

# IMPLEMENTING INDIANA'S AIS PROGRAM

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# Indiana's AIS program

- Origins – In the approval of the Indiana Aquatic Nuisance Species state management plan by the ANSTF on November 24<sup>th</sup> 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



Ariana caught by angler in Lake George, Lake County, Indiana Photo credit: Brian Bressler, 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

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- 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



# 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

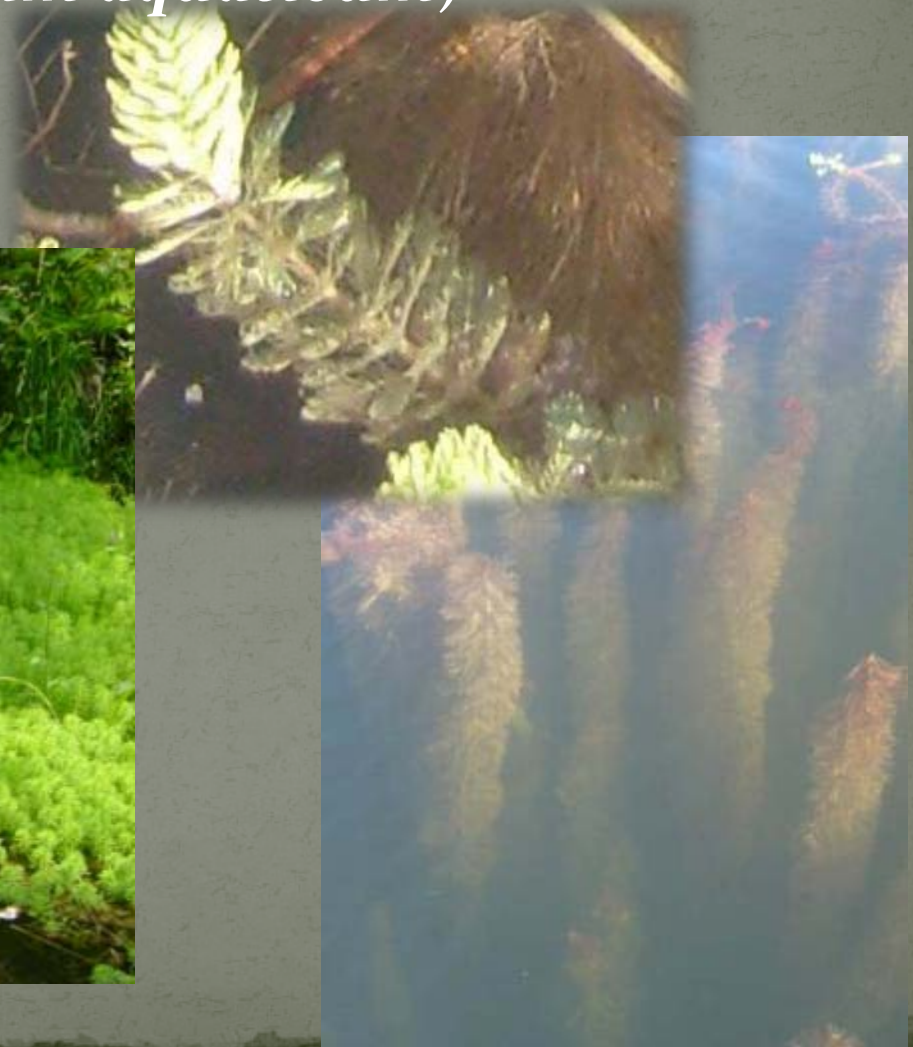
- State funding for emergency containment and response to Exotic/Invasive plant introductions and the growing threat of Asian Carp in the early 2000's was unrealistic in meeting our goals
  - Invasive plant discoveries
    - Parrot Feather- (*Myriophyllum aquaticum*) 2008  
Meserve Lake, Steuben Co.
    - 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

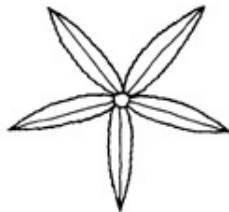
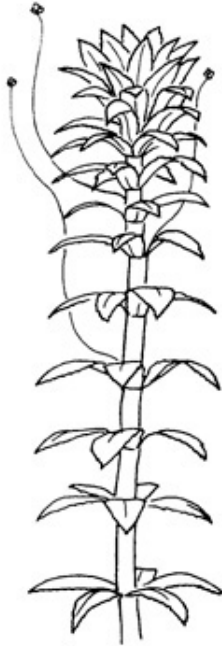
American elodea (Elodea canadensis)

- INVASIVE-Prohibited

Brazilian elodea (Egeria densa)



**HYDRILLA**



**ELODEA**



**EGERIA**



# • 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

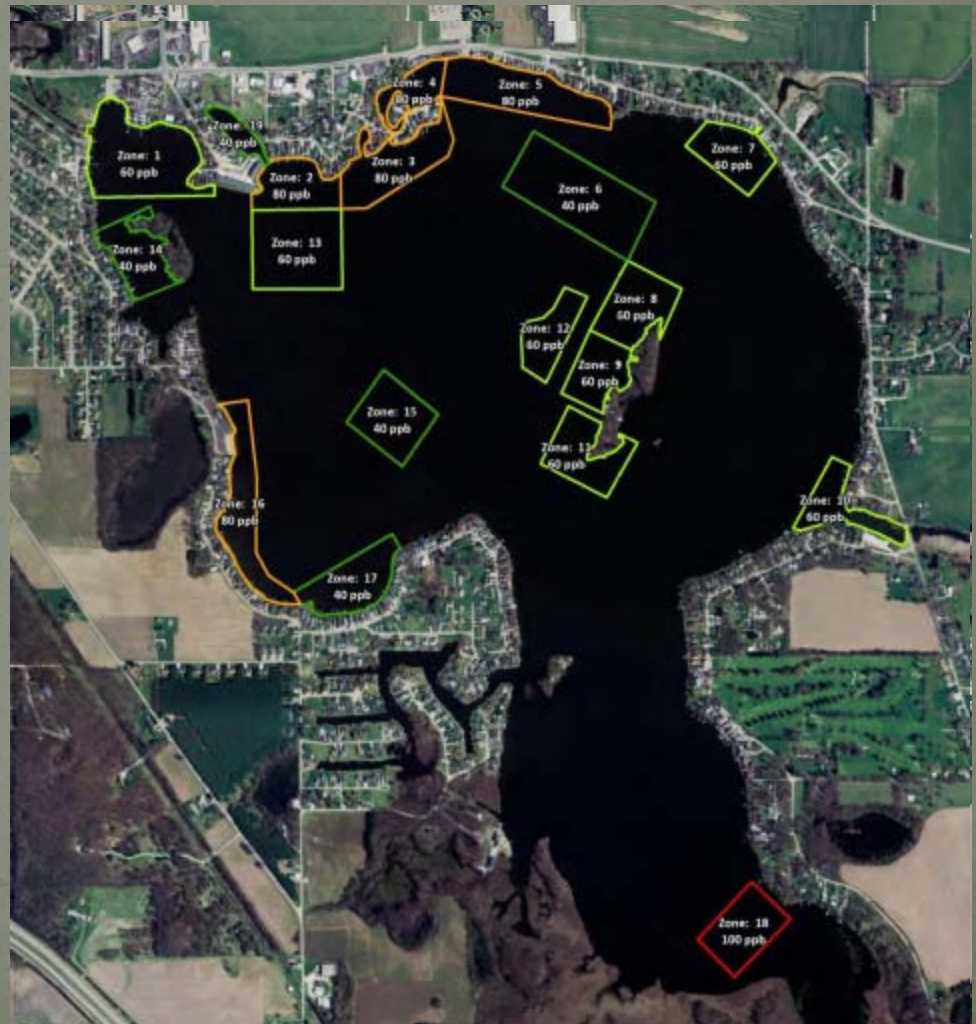
# Reaction and decisive action

- 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

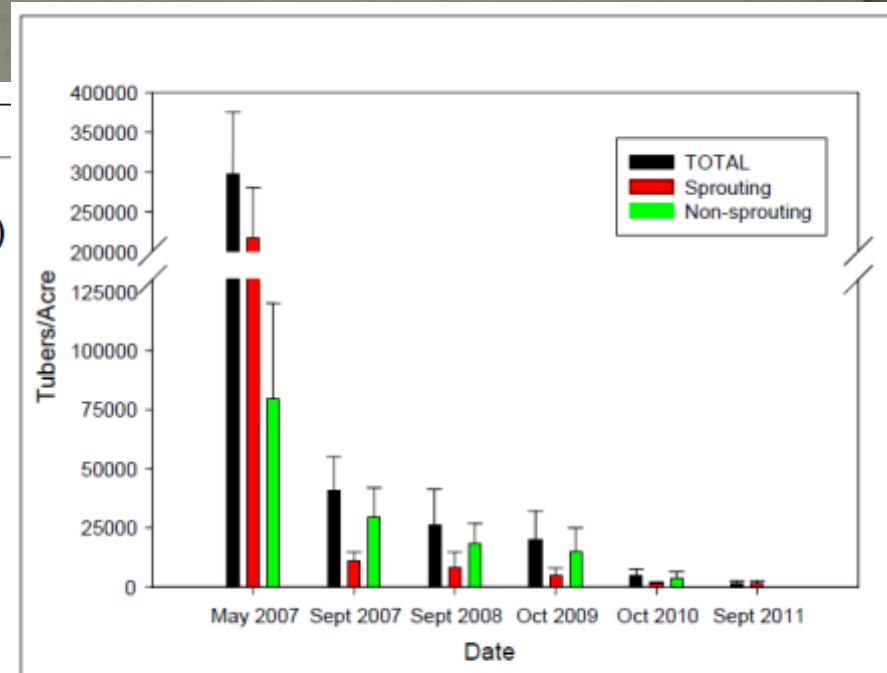
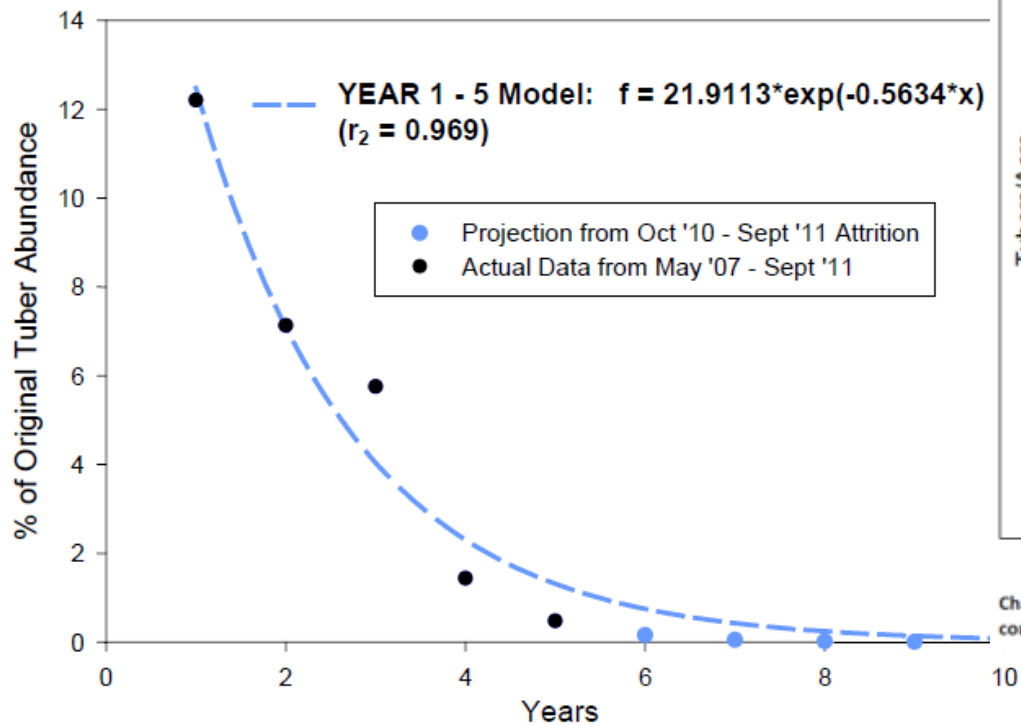


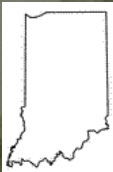
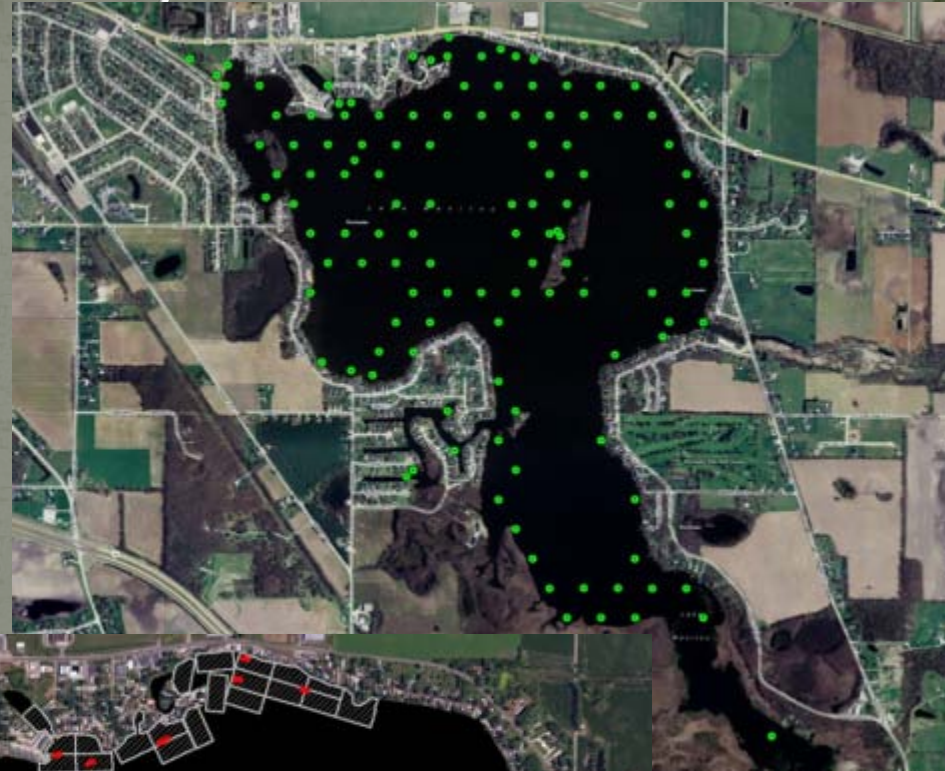
Chart 2.2.1. Overall changes in monoecious hydrilla tuber abundance in Lake Manitou following five consecutive years of Sonar treatments (sprouting + non-sprouting = total).

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 un-sprouted 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.



# 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<sup>2</sup>- 466,000 ft<sup>2</sup>
  - ~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





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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](http://www.in.gov/dnr/files/fw-Zebra_mussels_sightings.pdf)





# PUBLIC SIGN PLACEMENT

**PROTECT YOUR WATERS!**  
Unused bait and invasive plants and animals hitchhiking in bait buckets can ruin your fishing.

**REMOVE**  
non-bait fish, plants, and other hitchhikers from bait bucket before fishing.

**DON'T DUMP BAIT**

**DISPOSE**  
of all unwanted bait and hitchhikers in the trash.

**DRAIN**  
bait bucket before moving to another waterbody.

**NEVER RELEASE**  
organisms caught from one waterbody into another.

[www.protectyourwaters.net](http://www.protectyourwaters.net)

STOP AQUATIC HITCHHIKERS! Sea Grant Great Lakes RESTORATION ENVIRONMENTAL SCIENCE CENTER

**STOP AQUATIC HITCHHIKERS!™**

Prevent transport of aquatic invasive species.  
Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)

- **INSPECT** and **REMOVE** aquatic plants, animals, and mud from boat, motor, trailer, and equipment.
- **DRAIN** water from boat, motor, bilge, livewell, and bait containers away from landing.
- **DISPOSE** of unwanted live bait, fish parts, and worms in the trash.
- **SPRAY/RINSE** boat and equipment with high-pressure or hot water. **OR**
- **DRY** everything for at least five days before going to another water.
- **NEVER** release organisms from one waterbody into another.

Sea Grant ILLINOIS - INDIANA DNR Indiana Department of Natural Resources



# PRINTED MATERIALS

## EURASIAN WATERMILFOIL

*Myriophyllum spicatum*



## Asian Carp: Bighead & Silver



Copyright 1990 University of Florida  
Center for Aquatic and Invasive Plants

### HYDRILLA



### ELODEA



### EGERIA



they leaves  
more than 12  
leaflets

## Round Goby WATCH



conservation

**STOP**  
**The**  
**Invasion!**



**Asian Carp**  
are a huge threat  
to Indiana fish  
populations and  
human safety.

**Do Your Part**  
**to Help!**



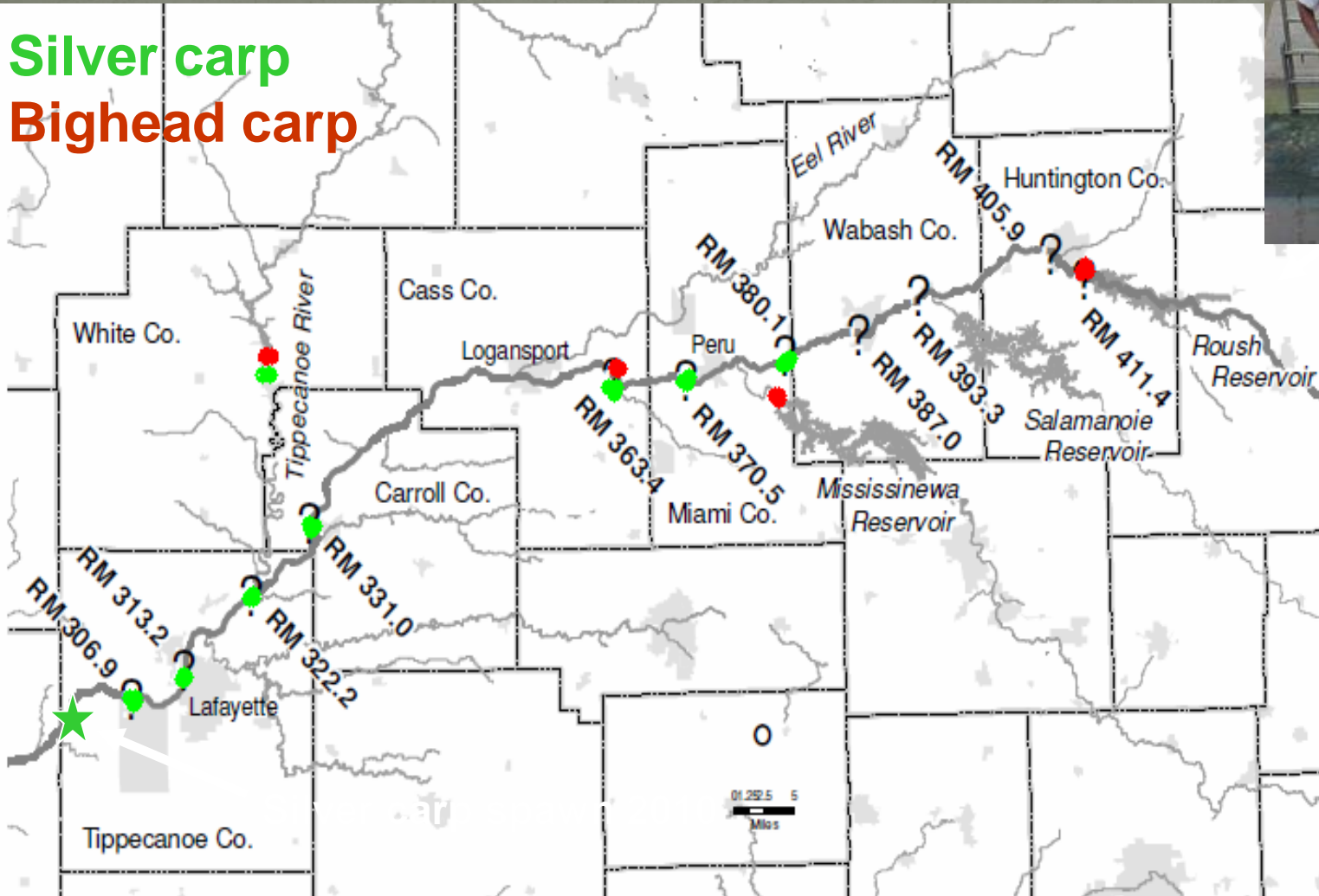
© Krasner

[www.asiancarp.dnr.in.gov](http://www.asiancarp.dnr.in.gov)



# Asian Carp UPPER WABASH

**Silver carp**  
**Bighead carp**



# Eagle Marsh – Watershed connection

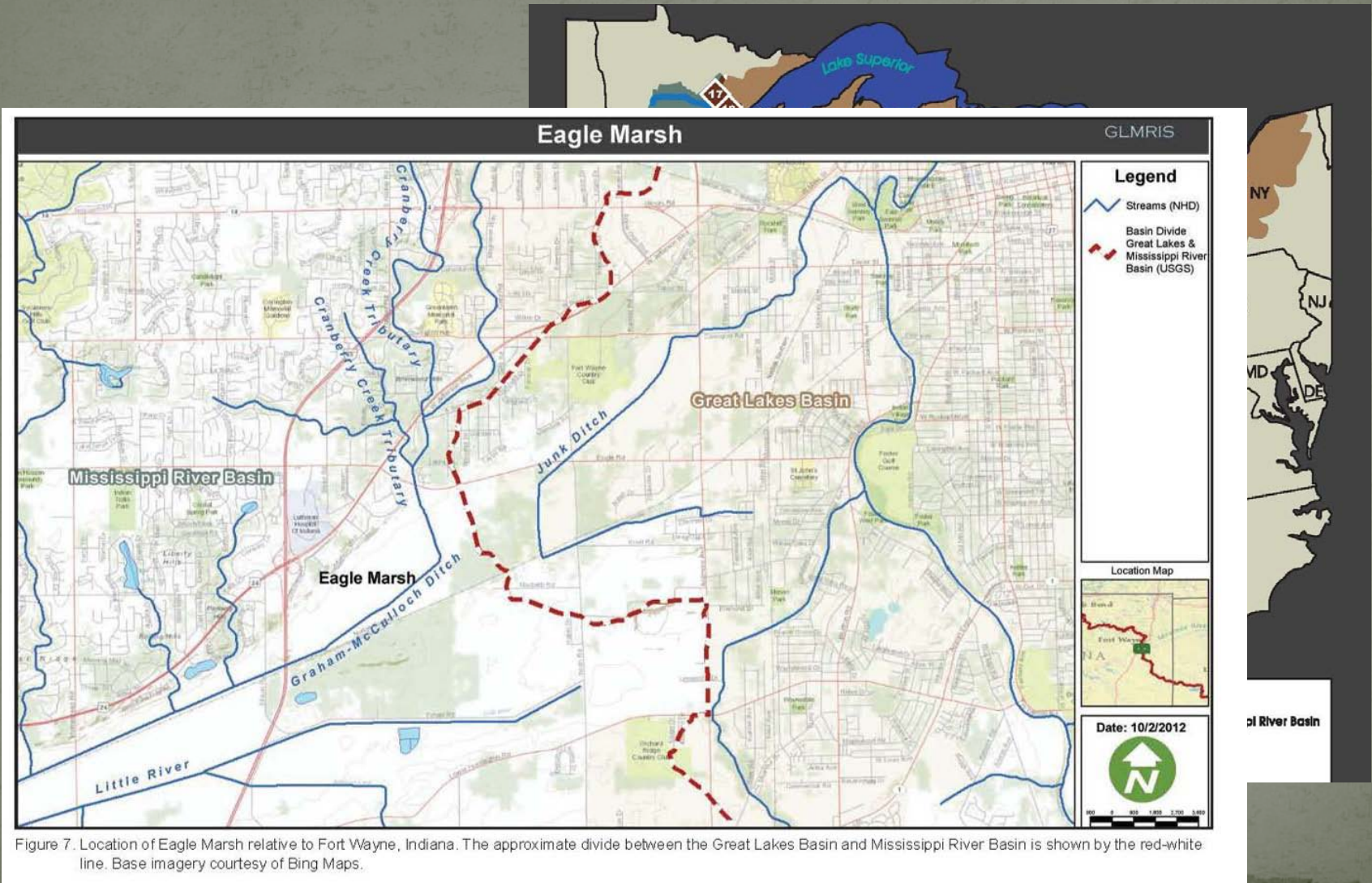
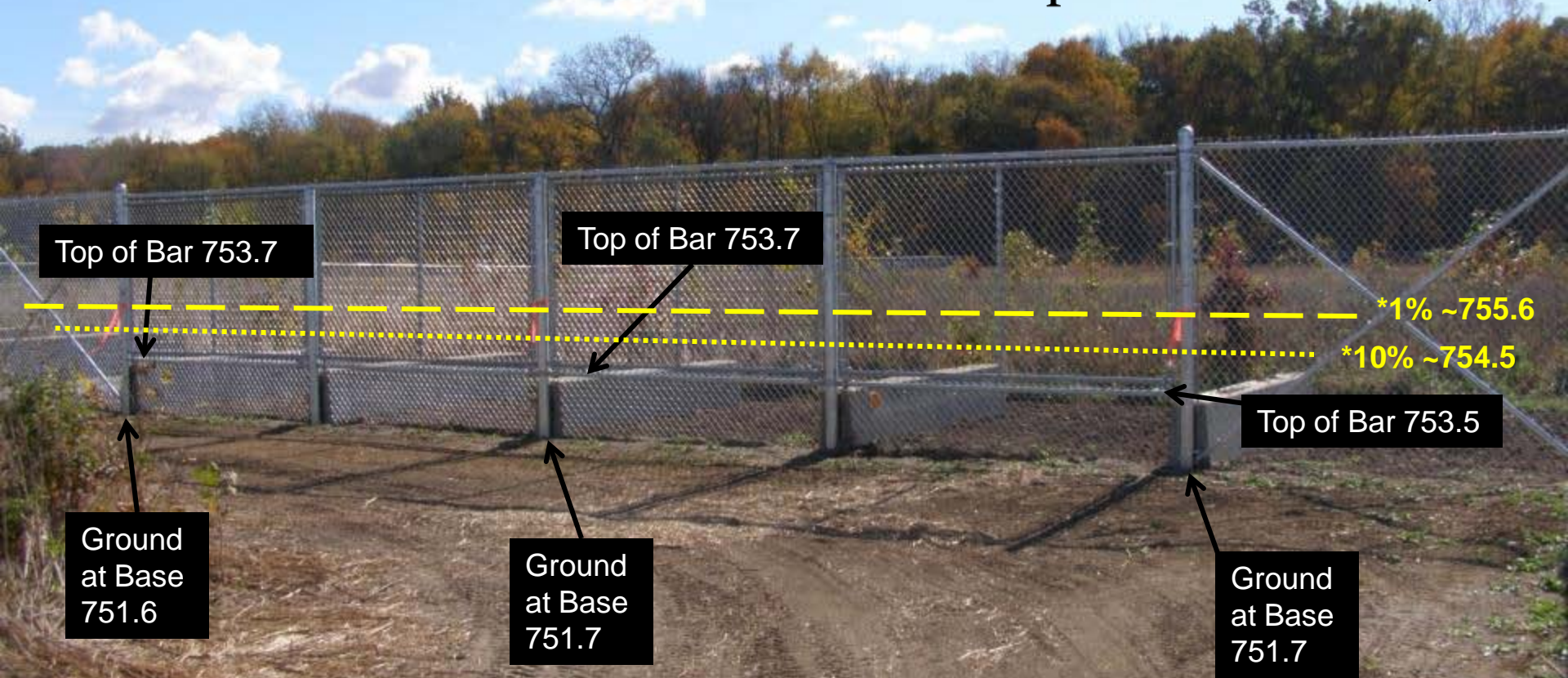


Figure 7. Location of Eagle Marsh relative to Fort Wayne, Indiana. The approximate divide between the Great Lakes Basin and Mississippi River Basin is shown by the red-white line. Base imagery courtesy of Bing Maps.

# 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

\*1% ~755.6

Top of Bar 753.5



# 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

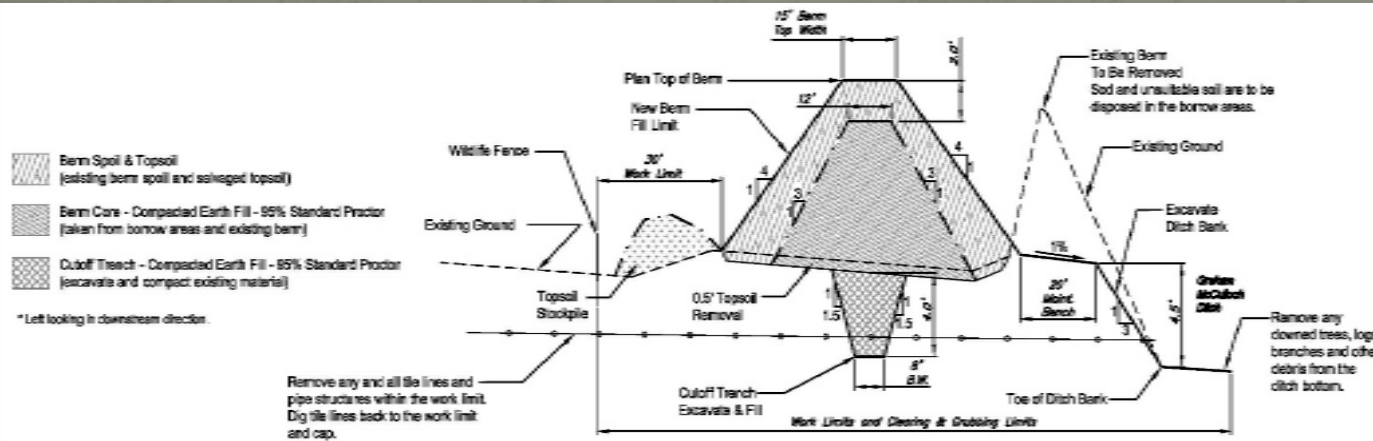
- Where are fish concentrating?
- Where are they migrating to for spawning?
- Do AC show any interest in running up Little River?
- Are they “testing” the fence?

## ● SPAWNING EVALUATION

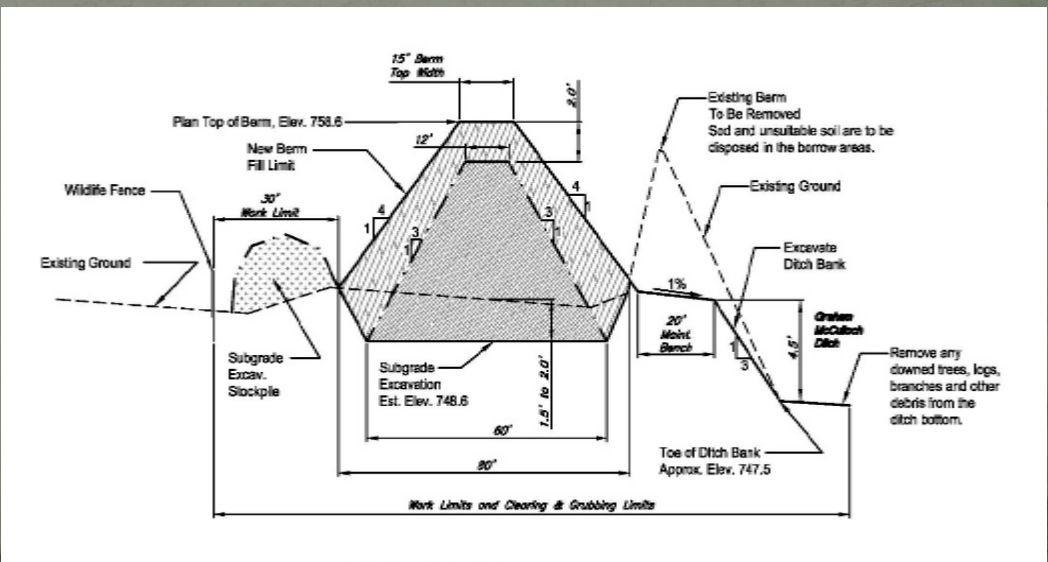
- Where does spawning occur?
- What are the conditions that trigger spawning (temperature, flow rate, river stage, etc)?
- Where do juveniles go to for development?



# Hydrologic Separation- Earthen Berm Design

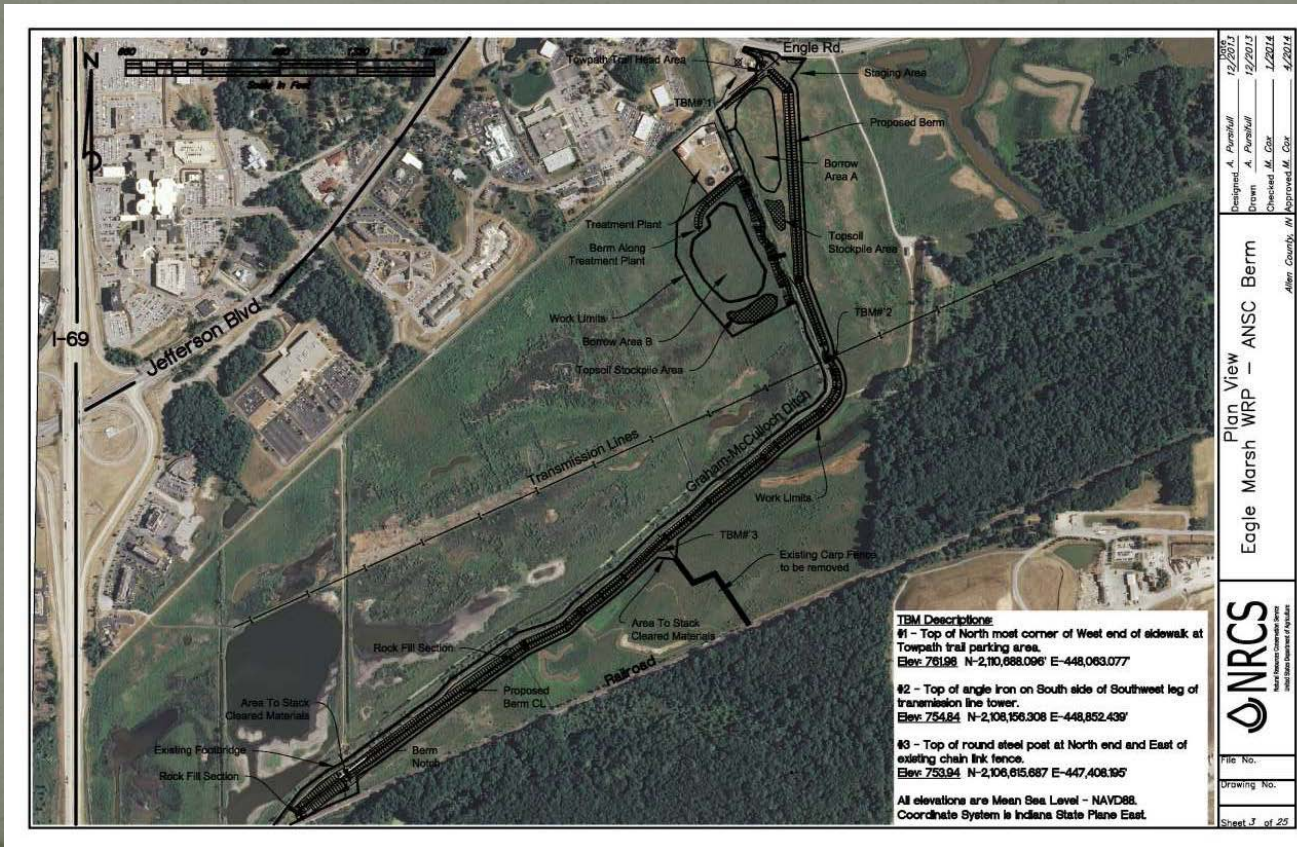


**TYPICAL BERM CONSTRUCTION CROSS SECTION**  
Sta. 28+75 to Sta. 98+35



# Earthen Berm Design

- Plan View – 9080 lin.ft. of berm



150928, September 28, 2015



151014, October 14, 2015



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
  - Early Detection
  - Rapid Response
  - Control
  - Mitigation
  - Planning

THANK YOU  
ANY QUESTIONS?  
E-mail [efischer@dnr.in.gov](mailto:efischer@dnr.in.gov)