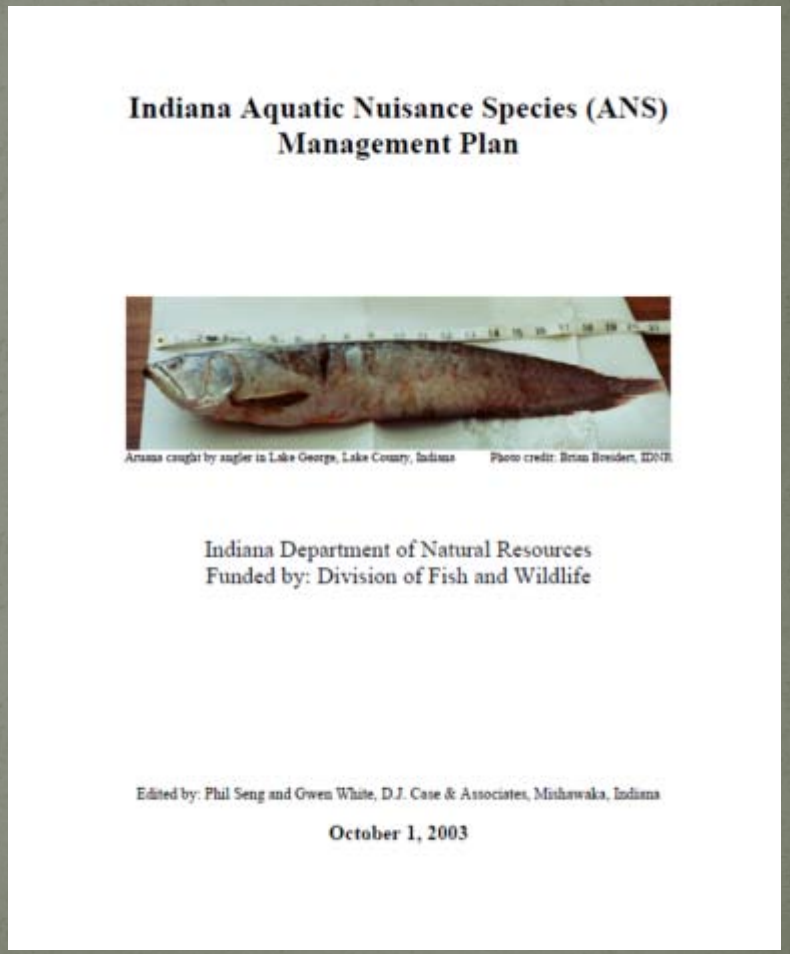
Indiana Department of Natural Resources DNR

IMPLEMENTING INDIANA'S AIS PROGRAM

ERIC FISCHER, AQUATIC INVASIVE SPECIES COORDINATOR
INDIANA DEPT. OF NATURAL RESOURCES

Indiana's AIS program

- Origins – In the approval of the Indiana Aquatic Nuisance Species state management plan by the ANSTF on November 24th of 2003.
- Just in time to apply for the 2004 State and interstate ANS management plans grant
- Support for the creating and maintaining staff and the program activities of the State AIS program.



Indiana Aquatic Nuisance Species (ANS) Management Plan

Arrana caught by angler in Lake George, Lake County, Indiana Photo credit: Brian Breidert, IDNR

Indiana Department of Natural Resources
Funded by: Division of Fish and Wildlife

Edited by: Phil Seng and Gwen White, D.J. Case & Associates, Mishawaka, Indiana

October 1, 2003

Indiana Aquatic Nuisance Species (ANS) Management Plan

- The goals / strategies of the state management plan were laid out
  - Coordination
  - Prevention
  - Early Detection
  - Rapid Response
  - Control
  - Mitigation
  - Planning

Budgets and work plan Implementation

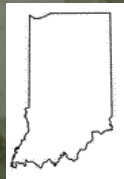
- Initial state management funding
  - By 2004 was already being divided by a growing number of state management plans-$70,000
  - Providing a critical initial investment in getting a full time AIS coordinator position and program started.
  - Initial budget estimates predicted the funding needed to fully implement the program in the range of 4.5 Million dollars

INDIANA DIVISION OF FISH & WILDLIFE

DNR
Indiana Department of Natural Resources

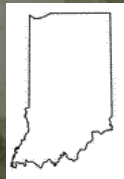
Additional State Invasive Funding

- At the same time as initial scoping and public meetings during the creation of the state ANS management plan
- State Legislature decided to expand on the funding of the Lake and River Enhancement Program
  - Program initially designed to administer a lake enhancement program to control sediment and associated nutrient inflow from rural areas into lakes



Additional State Invasive Funding

- 2003 legislative session Increased LARE funding agreeing to a graduated fee system on boater registration based on original value of each boat
- Stipulated the distribution of funding divided between
  - 1/3 sediment and nutrient management
  - 1/3 IDNR Law Enforcement
  - 1/3 Lake projects that include the control of exotic and invasive plant and animal species
  - $500,000- $750,000 annually



Great Lakes Restoration Initiative

- Since 2003 state management plan funding provided core of program funding- 1 full time staff member
- In 2010 the additional resources that became available to the state provided the financial support necessary to move from information, education and program administration to the critical control, prevention and research goals.

Prior to GLRI funding

- State funding for emergency containment and response to Exotic/Invasive plant introductions and the growing threat of Asian Carp in the early 2000's was unrealistic in meeting our goals
  - Invasive plant discoveries
    - Parrot Feather- (Myriophyllum aquaticum) 2008
      Meserve Lake, Steuben Co.
    - Brazilian Elodea- (Egeria densa) 2004
      Griffy Lake, Monroe Co. and private lakes
    - Hydrilla (Hydrilla verticillata) 2006
      Lake Manitou, Fulton Co.

New funding from GLRI bridged the gap between state struggling to respond and the implementation of EDRR activities like the eradication of species like Hydrilla

Parrot feather
(*Myriophyllum aquaticum*)

PARROT FEATHER ID

(*Myriophyllum aquaticum*)

- SUBMERSED LEAVES
  - UP TO 2”
  - 20-30 DIVISIONS/LEAF
  - WHORLS OF 4-6 LEAVES AROUND STEM
- SOMETIMES EMERGES UP TO 12”
  - 6-18 DIVISIONS/LEAF
  - “SMALL FIR TREES”
- PLANT TRADE

- # MESERVE LAKE
  - **Parrot Feather Eradication**
  - **3 years and >$50,000**
  - **18 acre lake in Steuben County**
  - **$2,800/acre**
  - **Ending 2012**

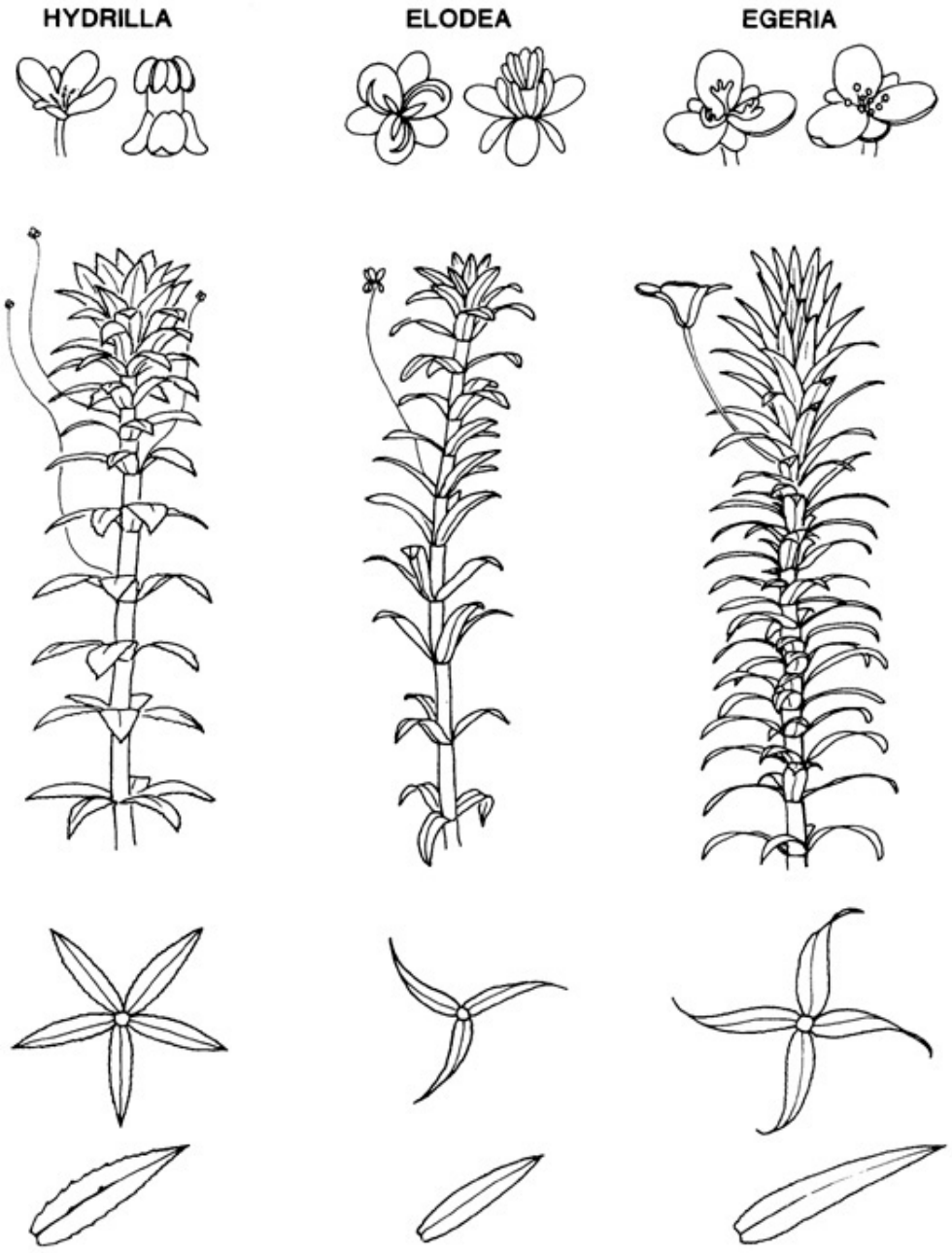
BRAZILIAN ELODEA

- NATIVE – Good alternative

  American elodea (Elodea canadensis)

- INVASIVE-Prohibited

  Brazilian elodea (Egeria densa)



GRIFFY LAKE

- Brazilian elodea Eradication
- 2 years of treatment and $150,000
- 109 acre lake in Monroe County
- $1,400/acre
- Ended 2009

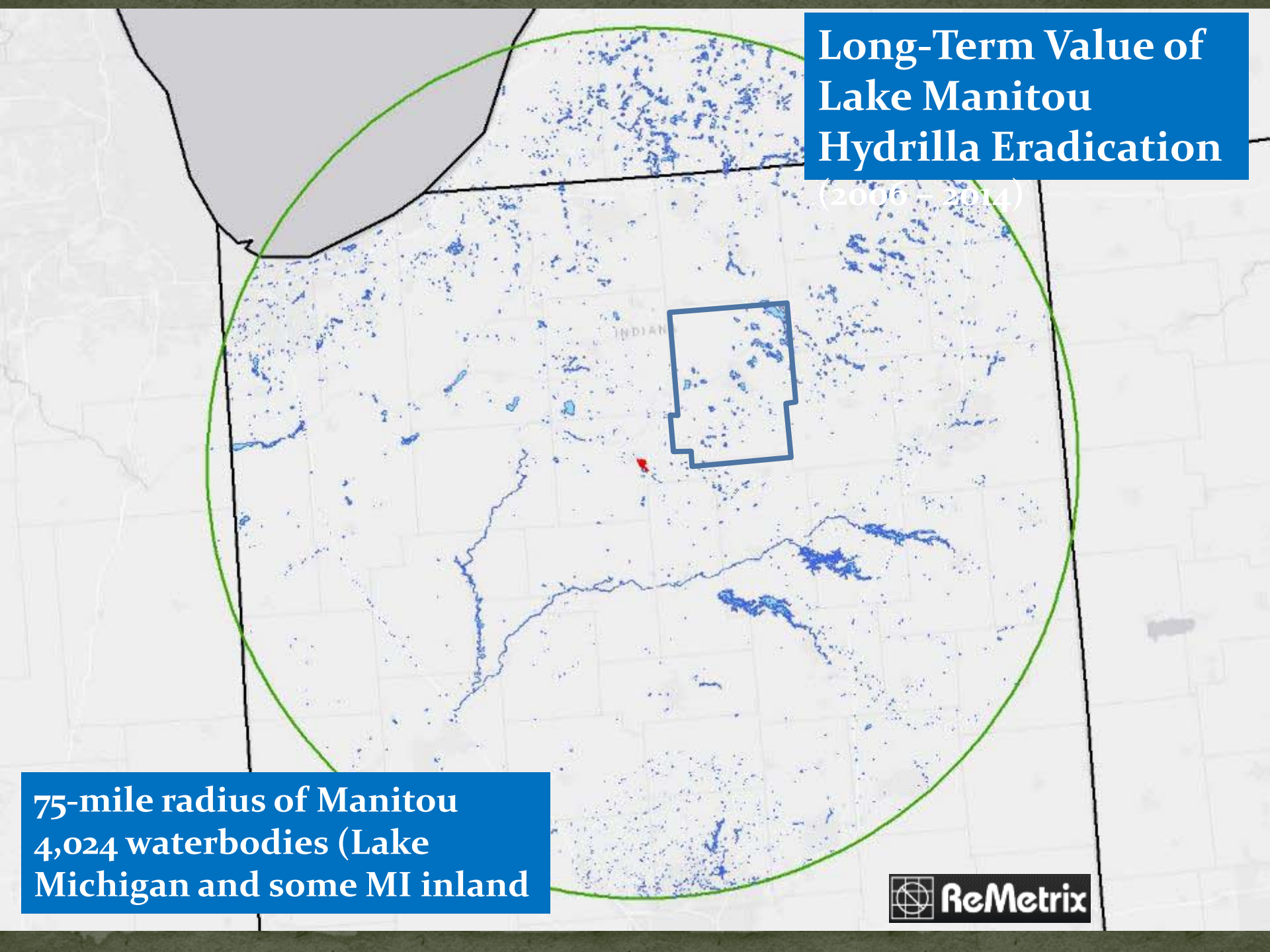
Hydrilla
(Hydrilla verticillata)

LAKE MANITOU

- Hydrilla verticillata Eradication project
- 9 years of treatment and <$2,600,000
- 809 acre lake in Fulton County
- $2900/acre+
- Still going
- <40mi to GL basin waters

Long-Term Value of Lake Manitou Hydrilla Eradication

(2006 – 2014)



75-mile radius of Manitou
4,024 waterbodies (Lake Michigan and some MI inland

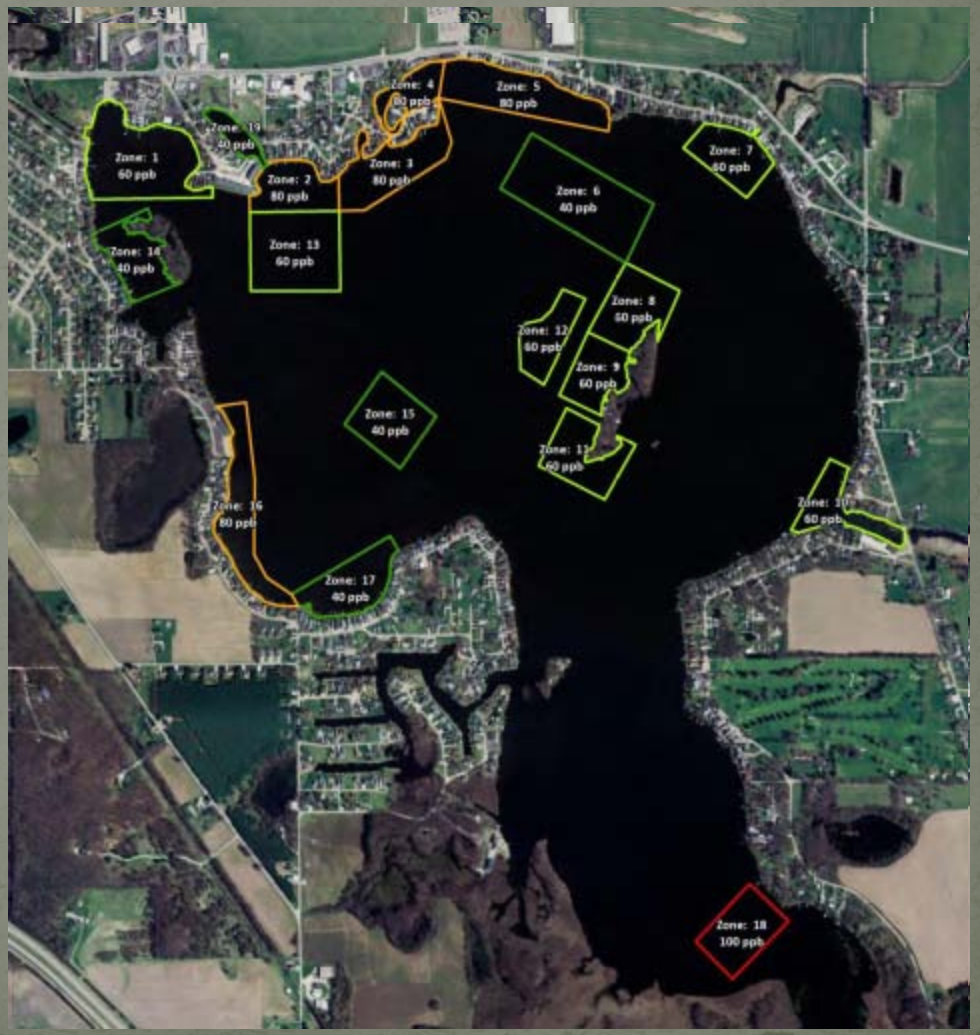
ReMetrix

Reaction and decisive action

- Discovery in fall of 2006
- Closure of boat ramps and inspections of equipment preformed through early 2008
- Followed by spring ramp closure prior to spring treatments
- Hydrilla reduced and ramps returned to year round accessibility from 2011 to present.
- This was one of the most important steps in containing the spread to any of the other 4000 lakes w/ 75mi.

Initial herbicide selection /execution

- 2007-2012
- Lakewide Sonar application
- Maintain Lakewide Sonar Concentration
- Initial objectives were to maintain >6ppb for 180 days but refined to increase selectivity of herbicide
- Initial Sonar application preformed in mid May with initial application to 6 ppb maintaining 2.5-5 ppb throughout the season
- 2013-2015 refined herbicide application to focus granular herbicide application



From Tuber assessment to diver survey

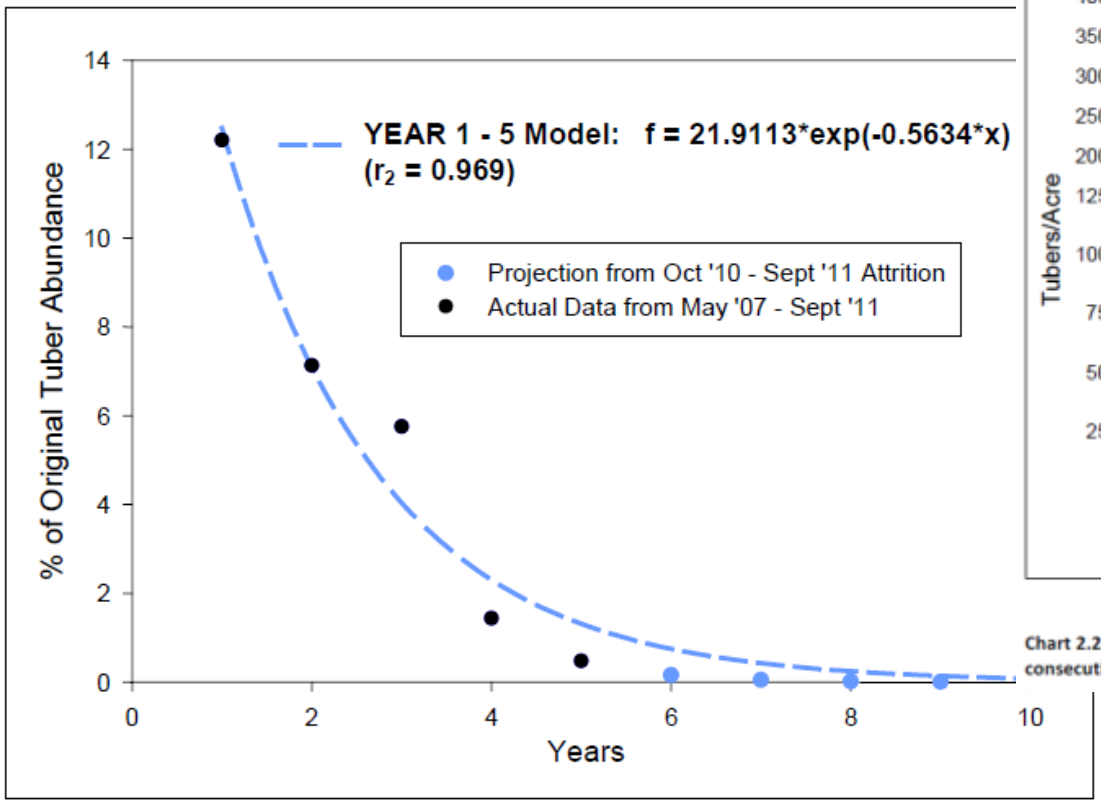


Chart 2.2.2. The attrition rate of hydrilla tubers on Lake Manitou based on 2011 Results and 2012 Projections. Year 1 (88%), Year 2 (42%), Year 3 (19%), Year 4 (75%), and Year 5 (67%) reductions (black dots) are from actual data and include both sprouted and unsprouted tubers; all subsequent reductions (years 6 through 10 –blue dots) were based on reductions observed during year five (Oct '10 – Sept '11: 67%). The blue dotted line represents predicted attrition rate based on non-linear regression analysis incorporating Year 1 – 5 data.

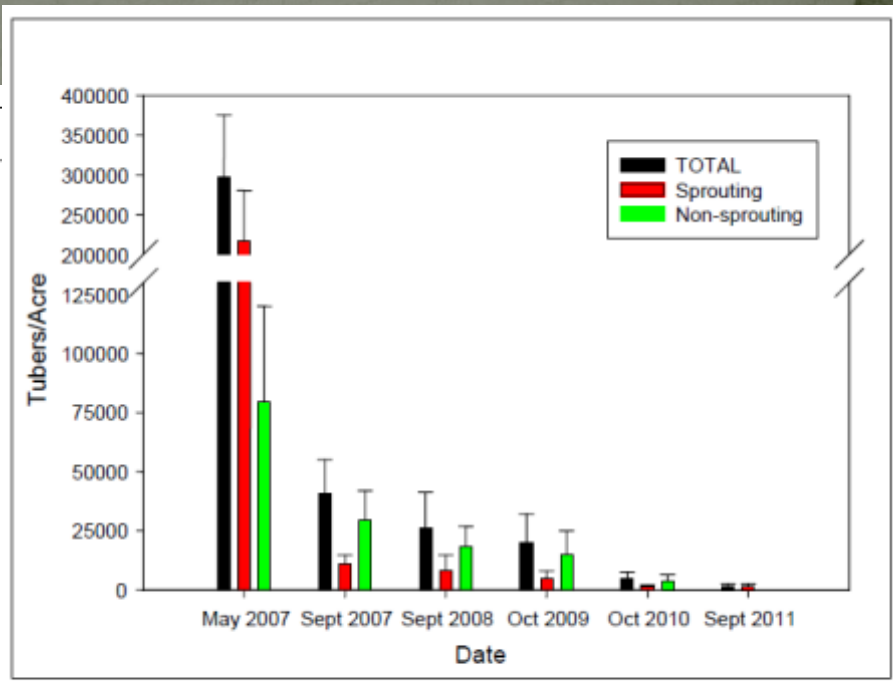


Chart 2.2.1. Overall changes in monoecious hydrilla tuber abundance in Lake Manitou following five consecutive years of Sonar treatments (spouting + non-sprouting = total).

Survey Design and adjustments

- Point intercept plant sampling spring and late summer (122 pts.)
- Intensive Diver survey designed to maximize detection 2011-15
  - 140,000 ft^2- 466,000 ft^2
  - ~20 plants in 2012
  - 4 plants in 2013
  - 0 plants in 2014
  - 0 plants in 2015

INDIANA OUTREACH PROGRAM

- Combination of printed materials, electronic fact sheets, Physical placement of informational materials at points of contact, and Social Media


STOP AQUATIC HITCHHIKERS!
Protect Indiana's Waters
STOP AQUATIC HITCHHIKERS!
Protect Indiana's Waters
Aquatic invasive species harm recreation, our environment, and our economy.
STOP AQUATIC HITCHHIKERS!
Protect Indiana's Waters
✓ Inspect boats and equipment
✓ Remove plants, animals, & mud
✓ Drain water away from landing
✓ Never Release organisms from one water body into another
DNR

www.INVASIVESPECIES.IN.GOV

Indiana Department of Natural Resources

Invasive Species

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AIS
Aquatic Invasive Species

ZEBRA MUSSEL

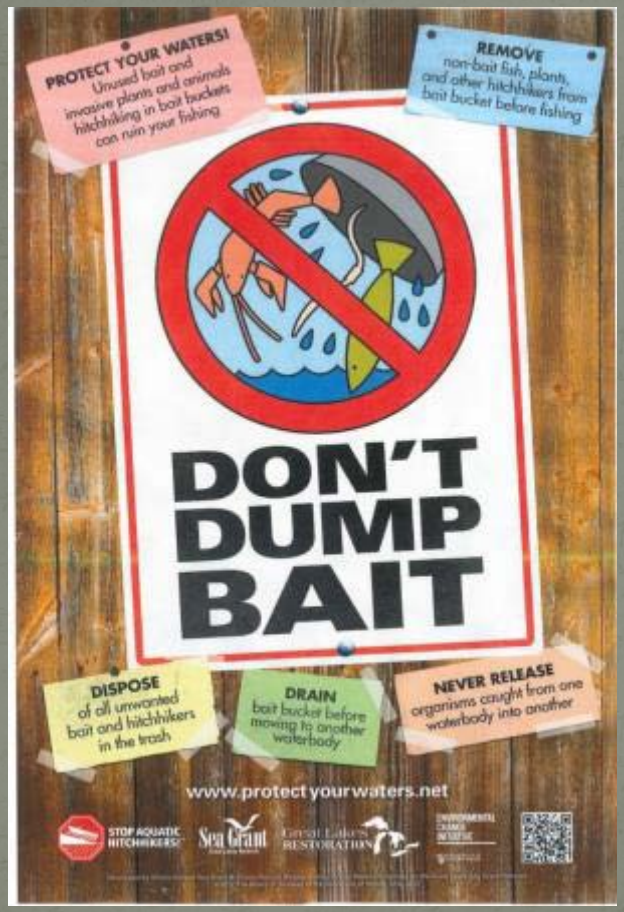
COMMON NAME: Zebra Mussel
The zebra mussel gets its name from the dark and light stripes on its shell that resembles those on a zebra.

SCIENTIFIC NAME: *Dreissena polymorpha*
Zebra mussels are in the Dreissenidae family, the false mussel and zebra mussel family.

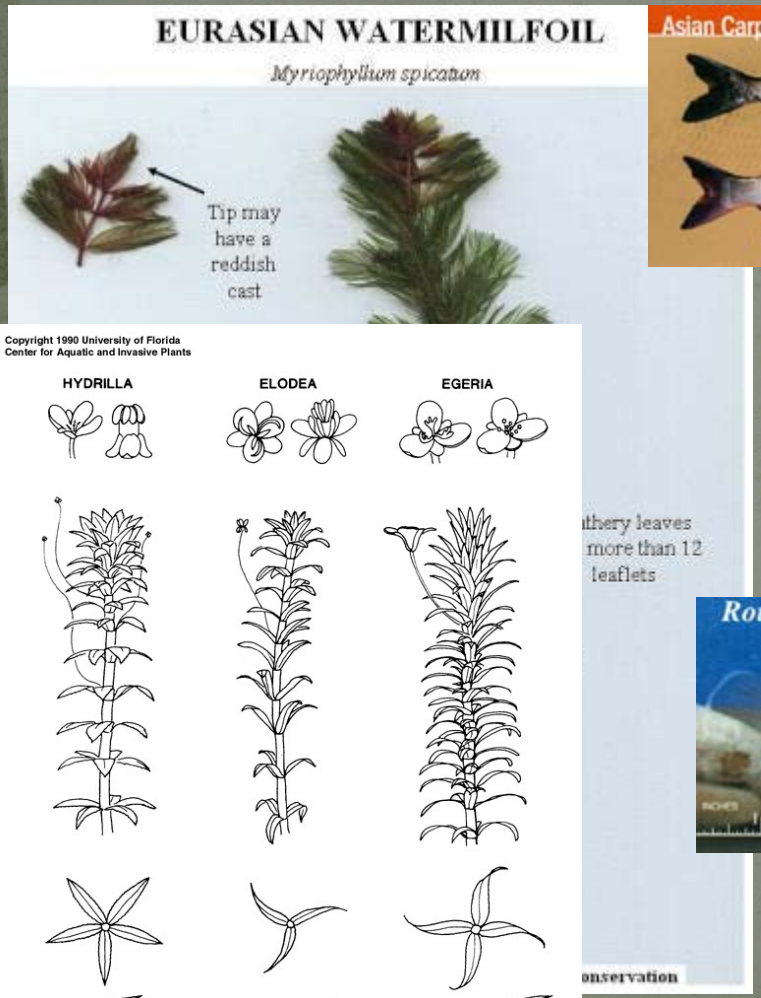
DISTRIBUTION: Natively the zebra mussel inhabits parts of western Russia near the Caspian Sea and the Ural River. From its native origin, the species has spread to the point where the zebra mussel now affects the waters of most of Europe. The Canadian provinces of Quebec and Ontario have confirmed populations. As of 2005, sightings have been received from the following states: Alabama, Arkansas, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New York, Ohio, Oklahoma, Pennsylvania, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin. For the latest distribution of zebra mussels in the United States, please visit the following website:
http://nas.er.usgs.gov/taxgroup/mollusks/zebramussel/

Indiana: To view a list of the known bodies of water in Indiana that contain zebra mussels, please visit: http://www.in.gov/dnr/files/fw-Zebra_mussels_sightings.pdf

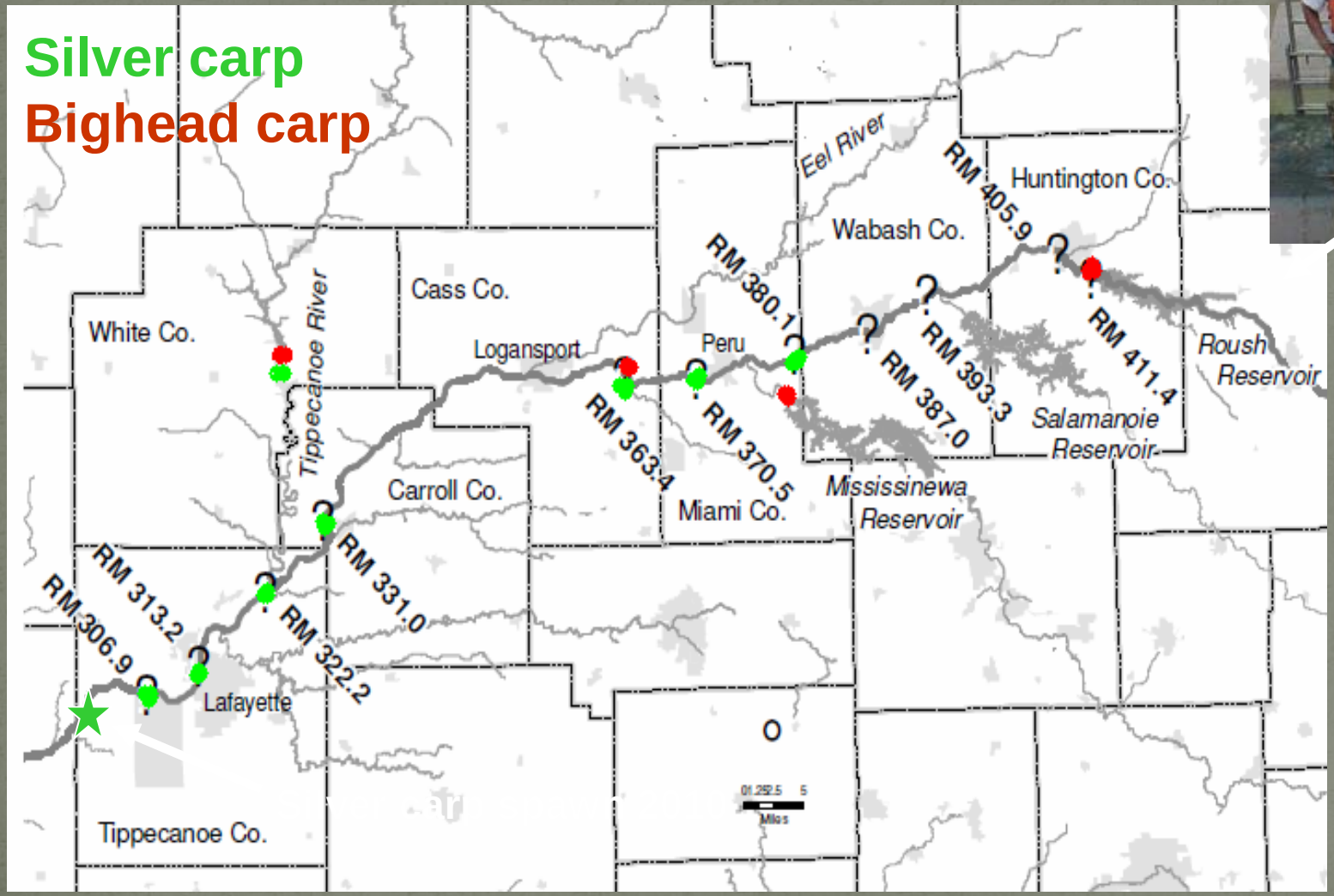
PUBLIC SIGN PLACEMENT



PRINTED MATERIALS



Asian Carp UPPER WABASH



Eagle Marsh – Watershed connection

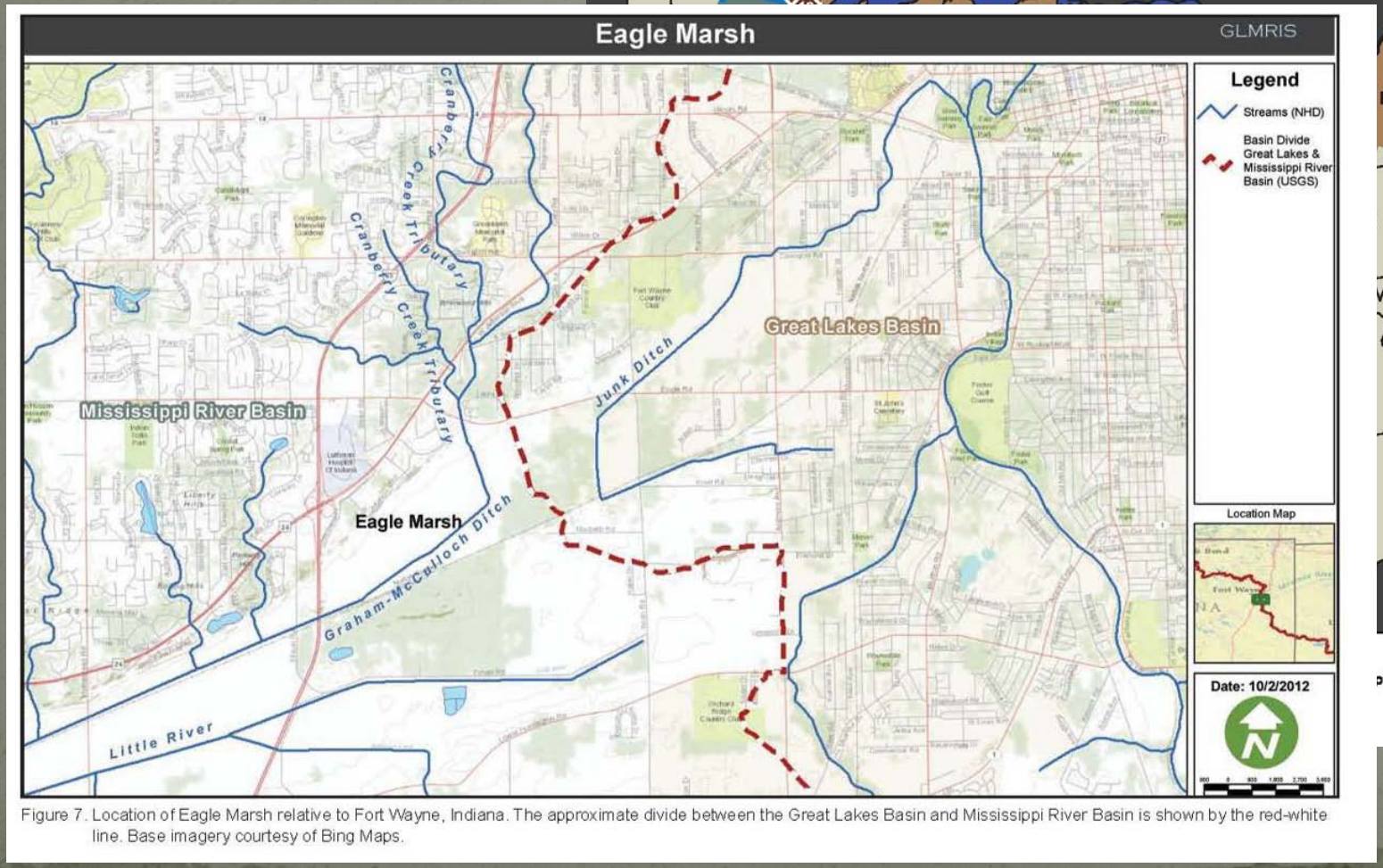


Figure 7. Location of Eagle Marsh relative to Fort Wayne, Indiana. The approximate divide between the Great Lakes Basin and Mississippi River Basin is shown by the red-white line. Base imagery courtesy of Bing Maps.

GLMRIS Pathway of concern and Temporary Barrier

Completed October, 2010

* Very approximate line position for the 10% chance / year and the 1% chance /year flood frequency elevation (ie: BFE, Regulatory Flood, 100 year flood elevation)

•All elevations are in NAVD '88

Completed October, 2010

Temporary Barrier Fence Maintenance and Monitoring

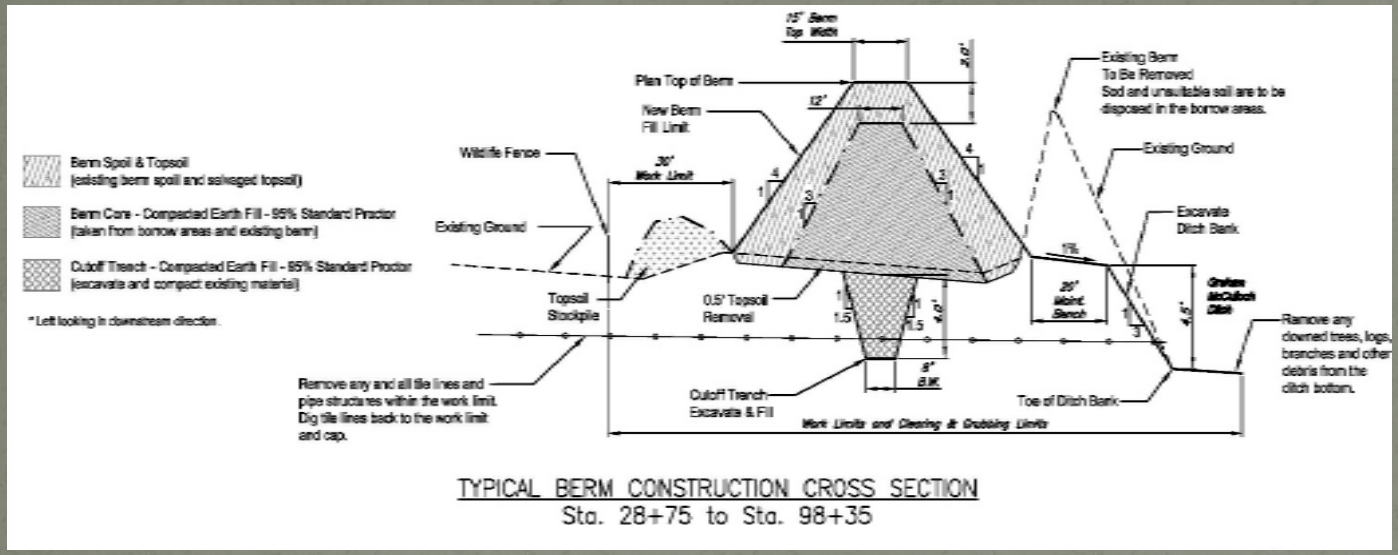
- LRWP – Maintenance
  - Contract for routine maintenance and minor repair
  - IDNR with Federal Grant funds
- IDNR, USGS, LRWP Monitoring
  - Many forms of Monitoring
  - Stage = USGS primary w/ LRWP & IDNR secondary
  - Structural Condition = LRWP & IDNR
  - Overall Function, IDNR

STUDIES IMPLEMENTED

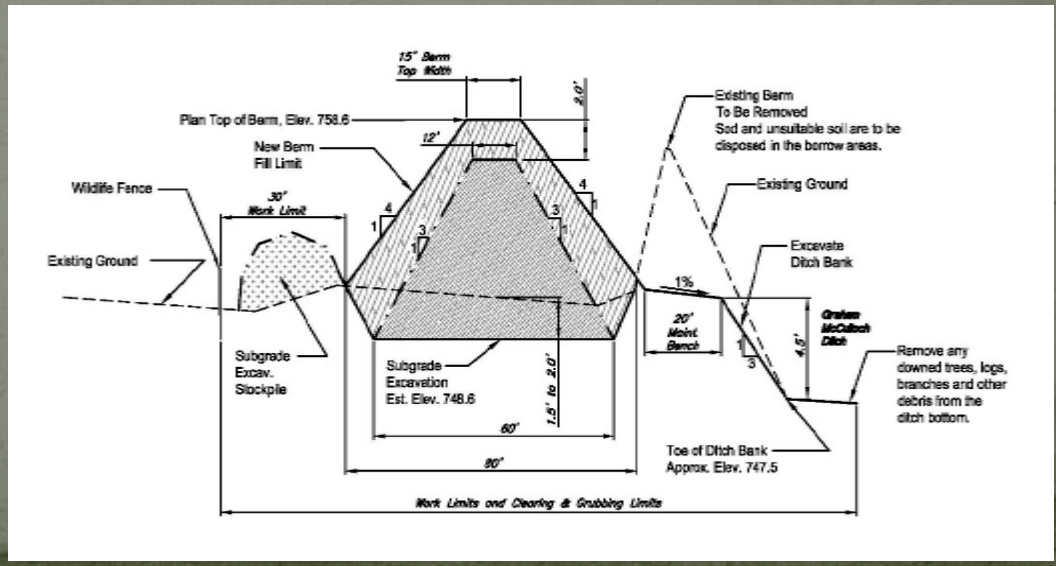
- TELEMETRY
  - Where are fish concentrating?
  - Where are they migrating to for spawning?
  - Do AC show any interest in running up Little River?
  - Are they “testing” the fence?

- SPAWNING EVALUATION
  - Where does spawning occur?
  - What are the conditions that trigger spawning (temperature, flow rate, river stage, etc)?
  - Where do juveniles go to for development?

Hydrologic Separation- Earthen Berm Design

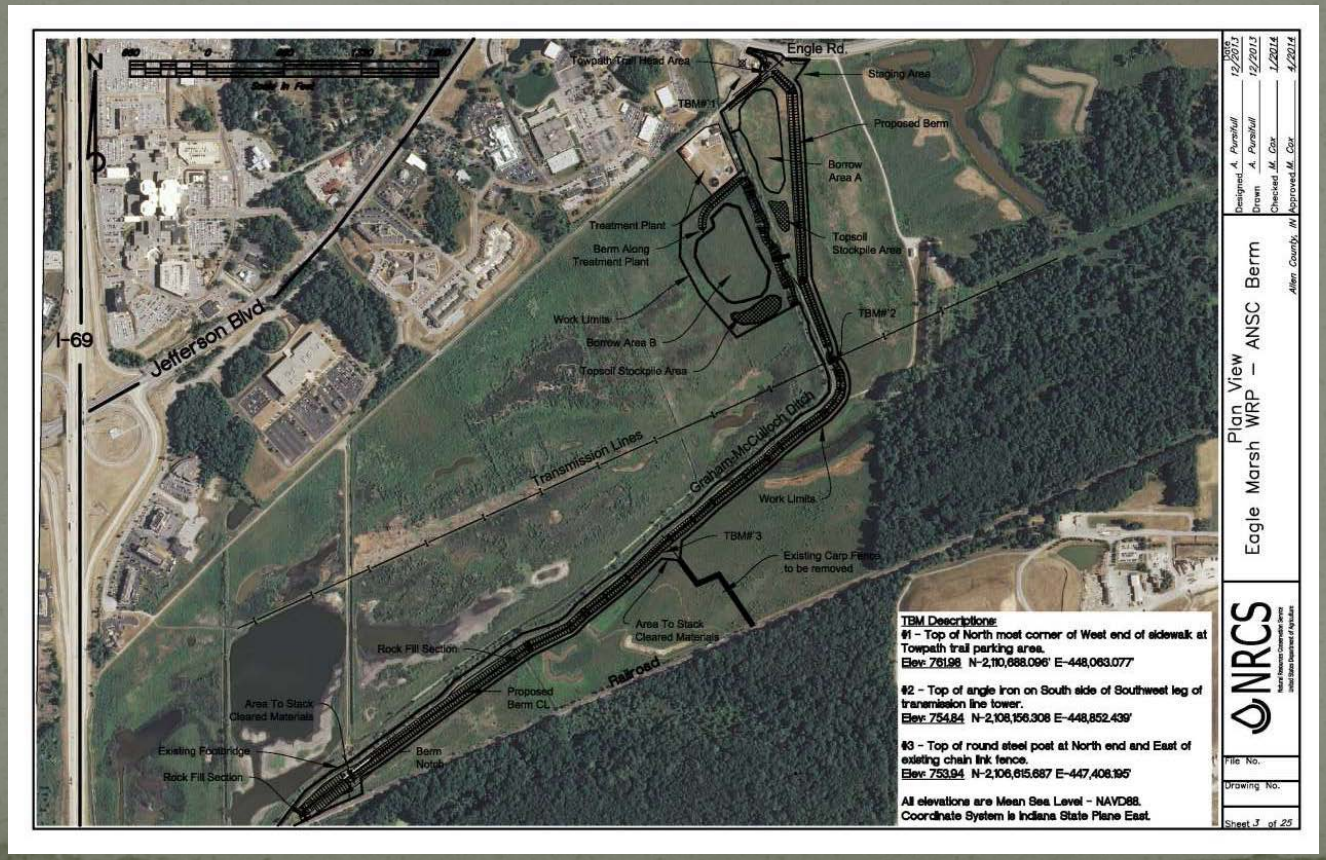


TYPICAL BERM CONSTRUCTION CROSS SECTION
Sta. 28+75 to Sta. 98+35



Earthen Berm Design

- **Plan View –9080 lin.ft. of berm**




150928, September 28, 2015


151014, October 14, 2015

151118, November 18, 2015

151118, November 18, 2015

Great Lakes Restoration Initiative Impact

- The goals / strategies of the state management plan were laid out
  - Coordination
  - Prevention
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THANK YOU
ANY QUESTIONS?
E-mail efischer@dnr.in.gov