March 27, 2014

Mr. Dave Wethington
U.S. Army Corps of Engineers, Chicago District
231 S. LaSalle St., Suite 1500
Chicago, IL 60604

ATTN: GLMRIS Comments

Dear Mr. Wethington:

The Great Lakes Commission (GLC) and the Great Lakes and St. Lawrence Cities Initiative (Cities Initiative) have reviewed the Great Lakes and Mississippi River Interbasin Study (GLMRIS) and commend the U.S. Army Corps of Engineers (USACE) for the comprehensive and diligent efforts put forth to complete the report by January 2014. Although the alternatives presented are all viable, the GLC and Cities Initiative believe the assumptions setting the foundation for the alternatives analysis were overly conservative and resulted in mitigation costs and implementation timelines that go well beyond returning system functions to the current status quo. As a result, the cost and schedule of hydrologic separation of the Great Lakes and Mississippi River watersheds is unrealistically expensive and lengthy.

The study recognizes hydrologic separation as the most effective way to prevent aquatic invasive species (AIS) transfer and the approach with the least adverse impact on flooding; however, several assumptions also make it the most expensive and lead to extensive implementation timelines. Specifically:

1) The USACE's assumption that no flows can be directed to the Great Lakes is extremely conservative and far exceeds the limits placed on any other Great Lakes city, especially recognizing that CSOs and contaminated sediments are currently transported to the lakes during large, but recurring, storm events.
2) The USACE's assumption that all combined sewage will be captured and treated to tertiary treatment levels for any storm up to and including the 500 year storm is well beyond the known requirements placed on any other U.S. or international city.
3) The Tunnel and Reservoir Plan (TARP) system will effectively double in size and a new series of tunnels will be built to reroute all drainage and treated wastewater effluent to the river side of the barrier.
4) The water used to replace the flow in the river (because all drainage has been captured) will be lake water treated beyond drinking water standards.
5) Current challenges, including existing flooding, CSO control and contaminated sediments, will all be remediated as a project cost.

The GLC and Cities Initiative appreciate the work performed by USACE but note the limitations summarized above and detailed in the attached document. We urge you to consider these comments as additional efforts are undertaken on the GLMRIS alternatives. We also urge USACE to move forward quickly, in collaboration with other agencies and stakeholders, to implement near-term control measures that can reduce the risk of AIS transfer – Asian carp in particular – while a long-term solution is developed. It is imperative that we use the GLMRIS study and related efforts to take action to protect the Great Lakes.

The GLC and the Cities Initiative are well positioned to facilitate consensus and provide guidance on next steps. Our Chicago Area Waterway System (CAWS) Advisory Committee has developed a six-part strategy for moving forward and is focusing intently on advancing near-term control measures and reaching consensus on a long-term solution. In addition, both of our organizations have adopted resolutions (attached) recommending the path forward. We will continue to provide leadership and generate support from the diverse groups working to protect the Great Lakes from Asian carp and other aquatic invasive species. We look forward to working closely with USACE in this effort.

Sincerely,

Tim Eder
Executive Director
Great Lakes Commission

David A. Ullrich
Executive Director
Great Lakes and St. Lawrence Cities Initiative

Comments on the Great Lakes and Mississippi River Interbasin Study

Prepared by the Great Lakes Commission and the
Great Lakes and St. Lawrence Cities Initiative

March 2014

GLMRIS presents a range of options and technologies to prevent invasive species movement between the Great Lakes and Mississippi River basins via the Chicago Area Waterway System (CAWS). The report identifies eight alternatives and analyzes potential impacts and corresponding mitigation requirements for flood-risk management, natural resources, water quality and navigation. The alternatives range from the current electric barriers, commercial harvesting and monitoring, to full hydrologic separation with physical barriers, and a new technology called a "GLMRIS lock" that would permit barge traffic but use treated water in locks to remove invasive species. The study recognizes hydrologic separation as the most effective way to keep Asian carp out of the Great Lakes, prevent aquatic invasive species (AIS) from reaching the Mississippi River, and mitigate flooding, but several assumptions also makes it the most expensive and lead to extensive implementation timelines.

Key elements of the alternatives include major expansion of Chicago's Tunnel and Reservoir Plan (TARP) system, removal of contaminated sediments in the Chicago and Calumet rivers, and the construction of a major water treatment plant to provide AIS-free water for lockages and water quality enhancements. The costs range from $7.8 to $18.4 billion and time for implementation is between 10 and 25 years.

The following is a brief overview of the alternatives; see the summary report for a more complete description and the table on page ES-11 of the executive summary of the full report for the GLMRIS alternatives evaluation criteria.

Alternative	Cost	Years to Complete	Effectiveness	Key Structural Elements				
				GLMRIS Lock	*Electric Barrier*	*ANS Treatment Plant*	*Screened Sluice Gates*	*Physical Barrier*
No New Federal Action - Sustained Activities (baseline condition)	None	N/A	ι					
Nonstructural control technologies	$68 M	Immediate	ιι					
Mid-System Control Technologies without a Buffer Zone	$15.5 B	25 years	ιιι	Y	Y	Y		
Control Technology Alternative with a Buffer Zone	$7.8 B	10 years	ιιι	Y	Y	Y	Y	Y
Lakefront Hydrologic Separation	$18.4 B	25 years	ιιιι			Y		Y
Mid-System Hydrologic Separation	$15.5 B	25 years	ιιιι			Y		Y
Mid-System Separation Cal-Sag Open Control Technologies with a Buffer Zone	$15 B	25 years	ιιι	Y	Y	Y	Y	Y
Mid-System Separation CSSC Open Control Technologies with Buffer Zone	$8.3 B	25 years	ιιι	Y	Y	Y	Y	Y

Assessment of GLMRIS Assumptions and Methodologies

The U.S. Army Corps of Engineers (USACE) made key assumptions in GLMRIS that account for the significant costs and extensive implementation times for its alternatives, including:

1) complete capture and treatment of all wet weather events up to and including a 500-year storm event;
2) complete removal of contaminated sediments (as a cost of separation); and
3) no new discharges to Lake Michigan regardless of water quality.

The recommendations were limited to proven technologies leaving out potentially promising, less costly, approaches (such as using CO_2 to treat lock chambers, currently being investigated by the State of Illinois and the University of Illinois). Containing all CSOs for a 500-year storm event far exceeds design standard generally used for wastewater and stormwater systems internationally. Consequently, the proposed combined sewer overflow (CSO) controls far exceed the typical standard of care and are not consistent with U.S. EPA's national CSO control policy (which typically strives for four treated overflows per year).

The following is an assessment of USACE assumptions and methodologies in key areas. After review, we believe that effective solutions likely will not be as costly as projected in the GLMRIS report. It is important to recognize that differing assumptions significantly impact cost estimates for physical separation. It also is important to distinguish between costs directly related to the alternatives themselves versus those that are needed today or anticipated in the future to address existing problems related to water quality, flooding and transportation.

Overarching Observations taken from GLMRIS

- Physical separation is the most effective means of preventing aquatic invasive species (AIS) from crossing between the two watersheds (GLMRIS, pg. ES-11).
- Water quality in Lake Michigan continues to receive priority over the Mississippi River basin, as Illinois anti-degradation law requirements apply to discharges to Lake Michigan and not to discharges to the Mississippi River basin. The report does, however, recognize the difficulty of meeting those requirements (GLMRIS, p. 85).
- The assumption of no additional wastewater and CSO pollutants discharged to Lake Michigan drives much of the alternative elements and, thus, costs.
- Impacts and mitigation measures regarding CSO volumes and flooding were determined using the 500-year storm event (GLMRIS, p. 86).
- The mid-system hydrologic separation alternative "minimizes induced flooding impacts to the Chicago area." (GLMRIS, pg. ES-7) "Mid-System hydrologic separation alternative has the least adverse impact on overbank or basement flooding." (GLMRIS, App. B, p. 52)
- "Non-structural alternatives could be implemented quickly, while remaining elements of a primarily structural plan were being designed and constructed." (GLMRIS, pg. ES-6)
- Contaminated sediments are an important (and costly) impairment.
- "Mitigation for commercial navigation was not included as part of any GLMRIS Alternative." (GLMRIS p. 86) "Impacts to commercial navigation would not be mitigated, because no mitigation measures were identified that would effectively address the impacts." (GLMRIS, p, 159).
- Time to achieve full implementation of the separation alternatives is 25 years and is driven by construction of new CSO holding and treatment capacity. Time to implement the first phase of separation in the *Restoring the Natural Divide* report is 10 years.

Water Quality

Not allowing any discharge of CSOs or treated wastewater to Lake Michigan accounts for approximately $12 billion of the $16 billion cost of the GLMRIS Mid-System Alternative. GLMRIS proposes to use tunnels to relocate the highly treated wastewater effluent to the Mississippi River side of physical barriers. Additionally, all CSO discharges up to the 500-year storm event would be captured, highly treated and discharged to the Mississippi (via new tunnels and reservoirs) even though untreated CSOs are currently discharged to the lake during large storm events. Furthermore, GLMRIS proposes to take Lake Michigan water, treat it to drinking water standards, and then use it to augment flows on both sides of physical barriers to dilute other pollutant sources, and maintain water quality standards.

The CSO control program proposed by GLMRIS is driven by the assumption that CSOs cannot be discharged to Lake Michigan. Rather than capturing a small volume of CSOs for a short period of time, screening and disinfecting it, and then discharging it, GLMRIS proposes to capture and treat all flows from all storms up to and including a 500-year storm and discharge them to the Mississippi River basin.

GLRMIS proposes that contaminated sediments exposed to the Great Lakes must be remediated as part of separation, while sediment remediation on the Mississippi River side of any physical barriers is not required (and, therefore, there are no project costs). Currently, contaminated sediments are released to the Great lakes during large events.

Flood Risk Management

GLMRIS states that the "Mid-System hydrologic separation alternative has least adverse impact on overbank or basement flooding" (GLMRIS, App. E, p. 52). Second storage reservoirs at both McCook and Thornton are primarily a water quality mitigation element, which is driven by the assumption that no additional wastewater or CSO flows can be discharged to Lake Michigan. It is difficult to determine the costs associated with maintaining water quality versus the costs associated with flood mitigation relative to the total cost of the tunnels and reservoirs.

GLMRIS baseline conditions assume that climate change, land use and green infrastructure would have negligible impact (GLMRIS, p. 46). The 500-year (24-hour duration) storm event was used for evaluation of overbank flood impacts (GLMRIS, App. B, p. 53). GLMRIS mitigation assumptions include Lake Michigan water levels at historic average levels with consideration given for historic high levels (GLMRIS, App. B, p. 53).

Transportation

GLMRIS did not include mitigation for commercial navigation for any GLMRIS alternative because no mitigation measures were identified that would effectively address the impacts. This was based on feedback from CAWS operators who indicated they would not likely use a multi-modal facility because of the additional re-handling costs and, as a result, that cargo would shift modes to rail or truck. Additionally, should operators desire to use a multi-modal facility, a similar facility currently operates in Joliet, Illinois. This unmitigated impact to commercial cargo operations was estimated at $250 million per year for the Mid-System hydrologic separation alternative (GLMRMIS, p. 159). Furthermore, GLMRIS assumed that recreational vessels would not be lifted or moved around a physical barrier based on the potential increased risk for ANS transfer. If similar assumptions for commercial and recreational transportation were made for alternatives in the *Restoring the Natural Divide* study, the cost of its mid-system alternative would be reduced by approximately $1 billion.

ANS Control Technologies

Nonstructural Alternatives: GLRMIS only proposed measures currently in use for the non-structural alternative. As a result, "The Nonstructural Alternative would not reduce the risk of establishment of the bighead or silver carp when compared to the No New Federal Action – Sustained Activities conditions." Additionally, regarding new or emerging technologies, GLMRIS states "As effective nonstructural measures are introduced, they should be considered for use under the Nonstructural Alternative" (GLMRIS, pg. 98).

Structural Alternatives: The GLMRIS Lock is intended "*to allow for vessel transportation while reducing the risk to the maximum extent possible of passive drift GLMRIS species transferring during lockages"* (GLMRIS, pg. 65). This is a different criteria than stated in the GLMRIS Objectives which states*, "Study the range of options and technologies available the prevent, by reducing the risk to the maximum extent possible, additional ANS transfer through the CAWS and other aquatic pathways between the Mississippi River and the Great Lakes basins".* (GLMRIS, pg. ES-4). The newly envisioned GLMRIS Locks are coupled with ANS treatment plants and enhanced electric barriers. These treatment plants use a combination of screening, filtration, and UV radiation to produce 'ANS-free' water. While the effectiveness of electric barriers continues to be verified/studied, GLMRIS states that enhanced electric barriers are currently considered the most effective technology (not including physical barriers) for preventing fish passage. Other technologies reviewed in GLMRIS, such as CO_2, were not considered as effective, their effectiveness was too uncertain, or they had unacceptable negative impacts. The GLC and Cities Initiative question this limited review.

A separate study, released by USACE in late December, showed that the electric barriers are not stopping the movement of all fish. USACE conducted a series of underwater sonar recordings in the area within the electric barrier that showed fish passing through the electric field in nearly two-thirds of the recordings. A related study showed that barges can sweep fish through the electric barrier.

GREAT LAKES AND ST. LAWRENCE CITIES INITIATIVE
ALLIANCE DES VILLES DES GRANDS LACS ET DU SAINT-LAURENT

RESOLUTION 3 – 2014B

STOPPING ASIAN CARP

WHEREAS, The Great Lakes and St. Lawrence represent the largest body of surface fresh water in the world and are a resource of tremendous value to all Canadian and U.S. citizens in the basin;

WHEREAS, One of the most serious threats to the resource for many years is invasive species, with over 180 different kinds having reached the waters and are causing hundreds of millions of dollars in damage each year;

WHEREAS, The most serious new threat comes from Asian carp, including silver, bighead, grass, and black varieties;

WHEREAS, Asian carp were introduced in the United States in the 1960's in the south, and have since migrated north up the Mississippi, Illinois, Ohio, and other rivers, causing tremendous damage and essentially taking over the habitat otherwise occupied by more desirable game fish;

WHEREAS, These carp have the potential to devastate the $7 billion fishery in the Great Lakes if they reach the waters and are able to establish populations there;

WHEREAS, the most likely entry point for Asian carp to the Great Lakes from the Illinois River is through the Chicago Area Waterway System (CAWS) to Lake Michigan;

WHEREAS, The Great Lakes and St. Lawrence Cities Initiative (Cities Initiative) in collaboration with the Great Lakes Commission (Commission) developed and released a report "Restoring the Natural Divide" on January 31, 2012 detailing the feasibility of physical separation of the Great Lakes and Mississippi River basins in the CAWS;

177 North State Street, Suite 500, Chicago, Illinois 60601 ~ (312) 201-4516 phone ~ (312) 553-4355 fax
www.greatlakescities.org

WHEREAS, The U.S. Army Corps of Engineers (the Corps) released the Great Lakes and Mississippi River Interbasin Study (GLMRIS) on January 6, 2014 detailing eight alternative strategies for keeping Asian carp from reaching Lake Michigan through the CAWS, but not recommending an alternative or defining a process for reaching a decision;

WHEREAS, The GLMRIS study identifies physical separation as the most effective solution for keeping Asian carp from getting through the CAWS, but also the most expensive and most time consuming;

WHEREAS, The threat of Asian carp reaching Lake Michigan continues, and concern has increased because of questions about the effectiveness of the current electric barriers that are used to stop the carp in the CAWS;

NOW, THEREFORE, BE IT RESOLVED, that there needs to be a much greater sense of urgency and recognition that time is of the essence in reaching decisions on additional short, mid, and long term actions to stop Asian carp from reaching Lake Michigan through the CAWS;

BE IT FURTHER RESOLVED, that a forum and process for reaching these decisions is needed to make sure that timely action is taken;

BE IT FURTHER RESOLVED, that the Advisory Committee forum and process established by the Cities Initiative and the Commission for the "Restore the Natural Divide" work includes the appropriate stakeholders and should be designated to advance the dialogue to a timely conclusion on this critically important matter;

BE IT FURTHER RESOLVED, that the information provided in GLMRIS and "Restoring the Natural Divide" provide the primary basis for this dialogue, as well as other valuable information that might be developed by other sources;

BE IT FURTHER RESOLVED, that based on GLMRIS and "Restoring the Natural Divide," physical separation is the most effective long term solution for keeping Asian carp from reaching Lake Michigan through the CAWS and should be the focus of the dialogue for reaching consensus on a solution, and resolving the key issues concerning transportation, water quality, and flood control;

177 North State Street, Suite 500, Chicago, Illinois 60601 ~ (312) 201-4516 phone ~ (312) 553-4355 fax
www.greatlakescities.org

Gary Becker, Mayor of Racine, Chair

Richard M. Daley, Mayor of Chicago, Founding United States Chair

David Miller, Mayor of Toronto, Founding Canadian Chair

Great Lakes and St. Lawrence Cities Initiative
Alliance des villes des Grands Lacs et du Saint-Laurent

BE IT FURTHER RESOLVED, that the Cities Initiative and Commission forum and process should be used to find additional short and mid- term measures to protect the Great Lakes while the long term solution is implemented;

BE IT FINALLY RESOLVED, that the Cities Initiative is fully committed to supporting this process to find and implement short, mid, and long term solutions for keeping Asian carp out of the Great Lakes.

Signed this 17th day of January, 2014

Keith Hobbs, Chair
Mayor of Thunder Bay
Great Lakes and St. Lawrence Cities Initiative

177 North State Street, Suite 500, Chicago, Illinois 60601 ~ (312) 201-4516 phone ~ (312) 553-4355 fax
www.greatlakescities.org

Great Lakes Commission
des Grands Lacs

Adopted March 5, 2014

Preventing the interbasin transfer of Asian carp and other invasive species

Whereas, Asian carp pose an imminent threat to the Great Lakes and St. Lawrence River ecosystem and economy because of their ability to reproduce rapidly and consume large quantities of food; and

Whereas, if populations of Asian carp become established in the Great Lakes and St. Lawrence River they will be difficult, if not impossible, to control or eradicate and thus the federal government has recognized Asian carp as "the most acute [aquatic invasive species] threat facing the Great Lakes today"; and

Whereas, extensive monitoring and control efforts including commercial fishing in the Illinois River, led by the Illinois Department of Natural Resources and its federal partners, are important interim control measures, while long-term solutions are pursued; and

Whereas, a recent study conducted by the Army Corps of Engineers and the U.S. Fish and Wildlife Service showed that the electric barriers in the CAWS are not effective in stopping the movement of all fish, especially small fish, and that barges can sweep fish through the electric barrier; and

Whereas, the Army Corps of Engineers has identified 13 aquatic invasive species (AIS) with a high or medium risk of passing through the CAWS into either the Great Lakes or Mississippi River basins that likely would cause harmful impacts on the basin being invaded; and

Whereas, the Army Corps of Engineers has identified 17 other pathways, in addition to the CAWS, through which AIS may be able to pass between the Great Lakes and Mississippi River basins; and

Whereas, the states of Indiana and Ohio are working with federal partners to close connection points in Eagle Marsh and Ohio waterways; and

Whereas, the State of Wisconsin has permanently closed the Rapide Croche Lock on the Fox River to prevent the passage of aquatic invasive species from Lake Michigan into the Fox River; and

Whereas, the State of Minnesota is actively developing and investing in measures to combat further spread of Asian carp to its inland lakes and rivers, including possible closure of the most upstream Mississippi River lock in Minneapolis; and

Whereas, the Great Lakes governors and premiers of Ontario and Québec have committed to work together to prevent the introduction of new aquatic invasive species, and to develop a mutual aid agreement to facilitate cooperative response actions in the event of detection of new aquatic invasive species that threaten the region; and

Whereas, preventing the spread of Asian carp is a national problem – as evidenced by control efforts also underway in the Ohio River and Upper Mississippi River – and research and control actions in the Great Lakes can support and will be relevant for efforts in other parts of the country; and

Whereas, the *Restoring the Natural Divide* report prepared in 2012 by the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative presented three alternatives for separating the Great Lakes and Mississippi

River watersheds in the CAWS to provide a long-term solution that prevents AIS transfer while maintaining or enhancing the system's benefits for flood protection, water quality and waterborne transportation; and

Whereas, the Army Corps of Engineers has released the *Great Lakes and Mississippi River Interbasin Study* (GLMRIS) presenting a range of eight options to reduce risk of AIS movement between the Great Lakes and Mississippi River basins, including two alternatives for full hydrological separation; and

Whereas, the GLMRIS report recognizes the hydrologic separation options as the most effective at keeping Asian carp out of the Great Lakes; and

Whereas, the GLMRIS report does not recommend a preferred alternative and the Corps of Engineers has not provided direction on next steps, emphasizing that "ANS control is a shared responsibility" and "continued participation by stakeholders is essential to reach a decision and authorization for a collaborative path forward"; and

Whereas, the Great Lakes Commission has determined that immediate action is needed to identify short-term steps that can be implemented quickly to reduce risk while continuing to build consensus around a long-term solution.

Therefore, Be It Resolved, that the Great Lakes Commission calls for continued action by federal partners to support states in their efforts to further modify waterways and construct barriers to reduce and strive to eliminate the degree of risk from connection points outside of the CAWS; and

Be It Further Resolved, that the Great Lakes Commission calls for immediate action on a suite of near-term measures to reduce the risk of interbasin transfer of Asian carp and other invasive species at the CAWS, including:

- continued implementation of the Asian Carp Control Strategy Framework and related efforts;
- immediate implementation of additional control measures as generally outlined in the GLMRIS alternative two (such as use of chemical controls, ballast and bilge management, habitat alternation, and controlled harvesting and overfishing);
- within three years, design, engineer and construct modifications to the Brandon Road lock and dam structure to reduce the risk of one-way transfer (into Lake Michigan), including additional electric barriers at the entrance and exit of the lock, use of fish deterrents, modifications to the gates on the dam, and other technologies;
- design, engineer and test the "GLMRIS lock," as a national demonstration project, to determine its viability and effectiveness at stopping both one- and two-way transfer and cost; and

Be It Further Resolved, while near-term control measures are vital, it is critical that long-term solutions, which may include ecological and/or physical separation, be implemented quickly consistent with the continued movement of Asian carps and other invasive species toward the Great Lakes, and from the Great Lakes toward the Mississippi River basin; and

Be It Further Resolved, that efforts to develop and reach regional consensus within both the Great Lakes and Mississippi River basins on long-term solutions to prevent interbasin transfer of aquatic invasive species should be accelerated and should include input from the states, the provinces of Ontario and Québec, the full range of affected stakeholders, and that an advisory committee assembled by the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative be requested to provide input on solutions in and affecting northeast Illinois and northwest Indiana; and

Be It Further Resolved, that long-term solutions must strive to eliminate risk and prevent the interbasin transfer of all aquatic invasive species while mitigating potential negative impacts on current flood risk management, water quality protection, recreation, and commercial transportation priorities in northeast Illinois and northwest Indiana; and

Be It Further Resolved, that commercial navigation industries are called upon to identify practices to reduce the risk of aquatic invasive species transfer that will be instituted on an escalating pace commensurate with increasing risk of interbasin transfer of Asian carp and other invasive species during their advance toward Lake Michigan; and

Be it Further Resolved, that the Great Lakes Commission calls on the U.S. Department of Transportation to conduct a study on the current status, projected trends, and infrastructure and related needs to support the long-term economic viability of commercial transportation on the CAWS, including opportunities for improved multi-modal connectivity, and that this study be conducted in collaboration with other federal agencies, the Great Lakes states, existing users of the CAWS and other interested parties; and

Be It Further Resolved, to complement what is expected to be a substantial commitment of federal resources to address solutions, the Great Lakes states and provinces note that they are currently investing substantial state and provincial resources including development of the new mutual aid agreement, resources for research, prevention and enforcement, surveillance, management and public education programs and, further, that the states and provinces are willing to engage in further dialogue on potential for financing approaches that recognize aquatic invasive species prevention and control as a shared responsibility; and

Be It Finally Resolved, that the Great Lakes Commission calls on the Obama Administration to increase its leadership to resolve the challenge of preventing AIS transfer between the Great Lakes and Mississippi River basins through the Council on Environmental Quality and that the Department of Interior should be delegated the lead role and provided with the resources necessary to coordinate efforts of all other federal agencies.