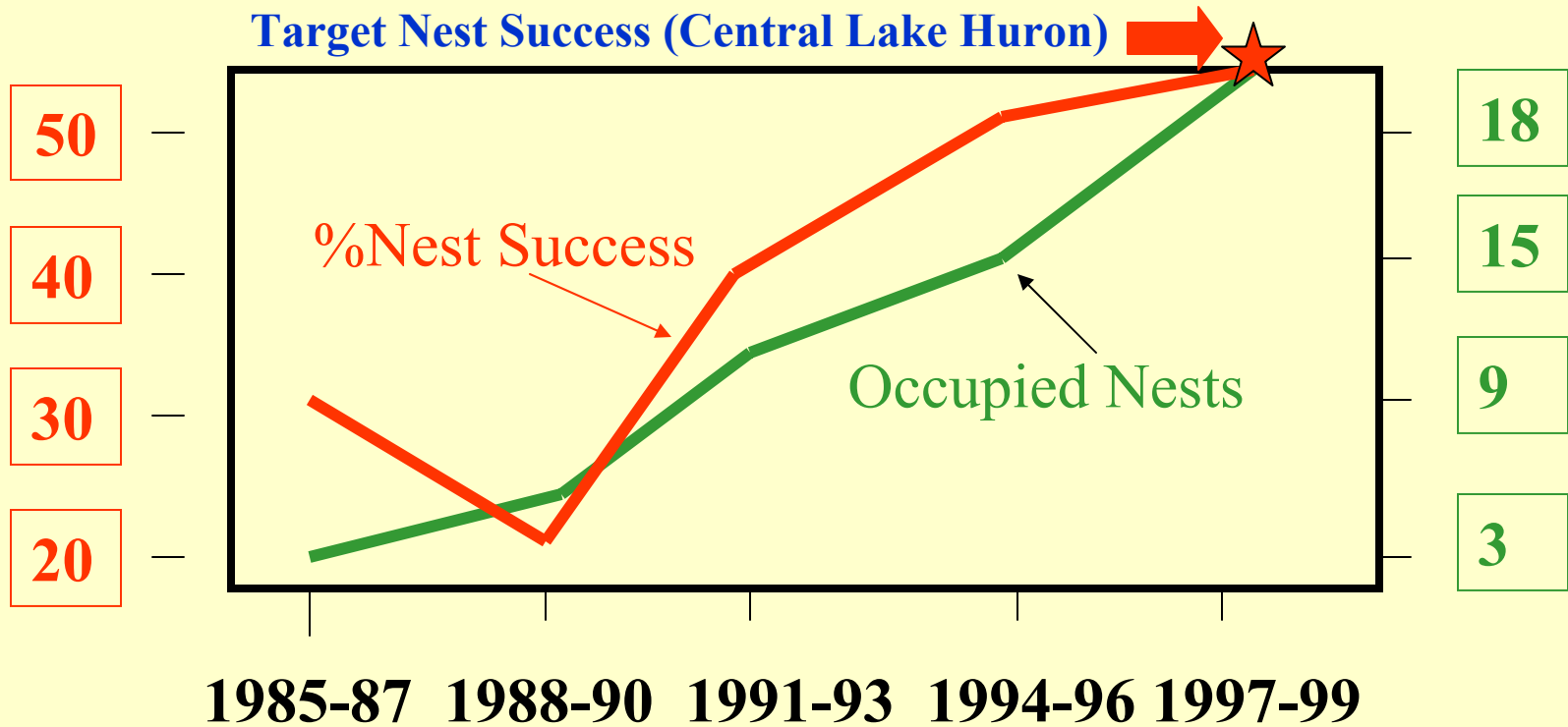
Herring Gull nest with eggs

WILDLIFE

Recovery of Bald Eagle Saginaw Bay/River

**Percent
Nest
Success**

**Occupied
Nests**



WILDLIFE

Next Steps

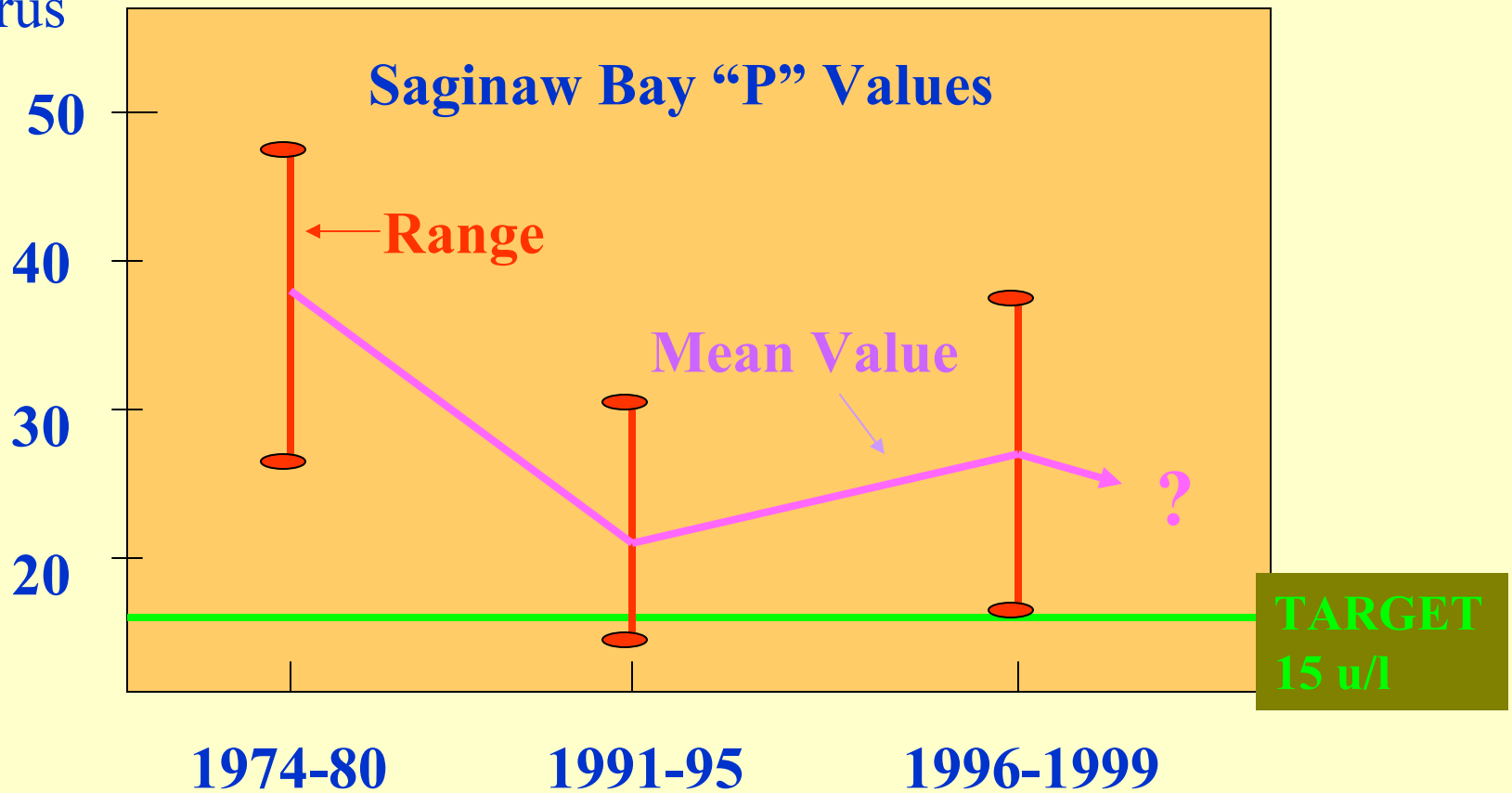
- Develop GIS/inventory data base for coastal marshes
- Coordinate restoration opportunities
- Establish index
- Identify critical marshes
- Continue routine monitoring of bald eagle nesting in bay area*
- Continue comparative analysis of herring gull eggs in bay with other areas in Lake Huron*

*Underway

BAY ECOSYSTEM

Phosphorus History/Target

Total
Phosphorus
u/l



BAY ECOSYSTEM

Next Steps

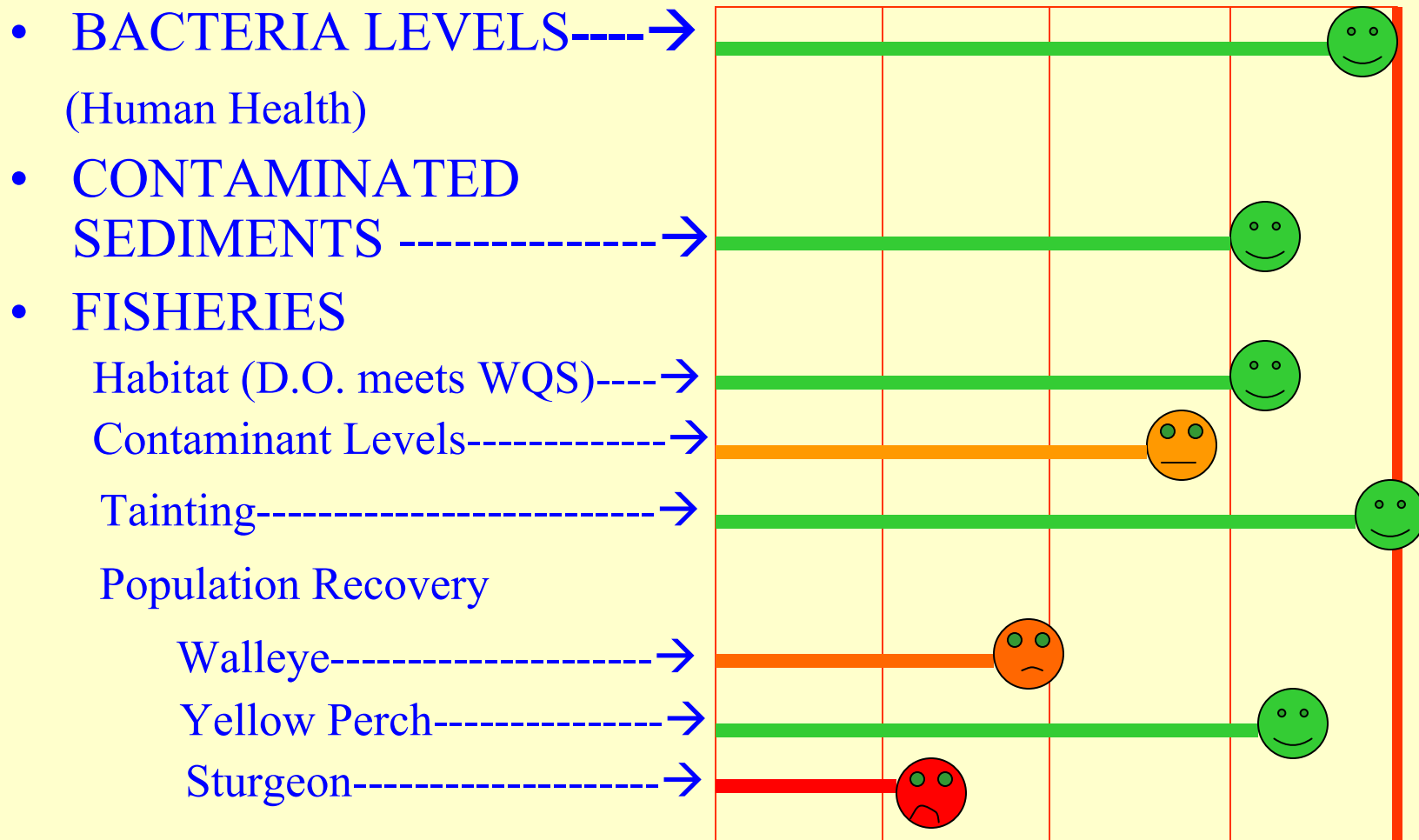
- Determine subwatershed contributions of “P”
- Monitor success of local control programs
- Support controls of and document fertilizer, waste application to lands
- Monitor bay for phosphorus*
- Support monitoring of mayfly larva (*Hexagenia* sp.) in bay
- Periodically monitor N:P ratios near water supplies in bay*

*Underway

SUMMARY

Report Card on Targets

25% 50% 75% 100%



SUMMARY

Report Card on Targets

25% 50% 75% 100%

- WILDLIFE

Habitat (Wetlands)

60% Protected-----→

(below 585 contour)

40% Closely Watched-----→

- CONTAMINANTS

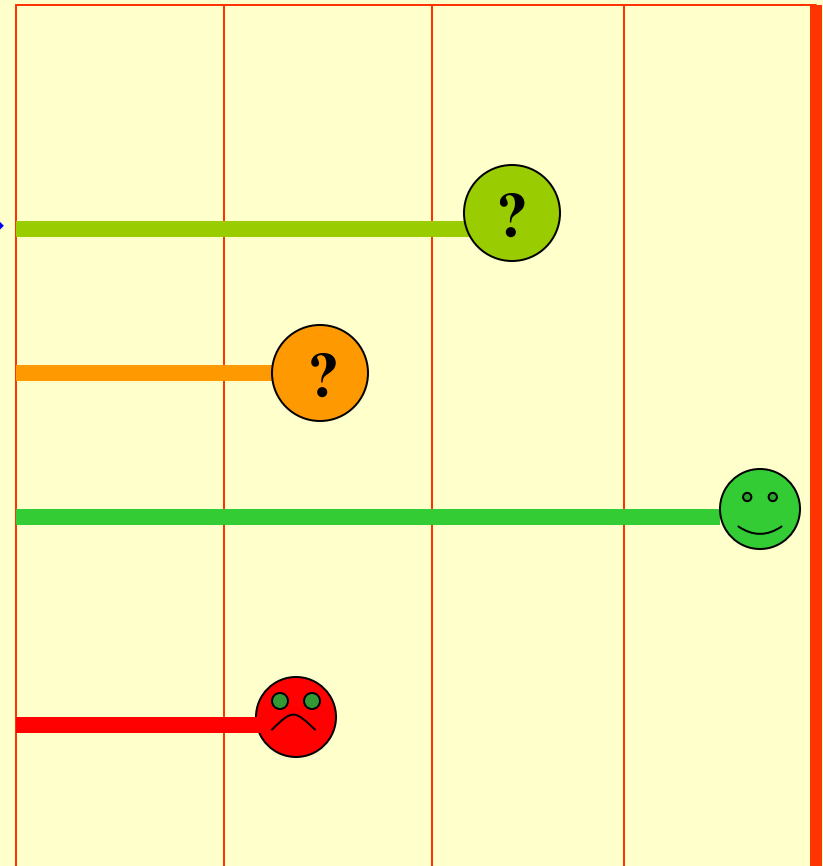
Bald Eagles Nesting -----→

(success rate =L. Huron)

Herring Gull Contaminant

Levels-----→

(=Lake Huron levels)



SUMMARY

Report Card on Targets

25% 50% 75% 100%

- BAY ECOSYSTEM

Eutrophication ----->

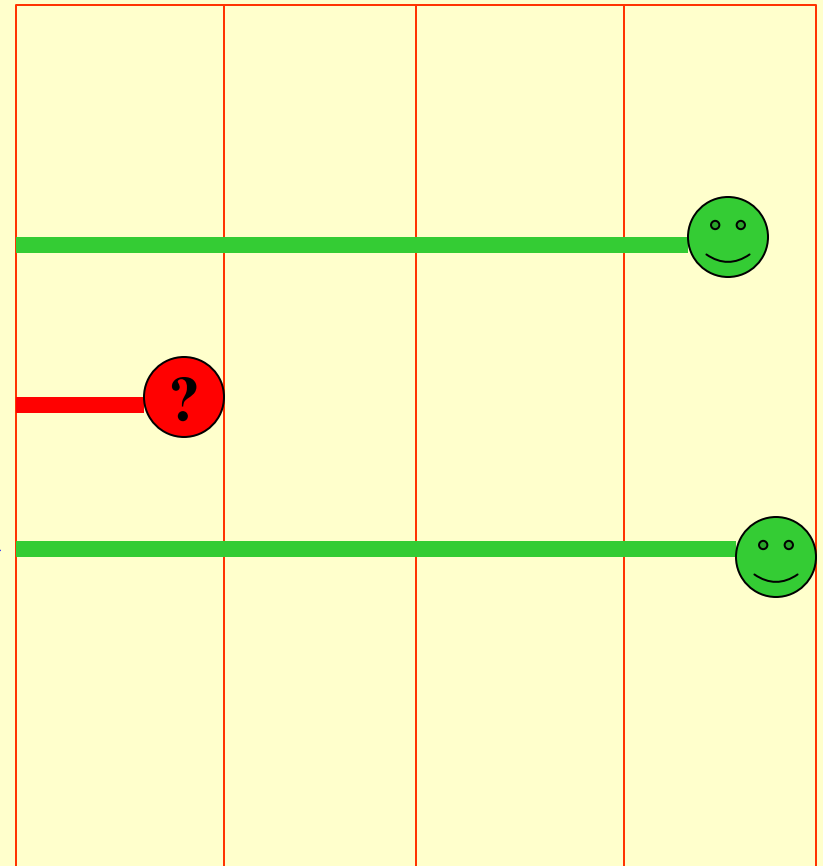
(P < 15ug/l)

Benthic Community ----->

(Mayflies 30/M²)

Drinking Water ----->

(N:P Ratio 29:1)



Next Steps

1. Identify those actions which responsibility has not been accepted – initiate projects to fill gaps
2. Document Targets That Have Been Achieved and Petition to have impairments Delisted (Fish tumors, tainting, swimming beach closures, drinking water taste and odor)
3. Collect Evidence for Petition to List as Area of Recovery (Contaminant levels in fish and wildlife, eutrophication)

CELEBRATE PROGRESS SETS GOALS FOR THE FUTURE



Publications Available at:

WWW.PSCINC.COM