

## THE GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY NEWSLETTER

### Inside this issue:

<i>ANS Controls Paper</i>	1-2
<i>Technology Team Lead</i>	2
<i>Upcoming Interim Products</i>	3
<i>Q &amp; A's on CAWS Cargo Assessment</i>	4-5
<i>Update on Other USACE ANS Projects</i>	6-7
<i>Calendar of Events</i>	7
<i>Response to GLC/CI Report</i>	8

If you have questions or comments about the GLMRIS Newsletter or have suggestions for future topics you would like to see addressed, please contact the Chicago District Public Affairs Office at

[ChicagoDistrict.PAO@usace.army.mil](mailto:ChicagoDistrict.PAO@usace.army.mil) or call us at (312) 846-5330.

Additional information about GLMRIS, including previous issues of the newsletter, is available online at [glmr.is.anl.gov](http://glmr.is.anl.gov).

The purpose of GLMRIS is to determine the range of options and technologies available to prevent aquatic nuisance species transfer via aquatic pathways between the Great Lakes and Mississippi River basins.

### Stay Connected:



[Twitter](#)



[Facebook](#)

### U.S. Army Corps of Engineers Releases Aquatic Nuisance Species Controls Paper

“The ANS Controls Paper can be compared to a tool box that holds various tools — 90 tools within 27 categories, to be exact — that will be investigated as a part of GLMRIS,” said GLMRIS Chicago Area Waterway System (CAWS) Project Manager Dave Wethington about the “Inventory of Available Controls for Aquatic Nuisance Species of Concern – Chicago Area Waterway System,” released Dec. 21, by the U.S. Army Corps of Engineers (USACE).



Light attenuating dyes, one category of the 27 ANS Control Categories, are concentrated synthetic colorants that can be applied to water to reduce the growth of submersed aquatic plants and algae. The dyes act to reduce light penetration into the water column, inhibiting the ability to capture the necessary light needed for photosynthesis.

This ANS Control Paper is an inventory of available options or technologies that may be effective at preventing the 39 ANS of Concern, established by the ANS White Paper, from transferring through the aquatic pathways in the CAWS, as well as other potential aquatic pathways.

The ANS White Paper, released July 2011, identified the ANS of Concern that will be an initial focus in GLMRIS. Ten of the 39 species are of concern for potential transfer to the Great Lakes Basin and 29 are of concern for potential transfer to the Mississippi River Basin. View the species fact sheets at: <http://glmr.is.anl.gov/documents/ans/index.cfm>.

“Baseline assessments, such as the ANS Controls Paper, establish the building blocks for GLMRIS,” said Wethington.

The paper does not contain specific recommendations, rank the effectiveness of the ANS Controls or identify constraints, regulatory requirements or technological feasibility of application. The 90 identified controls were selected based on literature, scientific analysis and professional judgment.

Each of the Controls met the selection criteria of being potentially effective at preventing the transfer of the ANS of Concern through aquatic pathways, posing minimal risk to human health and safety, if applied in compliance with the appropriate laws, and being currently available or in research and development.

Examples of control categories include manual harvest, hydrologic separation, accelerated water velocity, pheromones, ultraviolet light, acoustic fish deterrents and ultrasound.

## ***USACE Releases Aquatic Nuisance Species Controls Paper***

“The Technology Team’s next steps are to develop screening criteria consistent with study objectives and to refine the inventory of ANS Controls to determine which warrant further consideration,” said Johnna Potthoff, GLMRIS Technology Team lead.

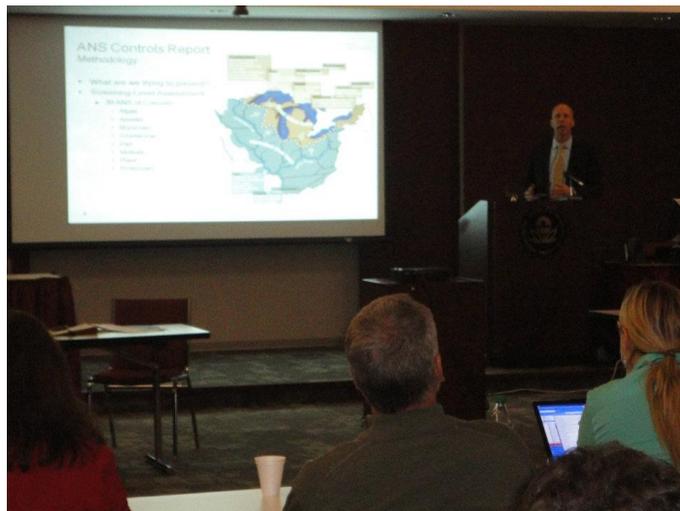
To ensure the list of potential controls is complete, USACE opened a public comment period from Dec. 21, 2011, through Feb. 17, 2012 to gain input on controls documented in the paper or on new prospective controls.

The paper will be re-issued in Spring 2012, incorporating necessary changes from the comments received.

“It is in our best interest as a collaborative group to make sure we have all potential controls in order to make the best recommendation for a control or suite of controls to prevent the transfer of ANS,” said Wethington.

The ANS Controls Paper and ANS Controls fact sheets are posted on the GLMRIS website. The ANS Controls Paper comments will also be posted in the spring.

“Public participation in the GLMRIS process is essential to ensuring an effective, long-term solution that works for Great Lakes communities,” said John Goss, Asian carp director, White House Council on Environmental Quality.



GLMRIS Chicago Area Waterway System Project Manager Dave Wethington discusses the ANS Controls Paper released December 2011 with non-governmental stakeholders at a quarterly Asian Carp Technical and Policy Workgroup Meeting, Chicago, Ill., Jan. 19, 2012. “Within the ANS White Paper, we first looked at species in a general sense, grouping them into categories. However, we must be cognizant of what the specific species are as we move into the ANS Controls screening criteria. For example, some molluscicides may not work on all mollusks,” said Wethington.

## ***Spotlight***

### ***GLMRIS Technology Team Lead Johnna Potthoff***

Johnna Potthoff currently works for the Planning Branch of USACE and has a total of eight years of experience with the Chicago District. During her tenure with USACE, she has worked in the environmental engineering section on a range of projects involving compliance with Clean Water and Air acts.

Potthoff received an undergraduate degree in civil engineering and master's degree in environmental engineering from the University of Illinois, Urbana-Champaign and a juris doctor from the John Marshall Law School.

Potthoff previously worked for the Illinois Attorney General's Office as an environmental litigator and for the City of Chicago's Department of Environment as a manager of the permitting and inspection staff and an in-house attorney.

“The biggest reward in this GLMRIS role has been working with the other Technology Team members, USACE staff and federal, state and municipal agencies that gave their support to the team’s initiatives. The biggest challenge of completing this GLMRIS interim product was ensuring all relevant technologies and research were included,” said Potthoff.



Johnna Potthoff, GLMRIS Technology Team lead, reviewing a draft version of the ANS Controls Paper, U.S. Army Corps of Engineers Chicago District, Feb. 15, 2012.

## *Interim Products Expected for Release Spring 2012*

### **Commercial Fisheries Report**

As a part of the GLMRIS Navigation and Economics Team, the Fisheries Economics Team is generating a baseline economic assessment and current valuation of the commercial fisheries in the Great Lakes, Upper Mississippi River and Ohio River basins. Data collected from state departments of natural resources (or other agencies that collect commercial harvest data) will be used to analyze commercial fishing harvests and their associated dockside values. The assessment will be used as a baseline that the Fisheries Economics Team will later compare to a variety of scenarios involving how ANS transfer would potentially impact future fisheries conditions. Those scenarios will be developed in coordination with the GLMRIS Natural Resources Team.



White House Council on Environmental Quality Asian Carp Director John Goss applauds the efforts and cohesiveness of the agencies within the Asian Carp Regional Coordinating Committee, Portage, Ind., Jan. 12, 2012. "We're determined to win this fight with Asian carp. It's not a sprint; it's more of a relay race, passing off the baton," said Goss .

The results will be released for public comment in Spring 2012 and will be used to help prioritize the funding of future GLMRIS actions, as well as assist multiple agencies in their decision making processes at these other aquatic pathways. The results will be incorporated into the overall study.

### **Aquatic Nuisance Species Controls Report for Wabash-Maumee Basins Connection, Fort Wayne, Ind.**

Developed by USACE Louisville District, this report is the highest priority for GLMRIS Focus Area 2. This effort will identify options or technologies (ANS Controls) to prevent ANS from transferring between the Wabash River and the Maumee River basins, near Fort Wayne, Ind., during flooding.

### **Focus Area II Aquatic Pathways Assessment**

To qualitatively evaluate the probability of ANS inter-basin transfer occurring at potential aquatic pathways outside of the CAWS, a preliminary assessment was completed in 2010, which took a cursory look at the entire length of the approximately 1,500 mile-long divide between the Great Lakes and the Mississippi River basins.

USACE collaborated with the U.S. Geological Survey, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration and the natural resource agencies in the states of Minnesota, Wisconsin, Indiana, Ohio, Pennsylvania and New York to identify 18 potential locations where it appeared that inter-basin flow could exist during storm events that occur at a frequency greater than the 1 percent annual return frequency storm. One of these 18 locations is the Wabash-Maumee (aka Eagle Marsh) site near Fort Wayne, Ind., which was determined in 2010 to be the highest priority GLMRIS location outside the CAWS.

The 2011/2012 efforts will build upon the preliminary results to better characterize the probability of ANS transfer occurring at these 18 locations.



GLMRIS Program Manager Gary O'Keefe speaks to Fox 8, Cleveland, at a public forum held by Rep. Marcy Kaptur, Bowling Green State University, Huron, Ohio, Feb. 6, 2012. The forum focused on Asian carp prevention, specific to Lake Erie.

## *Q & A's with the Navigation and Economics Team about the Chicago Area Waterway System Cargo Assessment*

### **Q. What is the CAWS Cargo Assessment?**

**A.** The Baseline Assessment of CAWS Cargo Traffic was released Dec. 7 and provides a detailed view of commodity traffic, as it relates to its movement into the CAWS, through the CAWS and within the CAWS. The second part of the assessment details CAWS navigation operations, constraints, vessel traffic and lock utilization and performance. This assessment is supplemental to the CAWS Non-Cargo Assessment that was released Sept. 28.

The separation between cargo (commercial) and non-cargo allows the team to focus on the nature of the lock usages. If the study only focused on a single parameter, such as tonnage or vessel type, it would not look at the potential impacts of ANS-Control implementation on the CAWS from a balanced perspective. In addition, the non-cargo uses of the CAWS (tour boats, recreation, sport fishing, etc.) are substantial in and of themselves.

### **Q. What is the geographic range of the study?**

**A.** All the commercially-navigable channels between Lockport Lock and Dam and Lake Michigan of the Chicago Area Waterway System. This includes the following structures: The Lockport Lock and Dam, the Thomas J. O'Brien Lock and Dam and the Chicago Harbor Lock and Dam. Commercially-navigable, in this instance, means navigable by commercial cargo traffic.

### **Q. Where is this data pulled from?**

**A.** The data is taken from the Waterborne Commerce Statistics (WCS), as collected and maintained by USACE Waterborne Commerce Statistics Center, and from Lock Performance Monitoring System (LPMS) data, which is collected and maintained by the USACE Navigation Data Center. The Waterborne Commerce Statistics Center makes 15 years of data available to USACE analysts. This gave GLMRIS analysts the 1994-2009 dataset. The WCS are compiled from monthly reports submitted by individual towing companies. Among other pieces of information, the WCS contains dock-to-dock commodity movement data by individual commodity groups. The LPMS datasets are collected by individual lockmasters.

### **Q. What are the commodity groups looked at? How were these chosen?**

**A.** The following commodity groups were examined: coal and coke, petroleum fuels, crude petroleum, aggregates, grains, chemicals, ores and minerals, iron and steel and other. These are the commodity groupings commonly used for the Ohio River System. They seemed to fit the commodity traffic situation on the CAWS reasonably well.

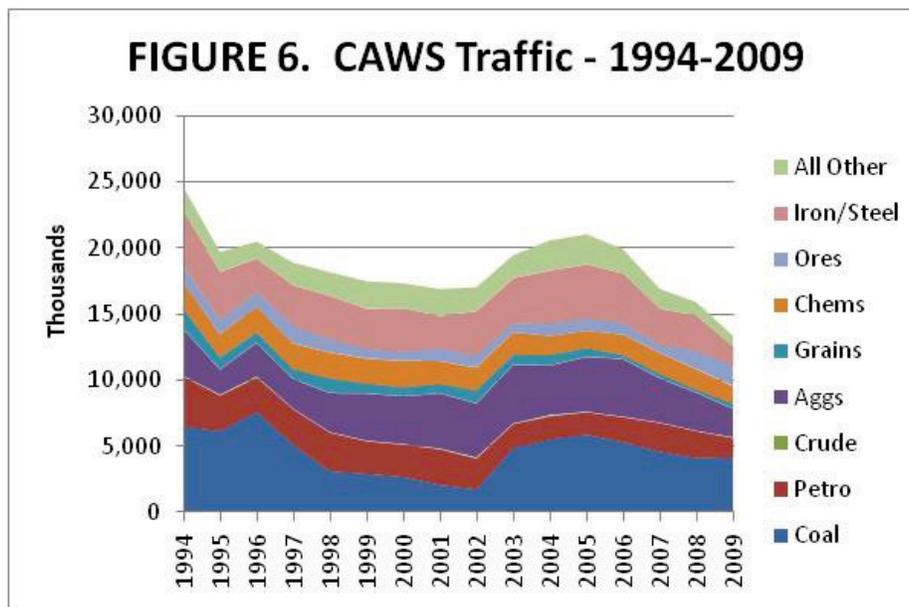


Figure 6: Changes in commodity traffic by major commodity group.

*Q & A's with the Navigation and Economics Team about the Chicago Area Waterway System Cargo Assessment*

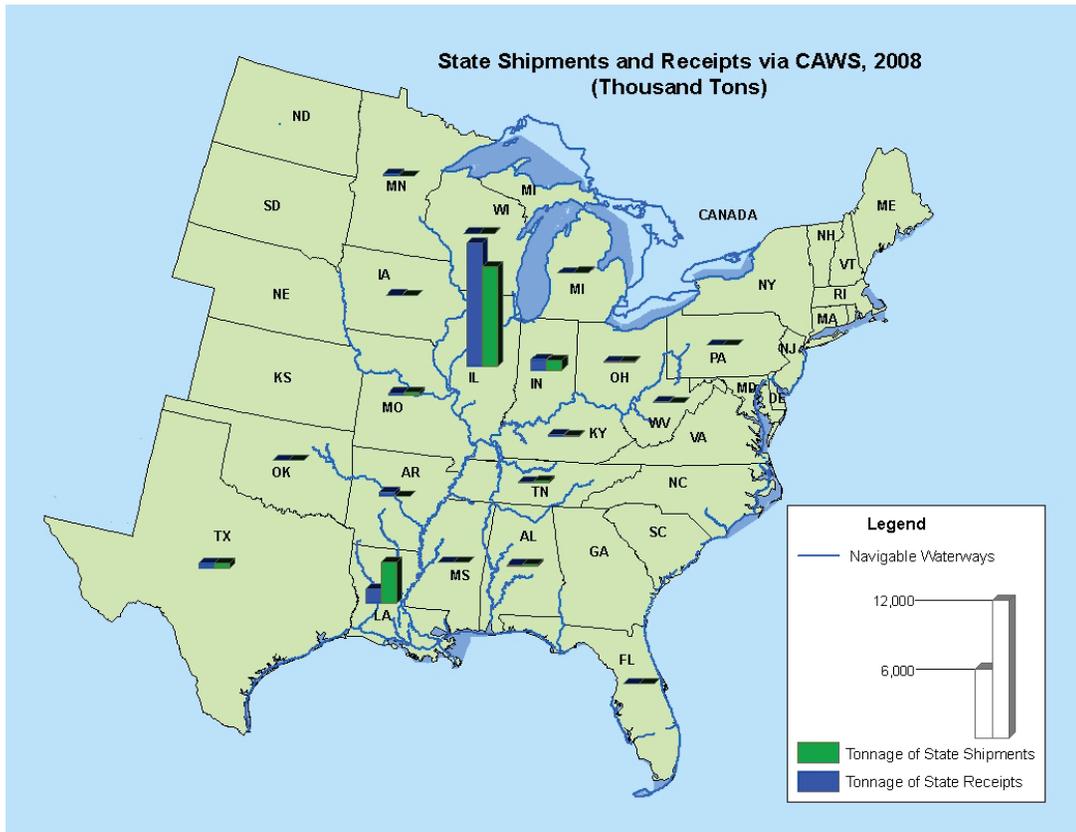


Figure 10: 2008 shipping and receiving states for CAWS traffic.

tows and barges on the CAWS typically pass through the Lockport Lock. The smallest tows, least tonnage and the smallest numbers of tows and barges pass through Chicago Harbor Lock. The overall orientation of traffic on the CAWS was about 73 percent up bound (toward the lake) in 2008.

**Q. Did you do any comparison of costs to move cargo via surface roads or rail?**

A. We are in the process of conducting a shipper survey and a base transportation rate analysis that will have a comparison of costs to move commodities on surface roads/rail. The GLMRIS Team will use this information during the next phase of the study including plan formulation and alternative analysis.

**Q. Will this information show you the best place to locate an alternative that would modify conditions in the CAWS?**

A. Using information gathered from the shipper survey and based transportation rate analysis, the GLMRIS Team will be able to identify the location (s) that has (have) the least potential adverse impact to commercial navigation. Note, however, that the location that minimizes impacts to commercial cargo may not be a location that minimizes, for example, the impacts to flood-risk management or CAWS water quality.

**Q. How will the GLMRIS Team use this data?**

A. The commercial cargo assessment provides baseline commercial cargo and operations data. Using this collected data, the GLMRIS Team will use a navigation system model to examine the impacts potential study alternatives may have on commercial cargo navigation.

**Q. How would you characterize CAWS traffic during the 1994 – 2009 dataset?**

A. Generally, CAWS traffic serves the transportation needs of Chicago-area manufacturers, particularly the iron and steel manufacturers and the construction and electric utility industries. The leading commodity group on the CAWS in 2008 was coal and coke, which comprised about 26 percent of total traffic. The highest level of traffic on the CAWS, recently, was attained in 1994, when traffic was about 25 million tons. Disregarding the 1994 data, CAWS traffic over the last 15 years could be characterized as flat to declining. The highest tonnages, largest tows and greatest numbers of

## *An Update on Other Aquatic Nuisance Species Projects*

As a member of the Asian Carp Regional Coordinating Committee (ACRCC), USACE is committed to preventing Asian carp, specifically bighead carp and silver carp, from becoming established in the Great Lakes. We are doing this through a four-pronged strategy: operating the electric barriers in the Chicago Sanitary and Ship Canal; studying the effectiveness of the barriers and strengthening them, as appropriate; extensive monitoring of the canal and additional research on environmental DNA (eDNA) and conducting GLMRIS.

"I am fortunate to work with a team that is dedicated to the Asian carp fight, through both immediate and long-term projects, and committed to preventing these nuisance species from establishing within the Great Lakes," said Col. Frederic A. Drummond Jr., commander, U.S. Army Corps of Engineers, Chicago District.

### **Barriers**

"We have high confidence in the effectiveness of the barriers and continue to work with our partners and stakeholders to assess the Asian carp threat and make informed decisions regarding barrier operations," said Drummond.

In the fall of 2011, the parameters at Barrier II were increased from 2 volts/ inch, 15 hertz and 6.5 ms to 2.3 volts/inch, 30 hertz and 2.5 ms. This increase was implemented after the completion of an interim efficacy study that suggested this setting would be effective at preventing the transfer of all sizes of fish. Although verified spawning of Asian carp is 152 miles from Lake Michigan, USACE increased the parameters at Barrier II as a conservative measure.



Lt. Col. Jim Schreiner, deputy commander, U.S. Army Corps of Engineers, Chicago District, explains to non-governmental stakeholders at the Asian Carp Technical and Policy Workgroup Meeting the Corps' four-pronged strategy for preventing Asian carp migration. This includes the electric barriers, efficacy studies on the effectiveness of the barriers, aggressive monitoring of the canal and GLMRIS, Chicago, Ill., Jan. 19, 2012. "With our 2012 budget, we are able to fully implement the prevention strategy set out by the White House," said Schreiner.

### **Efficacy**

Expanded use of ultrasonic telemetry, which is individually coded transmitters surgically implanted in fish to determine behavior near the barriers, has shown that of more than 3.7 million detections of 182 tagged fish in the area with a 75 percent detection rate, none have crossed any of the electric barriers in the upstream direction.

In fall 2012, USACE will begin construction on a permanent electric Barrier I. The current Demonstration Barrier will be decommissioned once the permanent Barrier I goes online.

Several interim efficacy studies have been undertaken to evaluate a range of factors that could potentially reduce the effectiveness of the electric dispersal barriers through analyzing various technical, environmental and biological factors.

A comprehensive efficacy study will be out in Fall 2012 and will report on issues not covered in the interim studies.

### **Monitoring**

Monitoring data helps inform project managers of the risk to the barriers from downstream invasions and is also used in assessing the efficacy of the barriers.

The ACRCC Monitoring and Rapid Response Workgroup remains committed to working together to find and refine Asian carp detection technologies, such as eDNA, to monitor the threat

and deploy necessary prevention efforts to keep Asian carp out of the Great Lakes.

In 2011, the Rapid Response Workgroup spent over 5,000 person hours monitoring with conventional gears in the CAWS upstream of the barriers. Over 325 hours of electrofishing and 78 miles of contracted commercial netting sampled over 68,000 fish representing more than 60 species. No Asian carp were found.

eDNA surveillance for Asian carp in the upper Illinois Waterway System and CAWS successfully wrapped up for the 2011 season with 2,548 water samples collected from May to October, by members of the ACRCC. Thirty-four samples were found positive for silver carp DNA and zero samples were found positive for bighead carp DNA above the barriers.

## An Update on Other USACE Aquatic Nuisance Species Projects

### Calendar of Events -- 2012 --

February 17– ANS Controls Paper Comment Period Colsed.

February 26-March 3– National Invasive Species Week.

March 19-23- Lake Committee Meetings, Great Lakes Fishery Commission, in Windsor, Ontario. [www.glfc.org](http://www.glfc.org)

March 30– Great Lakes Environmental Law Symposium– Chicago, Ill. [www.Kentlaw.edu](http://www.Kentlaw.edu)

April 4-5 - ACRCC Public Meeting, TBD, Minn.

April 23-26 (tentative)- IJC Spring Semi-Annual Meeting, in Washington, D.C. [www.ijc.org](http://www.ijc.org)

April 24-25 - Meeting of Council of Lake Committees, Great Lakes Fishery Commission, in Windsor, Ontario. [www.glfc.org](http://www.glfc.org)

May 13-17 – Annual Conference of the International Association for Great Lakes Research (IAGLR), in Cornwall, Ontario. [www.iaglr.org/conference/](http://www.iaglr.org/conference/)

June 6– Annual Meeting of Great Lakes Fishery Commission, in Buffalo, N.Y. [www.glfc.org](http://www.glfc.org)

June 26-28 – Annual Meeting of Great Lakes-St. Lawrence Cities Initiative, in Quebec City, Quebec. [www.glslcities.org/annual-meetings/2012.cfm](http://www.glslcities.org/annual-meetings/2012.cfm)

August 19-23– Annual Meeting of the American Fisheries Society, in Minneapolis– St. Paul, Minn. [Www.Afs2012.org](http://Www.Afs2012.org)

September 10-14– Great Lakes Week, Cleveland, Ohio. [www.glri.us/glweek.html](http://www.glri.us/glweek.html)

September 11-12– Great Lakes Commission Annual Meeting, Cleveland, Ohio. [www.Great-lakes.net](http://www.Great-lakes.net)

October 23-24- Meeting of Council of Lake Committees, Great Lakes Fishery Commission, in Romulus, Mich. [www.glfc.org](http://www.glfc.org)

Over 6,000 water samples have been collected and processed since 2009.

This monitoring method's main purpose is to act as an early warning tool in detecting Asian carp DNA to refocus prevention efforts, such as targeted netting, suppression tools or piscicides, if there are repeated positive samples in one area over time.

Released fall of 2011, the Environmental DNA Independent External Peer Review, conducted by objective panelists with technical expertise in genetics and population ecology, confirmed eDNA sampling and testing methodology is sound for detecting silver and bighead carp DNA but cannot indicate the source of Asian carp DNA (information on the size, gender, number and age of individuals present and cannot distinguish between pure silver or bighead carp and their hybrids).

### GLMRIS

GLMRIS is a complex study that addresses potential aquatic connections along the nearly 1,500 mile-long basin divide - not just the continuous connection in the Chicago area.

"As required by the National Environmental Policy Act, GLMRIS authorization and USACE Headquarters' implementation guidance, USACE must take a 'hard look' at direct, indirect and cumulative impacts of alternative actions. This includes the collection of economic, environmental and social data as well as the construction and utilization of engineering, environmental and economic models to accurately predict or assess cumulative impacts of potential ANS controls," said GLMRIS Chicago Area Waterway System Project Manager Dave Wethington.



Reporter Bowdeya Tweh of The Times of Northwest Indiana interviews U.S. Army Corps of Engineers Fish Biologist and member of the GLMRIS Natural Resources Team Kelly Baerwaldt on Asian carp monitoring techniques, Portage, Ind., Jan. 12, 2012.



Dr. Charles Yoe leads a risk-assessment workshop for a representative cross section of the GLMRIS Team, Chicago, Ill. Jan. 25, 2012. Risk assessment is a major part in establishing screening criteria in GLMRIS. Risk is categorized as probability x consequence. For just Focus area I, risks will need to be assessed for each of the 39 ANS of Concern by each of the five potential pathways for inter-basin transfer within the Chicago Area Waterway System. This workshop focused on risk language, risk science, qualitative risk approach and an example risk-assessment exercise.

## ***U.S. Army Corps of Engineers Update on GLMRIS In Relation to GLC/CI Report Restoring the Natural Divide***

**Great Lakes and Mississippi River Interbasin Study – Use of “Restoring the Natural Divide” by the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative (GLC/CI). Feb. 27, 2012**

The U.S. Army Corps of Engineers (Corps) appreciates the efforts of the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative (GLC/CI) and welcomes the information generated by the *Restoring the Natural Divide* report (GLC/CI Report). The report considers potential hydrologic separation of the Great Lakes and Mississippi basins in the Chicago area.

The Corps intends to use the information generated by the GLC/CI to inform the report authorized by Congress – the Great Lakes and Mississippi River Interbasin Study (GLMRIS). In GLMRIS, Congress directed the Corps to prepare a feasibility study of the range of “options and technologies” available to prevent the spread of aquatic nuisance species (ANS) between the Great Lakes and Mississippi River basins via the Chicago Area Waterway System (CAWS) and other aquatic pathways. One of the “options and technologies” being considered by USACE is hydrologic separation.

### **How will USACE use the GLC/CI Report?**

The GLC/CI Report identifies many potential opportunities and constraints inherent in the analysis, planning, and potential implementation of a hydrologic separation alternative.

The GLC/CI Report affirms the need to answer the many questions identified by the GLMRIS team in the course of detailed assessment of this alternative.

The GLC/CI report presents one piece of a very complex puzzle being assembled in GLMRIS. An existing Corps hydrologic separation team has already conducted a preliminary review of the report. The Corps team has developed a summary of comments and questions to discuss with the GLC/CI study team in order to improve our understanding of the underlying assumptions, data sets used, and methodology. The Corps team will meet with the GLC/CI study team in early March to discuss these points.

### **How will GLMRIS build upon the contribution of the GLC/CI Report?**

- GLMRIS will develop models related to flood control to further evaluate the impacts of flooding under the various separation scenarios. These models would:
  - o Address the residual risk of reasonably anticipated extreme flood events that could overtop the types of barriers conceived in the GLC/CI report, thereby continuing the risk of ANS transfer despite substantial public investment,
  - o Identify if any additional capital investments would be required beyond the current Tunnel and Reservoir Project (TARP) as part of potential mitigation measures in a hydrologic separation scenario.
- GLMRIS will involve local, regional, and state jurisdictions in assessing the feasibility of a plan that would rely upon improved local and regional sewage treatment.
- GLMRIS will model the impacts of hydrologic separation on water quality in the CAWS and Lake Michigan and consult with regulatory agencies on regulatory requirements to identify the water quality impacts of new discharges to the Great Lakes resulting from a hydrologically separated system.
- GLMRIS will consult with agencies that regulate the waterway, including MWRD, the operator of the Stickney and other large wastewater treatment plants (WWTPs) that discharge to the CAWS, to determine future regulatory requirements and future plans for any anticipated improvements. Issues to be addressed include:
  - o Level of disinfection that is anticipated at the Stickney WWTP within the study period,
  - o Whether system-wide nutrient reduction will be implemented within the study period,
  - o Anticipated regulatory requirements for emerging contaminants (e.g. mercury or other toxics) expected to be promulgated during the study period.
- GLMRIS will identify sediment remediation requirements that would be necessary with the implementation of a barrier separation project.
- GLMRIS will evaluate the functionality of stormwater systems as they currently exist, and may evaluate a changed future condition if the implementation of green infrastructure is anticipated by local municipalities to significantly reduce runoff.
- GLMRIS will continue to evaluate impacts to waterway users and the viability of mitigation for those impacts, building upon work already accomplished by the GLMRIS and GLC/CI study teams.

The GLMRIS Team continues to document observations and questions for further clarification with the GLC/CI study team. The GLMRIS Team looks forward to meeting with the GLC/CI study team, as well as other key stakeholders such as the Metropolitan Water Reclamation District of Greater Chicago, to further discuss the implications of these observations.