

Final Grant Report to the Great Lakes Fishery Trust

Restoring the Natural Divide: Advancing Separation in the Chicago Area Waterway System

*Great Lakes Fishery Trust Grant No. 2012.1282
Submitted by the Great Lakes Commission - September 2014*

PROJECT PROFILE

<u>Project Title:</u>	Restoring the Natural Divide: Advancing Separation in the Chicago Area Waterway System
<u>Grantee Organization:</u>	Great Lakes Commission 2805 South Industrial Hwy., Suite 100 Ann Arbor, MI 48104-6791 Ph. 734-971-9135
<u>Project Team:</u>	Tim Eder, Great Lakes Commission Dave Ullrich, Great Lakes & St. Lawrence Cities Initiative Jim Ridgway, Environmental Consulting and Technology, Inc. Paul Dierking, HDR, Inc.
<u>Contact Person:</u>	Tim Eder, Great Lakes Commission, teder@glc.org Dave Ullrich, Great Lakes & St. Lawrence Cities Initiative, david.ullrich@glslcities.org
<u>Grant amount:</u>	\$225,000
<u>Timeframe:</u>	January 2013-July 2014
<u>Focus Area:</u>	Special Project

Project Summary

The purpose of the project is to advance physical separation in the Chicago Area Waterway System (CAWS) to prevent the movement of Asian carp and other aquatic invasive species (AIS) between the Great Lakes and Mississippi River basins. Specific technical analysis was conducted in two key areas:

- Defining interim protection measures that can be implemented quickly, using existing infrastructure in the CAWS, to reduce the risk of AIS transfer into the Great Lakes from the Mississippi River basin; and
- Evaluating technical issues associated with the Mid-System Alternative identified in the 2012 report, *Restoring the Natural Divide*.

Project in Context

Asian carp are considered among the most serious threats facing the Great Lakes today. They are highly mobile, reproduce and grow quickly, and consume massive quantities of food, enabling them to compete against—and ultimately displace—native species. Silver carp pose a danger to boaters because they jump out of the water when disturbed by boat motors. These invasive carp are poised to invade the Great Lakes through the CAWS, which includes the Chicago Sanitary and Ship Canal (CSSC) that created an artificial connection between the Great Lakes and Mississippi River watersheds. An electric dispersal barrier system was constructed on the CSSC to prevent their migration. However, in 2009 new environmental DNA monitoring techniques found evidence of carp upstream of the barrier system. In response, a consensus emerged among many interests that a permanent solution is needed to prevent AIS movement – in both directions – between the Great Lakes and Mississippi River basins, and that this must entail separating the two basins, beginning in the Chicago area.

With previous support from the Great Lakes Fishery Trust (GLFT) and other funders, the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative conducted a study that developed three alternatives for separating the Great Lakes from the Mississippi River in the CAWS. Released in January 2012, the *Restoring the Natural Divide* report demonstrated that physical separation is feasible and achievable, and can be integrated with upcoming improvements in the CAWS to maintain and enhance the system's beneficial uses. The study reflected input from a broad-based stakeholder Advisory Committee and state and federal agencies. The final report is online at <http://projects.glc.org/caws/>. Following the report's release, Congress directed the U.S. Army Corps of Engineers to complete the Great Lakes and Mississippi River Interbasin Study (GLMRIS) by January 2014. With GLMRIS now completed, the Great Lakes region faces a critical decision on the best approach for preventing the transfer of Asian carp and other AIS through the CAWS.

There is also growing support to define and advance near-term control measures that provide initial, one-way separation while full separation is implemented. This reflects concern over the long timeframe for achieving full separation and the recognition that interim measures can be implemented, using existing infrastructure in the CAWS, to protect the Great Lakes against the movement of Asian carp. Technical analysis on the feasibility of interim actions, and how to integrate them with permanent separation, has been a focus of this project.

The debate over how to control Asian carp and other AIS is proceeding quickly and it is imperative that regional leaders be equipped with clear and credible solutions to challenges associated with separation. With continued leadership from the GLC and the Cities Initiative, this project advanced both near-term and permanent solutions and was timed to provide regional and Chicago-area leaders with critically needed information at a key decision point. It builds on the important progress made so far and positions regional leaders for pivotal upcoming decisions on how best to safeguard the environmental and economic health of the Great Lakes.

Goals of the Effort

The purpose of the project was to advance physical separation and associated actions in the CAWS to prevent AIS transfer between the Great Lakes and Mississippi River basins. Specific project goals were to

- publicize outcomes of the *Restoring the Natural Divide* study and generate a regional consensus that separation is both feasible and desirable, and highlight the benefits for the Chicago River;
- sustain our constructive working relationship with both regional and Chicago-area partners to further refine the vision for the CAWS and move in this direction;
- build support with decisionmakers for separation and shape policy actions needed to advance it, including opportunities to implement near-term solutions and options for generating nonfederal funding;
- engage the Army Corps of Engineers and ensure information from our project accelerates GLMRIS, and provide them with a balanced forum to review their work products; and
- address major outstanding technical issues, data gaps and other obstacles to moving forward, including the challenge of financing separation.

Results

Funding from the GLFT was specifically used to support the following analyses:

Defining feasible interim protection measures: The project evaluated interim protection measures that can be implemented quickly, using existing infrastructure, to prevent the movement of Asian carp into the Great Lakes from the Mississippi River basin while a comprehensive solution is implemented. Specifically, technical consultants investigated the potential for physical and operational modifications at two locations: the Lockport Lock and Dam and the Brandon Road Lock and Dam. Compared to the Lockport location, Brandon Road provides greater elevation drop and is downstream of the Des Plaines River-CSSC confluence, thus reducing the risk of AIS transfer between the Des Plaines River and the CSSC as well as the CAWS. These concepts were presented to the Advisory Committee and a technical memo was prepared describing the type of modifications that would be needed at each location and documenting Brandon Road as the preferred location. While such an interim option may achieve only one-way separation (stopping AIS movement *into* the Great Lakes), it would safeguard the Great Lakes during the extended timeframe needed to design and implement complete separation.

Refining a preferred alternative for permanent separation: The *Restoring the Natural Divide* report developed three separation alternatives but did not identify a preferred alternative. Based on costs, impacts and other factors, the mid-system alternative—with barriers near Bubbly Creek on the Chicago River and the O’Brien Lock on the Calumet River, along with barriers on the Grand Calumet and Little Calumet rivers—is the likely preferred alternative. The Advisory Committee provided input on opportunities and challenges associated with the Mid-System Alternative and next steps. Study sessions focused on key issues, including flood control, transportation and water quality. In follow up, the University of Illinois’ Ven Te Chow Hydrosystems Laboratory was contracted to assess the impact of the mid-system separation alternative on water levels and flooding in the CAWS during extreme rainfall events. The overarching conclusion is that in most cases flood risk is not increased by separation. While flooding issues require further investigation, recent evaluations suggest that flood risks associated with separation can be addressed with limited mitigation measures. The study results, like the system modeled, are complex and reflect the array of extreme conditions. In the most extreme circumstances (high water levels on Lake Michigan coupled with a historically large storm event), there could be an increased risk of basement backups. This reflects constraints in sewer and stormwater systems, which exist regardless of whether separation is implemented. Additional investments are needed to alleviate this condition.

In addition, a consultant was hired to carry out a financing study to define options to finance separation and identify implications of different approaches to participating parties. The study was discussed with the Advisory Committee, a workshop was held and interviews were conducted with key stakeholders to assess financing options. The study demonstrates that the costs of separation, while substantial, are manageable when spread over multiple funding sources over a long period of time. The financing model can be applied to the costs of other potential solutions. A final technical memo summarizes the analysis and outlines potential next steps.

The project was enhanced by input from the CAWS Advisory Committee, which includes approximately 35 members, roughly two-thirds from the Chicago/Northwest Indiana area and the remainder from regional organizations. The committee provided input on the *Restoring the Natural Divide* study and was maintained as part of the new GLFT project. It met six times during the GLFT grant, with additional small group meetings. In addition to advising on the technical analysis and participating in the study sessions, the committee reviewed the GLMRIS report, ongoing Asian carp prevention and control efforts, and related activities.

Because of our work to date, the GLC and Cities Initiative are positioned to provide critical guidance to Congress, the Corps of Engineers, and other agencies on a path forward in follow-up to GLMRIS. In March the GLC adopted a resolution recommending near-term control measures and calling on the CAWS Advisory Committee to help develop a long-term solution. This represents a powerful consensus of the Great Lakes states and provinces in response to GLMRIS and the path forward. The Advisory Committee recently wrote to Congress recommending near-term control measures and associated funding needs. This letter is a significant milestone as the first consensus product from the committee. These important statements were informed by the technical analysis made possible by the GLFT grant. In a significant demonstration of support for the Advisory Committee, 15 Great Lakes Senators wrote to the federal Asian Carp coordinator recognizing the work of the committee and inviting its continued input. With the committee’s shift to a consensus-building forum, we were able to secure funding from the Great Lakes Restoration Initiative to support our mediation team, which is now a vital part of the process. Moving forward, we are confident that consensus statements from the Advisory Committee will have a significant impact in guiding congressional and agency activities related to the CAWS.

Products and Resources

- Technical memo on interim barrier options
- Briefing paper on water quality elements for the mid-system alternative
- Technical Memo: Chicago Area Waterway System Strategic Financial Planning Model: Model Structure and Preliminary Results
- White Paper on Non-Physical Deterrents to Prevent the Passage of Invasive Species
- Review of the Great Lakes and Mississippi River Interbasin Study
- GLC and Cities Initiative comments to the Army Corps of Engineers on GLMRIS
- Final Report on Hydraulic Modeling of Chicago Area Waterways System to Assess the Impact of Hydrologic Separation on Water Levels and Potential Flooding during Extreme Rainfall Events

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FINAL NARRATIVE REPORT

Background/Overview

1. *Briefly summarize the project description as outlined in the original proposal.*

The purpose of the project was to advance physical separation in the Chicago Area Waterway System (CAWS) to prevent the movement of Asian carp and other aquatic invasive species (AIS) between the Great Lakes and Mississippi River basins. The project built on the structures, relationships and technical content generated in the *Restoring the Natural Divide* study—supplemented with additional technical research, stakeholder outreach, and public education—to undertake the next steps needed to advance separation. The Great Lakes Commission and the Great Lakes & St. Lawrence Cities Initiative coordinated stakeholder engagement and managed contracts with consultants to carry out technical analysis in two key areas:

- Defining interim protection measures that can be implemented quickly, using existing infrastructure in the CAWS, to reduce the risk of AIS transfer into the Great Lakes from the Mississippi River basin; and
- Evaluating technical issues associated with the Mid-System Alternative identified in the previous report, *Restoring the Natural Divide*.

2. *Was the project completed as originally intended? If not, indicate how the final outcome(s) differed from what was anticipated. Does your experience suggest that original expectations were realistic? What factors hindered or helped progress?*

The major elements of the project were completed as anticipated. The financing study was not carried through to be a complete plan for financing hydrological separation in the CAWS. A strategic financing model was completed illustrating that the costs of separation are reasonable when spread over many years and divided among multiple parties. The financing model can be applied to the costs of all potential solutions. Pursuing this further was considered a lower priority given the need to explore other issues, such as the impact of separation on flooding. Unused funding from the financing study was used to support the hydraulic modeling study, which was not included in the original workplan. Given local concerns about the impact of barriers on flooding, conducting a detailed analysis of this issue was considered a priority. Limited technical analysis was conducted on the Lockport lock and dam as a location for interim control measures due to the early recognition that the Brandon Road lock and dam was a much better site for these measures.

Outcomes

3. *What activities were pursued in relationship to intended outcomes, and to what extent did you achieve the following intended outcomes listed in your proposal? (Merge intended outcomes from proposal.)*

The GLFT-funded project was part of a larger project to sustain progress toward separation in the CAWS that included maintaining the CAWS advisory committee; continued outreach to and coordination with key agencies and stakeholders (such as the Corps, MWRD, City of Chicago, State of Illinois and the Asian Carp Regional Coordinating Committee); continued communication with the Great Lakes congressional delegation; and media outreach on key topics, such as the GLMRIS report. The GLFT project must be

viewed in this larger context. The following is a summary of activities undertaken to address the goals of the project – both the portion funded by the GLFT and the larger project.

- *Publicize outcomes of the Restoring the Natural Divide study and generate a regional consensus that separation is both feasible and desirable, and highlight the benefits for the Chicago River.*

The GLC/Cities Initiative shared the results of our study at conferences, meetings and other events. Presentations have been given at GLC/Cities Initiative annual meetings; Great Lakes Week 2012 and 2013; the Healthy Our Waters Coalition; the steering committee for GLMRIS; the International Conference on AIS; the Indiana Wildlife Federation; the West Michigan Regional Forum; and the Michigan Water Environment Association, among others. The project team has participated in Congressional briefings and met with the American Society of Civil Engineers – Illinois Chapter; staff for key members of Congress; and the Army Corps of Engineers. A focused effort was carried out in summer 2013 to meet with local community and environmental justice groups in the Chicago and Northwest Indiana region to gain a better understanding of stakeholder perspectives and concerns related to public health, environmental justice and hydrologic separation. There continues to be a consensus among many interests that separation – in some form – is feasible and desirable. There is also a deeper understanding of the challenges associated with this goal and a recognition of the need to establish near-term control measures to reduce the risk of AIS transfer during the lengthy timeframe needed to implement separation.

- *Sustain our constructive working relationship with both regional and Chicago-area partners to further refine the vision for the CAWS and move in this direction;*

The CAWS Advisory Committee was the primary mechanism for working with stakeholders. The full Advisory Committee has met eight times since the release of the *Restoring the Natural Divide* report.

- **July 13, 2012:** The meeting focused on setting a new charge for the Advisory Committee as well as sharing plans for the current phase of work on separation and updates on related initiatives. An important part of that meeting was introducing the concept of an interim partial separation option that would reduce risk in the near-term while permanent separation is implemented over the long-term.
- **October 30, 2012:** The meeting featured a session focused on flood control issues and opportunities created by separation, which highlighted the need for additional modeling to demonstrate the impact of separation on the system's hydrology. In addition, interim partial separation idea was further discussed and refined, and the study of options for financing separation was introduced.
- **April 4, 2013:** The meeting featured a session on transportation opportunities and challenges created by separation, as well as providing an update on the interim options analyses, the financing study and GLMRIS.
- **October 30, 2013:** The meeting included reports on the hydraulic modeling and financing studies, an update on GLMRIS, and a detailed panel session on water quality opportunities and challenges in the CAWS and Lake Michigan as presented in our report.
- **January 29, 2014:** This meeting marked a significant transition for the Advisory Committee. In contrast to the committee's previous role, we are now positioning it as a consensus-building body to help define near- and long-term actions. While work remains to define the process for this group moving forward, the members recognized the urgent desire to make progress and agreed a six-step strategy for moving forward. Workgroups were established to focus immediately on key steps and there was agreement on the need to accelerate the group's activities and secure support from a professional facilitator/mediator.
- **March 25, 2014:** Two small workgroup meetings were held to consider interim options for implementation at the Brandon Road lock and dam; and to further refine the goal and strategy for the Advisory Committee and building consensus around a long-term solution.
- **May 22, 2014:** This meeting was important for carrying the overall effort into the next phase, which will focus on an intense process to build consensus on both short-term measures and a

long-term solution. The facilitators were introduced and presented a draft charge and principles to the committee; reviewed elements to be addressed in developing a solution; discussed plans for facilitating workgroups; and received updates on related work from partners.

- **July 22, 2014:** The committee reviewed and finalized the charge and principles document which will guide its work over the next 18 months. The committee's short-term workgroup presented a draft letter to Congress for review and discussion. The letter requests that Congress provide the Corps direction and funding in FY 2015 to carry out additional evaluation, engineering and design work for specific elements of GLMRIS. The long-term work group also met and agreed to a framework for discussion on a long-term solution.

These meetings have demonstrated strong support from the Advisory Committee to provide credible guidance to Congress, the Great Lakes governors, and other parties on a path forward that provides feasible solutions to prevent AIS transfer through Chicago-area waterways. Several individuals noted that the committee is "the only game in town" for fulfilling this role.

- *Build support with decisionmakers for separation and shape policy actions needed to advance it, including opportunities to implement near-term solutions and options for generating nonfederal funding.*

The GLC has communicated regularly with the Great Lakes congressional delegation to build support for separation and an understanding of the necessary policy and funding support. Separation has been among the GLC's top legislative priorities, and we have advanced it through briefings to the Great Lakes Congressional Task Force, conference calls, meetings with key congressional leaders, informational materials, etc. We have had private discussions with the City of Chicago, MWRD, the State of Illinois and Congressional leaders and there is strong support – and eager anticipation – for credible guidance on specific actions that will attract broad-based support.

The Advisory Committee recently completed a letter to Congress recommending near-term control measures and funding, including a new engineered channel and control technologies at the Brandon Road lock and evaluation of locks to control AIS. It asked that the Corps be instructed to complete these investigations in two years and provide a decision-making document to authorize implementation of near-term measures.

This letter represents a significant milestone as the first consensus-based product of the Advisory Committee. In a significant demonstration of support for the Committee's work, 15 members of the Senate Great Lakes Delegation in late July wrote to John Goss, Asian Carp coordinator with the White House Council on Environmental Quality, recognizing the work of the committee and asking that he encourage it to make recommendations on short- and medium-term actions as soon as possible.

- *Engage the Army Corps of Engineers and ensure information from our project accelerates GLMRIS, and provide them with a balanced forum to review their work products.*

The GLC and its technical consultants have conferred regularly with the Corps on GLMRIS, including both technical details as well as a broader path forward following its release. There has been significant frustration with the slow pace in completing the study and the Corps' unwillingness to move forward quickly with next steps. We have discussed these matters with Corps leadership and are working to generate the guidance they need to continue work on near-term control measures and related priorities.

Substantial effort was devoted to responding to the GLMRIS report following its release in early January 2014. Our technical consultants reviewed the voluminous report and appendices and assessed its assumptions and methodologies in key areas. Our review demonstrated that the Corps made key assumptions in GLMRIS that account for the significant costs and extensive implementation times for its alternatives, including design for a 500-year storm event, complete removal of contaminated sediments (as a cost of separation), and no discharges to Lake Michigan. They limit their recommendations to proven technologies and leave out potentially promising approaches that might be

less costly (such as using CO₂ to treat lock chambers, currently being investigated). Planning to contain combined sewer overflows (CSOs) for a 500-year storm event is far above the design standard generally used for wastewater and stormwater systems and, as a result, the proposed CSO controls far exceed conventional standards of care and are not consistent with U.S. EPA's national CSO control policy.

We distributed our assessment broadly to emphasize that the Corps' overly conservative assumptions result in costs several times higher than ours, with a longer time to implement. This helped to counteract the "sticker shock" from the GLMRIS costs estimates, emphasizing the idea that effective solutions likely will not be as costly as projected in the GLMRIS report nor take as long to implement.

- *Address major outstanding technical issues, data gaps and other obstacles to moving forward, including the challenge of financing separation.*

The GLC retained its technical consulting team to carry out additional analysis on a preferred option for separation and to develop interim control options.

Defining feasible interim protection measures: These are actions that can be taken quickly, using existing infrastructure in the CAWS, to substantially reduce the risk of AIS transfer into the Great Lakes from the Mississippi River basin. We have evaluated the potential for physical and operational modifications at two potential locations: the Lockport Lock and Dam and the Brandon Road Lock and Dam. Compared to the Lockport location, Brandon Road provides greater elevation drop and is downstream of the Des Plaines River-CSSC confluence, thus reducing the risk of AIS transfer between the Des Plaines River and the CSSC as well as the CAWS. A conceptual design for dam modifications has been prepared and options for lock treatment (CO₂, chlorine) are being explored.

Presentations on these concepts have been provided at Advisory Committee meetings held in October 2012 and April 2013. In addition, a technical memo was prepared describing the type of modifications that would be needed at each location and documenting Brandon Road as the preferred location. Work is ongoing to investigate the potential for CO₂ to be used as an AIS control in the lock chamber. While such an interim option may achieve only one-way separation (stopping AIS movement from the Mississippi River basin into the Great Lakes), they will safeguard the Great Lakes during the extended timeframe needed to design and implement complete separation. The interim protection measures are designed to achieve a substantial reduction in risk, sustain momentum and generate an important sense of forward progress for local and regional stakeholders.

- **Refining a preferred alternative for permanent separation:** The previous phase of the project developed three separation alternatives but did not identify a preferred alternative. Based on costs, impacts and other factors, the Mid-System Alternative—with barriers near Bubbly Creek on the Chicago River and the O'Brien Lock on the Calumet River, along with barriers on the Grand Calumet and Little Calumet rivers—is the likely preferred alternative. The Advisory Committee meetings were used as an opportunity for focused study sessions to further discuss the opportunities and challenges associated with implementation of the mid-system alternative and to determine what more needs to be done to facilitate implementation of separation.

The October 2012 meeting of the Advisory Committee featured a session on flood control issues and opportunities created by separation. As follow-up from this meeting, the GLC/Cities Initiative worked with a contractor to conduct hydraulic modeling to assess the impact of the mid-system separation alternative on water levels and flooding. The overarching conclusion of the study is that in most cases, and with modest mitigation measures, flood risk is not increased by separation. The April 2013 Advisory Committee meeting focused on transportation opportunities and challenges created by separation. The October 2013 discussed water quality concerns. These meetings have indicated support from the Advisory Committee to further investigate interim options, while maintaining focus on implementing permanent separation.

A consultant was hired to study options to finance separation and identify implications of different approaches to participating parties. The study was discussed with the Advisory Committee, a workshop was held and interviews were conducted with stakeholders to assess financing options. The study demonstrates that the costs of separation, while substantial, are manageable when spread over multiple sources over a long time period. The model is structured to reflect potential financial contributions from an array of sources and mechanisms. Similarly, the model is structured to enable evaluation of different configurations and scheduling of activities, including not only those that will provide protection from AIS transfer, but also upgrade shipping infrastructure, improve flood protection and enhance water quality. A final technical memo summarizes the analysis and outlines potential next steps.

4. *What audience(s) were you particularly hopeful of reaching? To what extent did you reach them? Did you receive any feedback?*

The two primary audiences for this project are the CAWS Advisory Committee and the Great Lakes congressional delegation. As discussed above, the Advisory Committee continued to meet following release of the *Restoring the Natural Divide* report. It has been an invaluable forum for a diverse array of stakeholders to provide input, share information and express their views on issues associated with separation. There continues to be a high level of engagement and constructive dialogue on the committee, despite a lack of agreement on some subjects. There is no other forum serving this purpose, and the committee is widely regarded as the primary source of stakeholder input on the CAWS. The recent letter from the Senate Great Lakes delegation to the Asian carp director, discussed above, highlights the committee's credibility. Since January the Advisory Committee adopted a six-point strategy to accelerate both near-term and long-term actions and has expressed a strong desire to continue meeting. To assist with this process, we hired a team of two conflict resolution experts to facilitate the committee and reach consensus on near-term actions that can be taken quickly as well as long-term solutions. The next 18 months will be a critical period to consolidate progress and initiate meaningful solutions.

Leaders in the Great Lakes congressional delegation recognize the leading role being played by the GLC and Cities Initiative in developing feasible solutions to the threat of AIS passing through the CAWS and, similarly, the role of the Advisory Committee as the primary stakeholder forum for reaching consensus on both near-term options and a long-term solution. We communicate regularly with congressional staff and are providing advice on funding and policy options to support efforts in the CAWS. As discussed above, the Advisory Committee recently wrote to Congress recommending near-term control measures and associated funding and policy direction to the Corps. We are anxious to move forward quickly with this type of communications, but must balance this with a careful consensus-building process with the Advisory Committee. Given its stature, we believe that consensus statements from the committee will have substantial credibility and are hopeful that, as the facilitation process progresses, the committee will be able to generate additional communications to support and guide congressional and agency activities related to the CAWS.

5. *What relationships or opportunities were developed or strengthened through the work?*

Perhaps the biggest change in relationships during the project is the role of the Advisory Committee and the GLC and Cities Initiative's role therein. As discussed above, the committee is now working to reach consensus on near-term control measures and a long-term, permanent solution in the CAWS, versus advising on the development of the *Restoring the Natural Divide* study. As part of this change, the GLC and Cities Initiative have shifted their role to one of "convener" and "member" of the committee, versus being the primary facilitator of the process. This places us on a more equal footing with the rest of the members, with our new mediation team in the position of neutral "broker" of the process. In addition, while our organizations are clearly on record recognizing separation as the most effective solution, we are now more committed to a consensus-building process with the Advisory Committee than advancing a particular outcome. We believe this change is strengthening relationships with some members of the committee who do not support full separation and have been distrustful of the GLC and Cities Initiative due to our strong advocacy for it. While the consensus process is moving slower than we might like, a clear, consensus-based solution will have a powerful impact on Congress and will avoid protracted stalemate.

6. *Was an evaluation included as part of this project? If so, what were the key findings? (Please attach a copy of the evaluation report).*

A formal evaluation of progress to date has not been conducted. In light of the accomplishments we have made and the continued movement toward both near-term control measures and a long-term solution, we are satisfied with the progress we have made. Given the complex technical and political challenges, and the multitude of agencies and jurisdictions engaged with the CAWS, defining and advancing solutions are, necessarily, an ongoing process. We believe our work has been effective in maintaining forward momentum.

7. *Whether they were intended or unintended, what do you consider the most important benefits or outcomes of this special project?*

Because of our work to date, the GLC and Cities Initiative are well positioned and have the opportunity to provide critical guidance to Congress, the Corps of Engineers, and other agencies on a path forward in follow-up to GLMRIS. As noted above, these and other partners recognize the Advisory Committee as an invaluable forum for a diverse array of stakeholders to provide guidance on solutions. With the committee's shift to a consensus-building forum, we were able to secure funding from the Great Lakes Restoration Initiative (GLRI) to support our mediation team, which is now a vital part of the process. Securing federal funding for our work is a significant development. The Great Lakes congressional delegation recognizes the leading role being played by the GLC and Cities Initiative, and we believe that clear statements of consensus from the Advisory Committee will have a significant impact in guiding congressional and agency activities related to the CAWS.

On a technical level the project is evaluating key issues that must be addressed in crafting solutions in the CAWS. Perhaps most noteworthy, the hydraulic analysis of how separation will impact flooding in the CAWS is helping to resolve this significant concern. While issues associated with flooding will require further investigation, the GLFT-funded study, coupled with other evaluations, suggests that flood risks associated with separation can be addressed with limited mitigation measures.

Related Efforts

8. *Was this project a stand-alone effort or was there a broader effort beyond the part funded by the GLFT? Have other funders been involved either during the time of your GLFT grant or subsequently?*

The GLFT grant was supplemented by, and closely coordinated with, support from the Wege, Joyce and C.S. Mott foundations. These funds were used to support ongoing communication and outreach efforts; meetings of the Advisory Committee; technical support from our expert consulting team; and overall project management. A new grant from the Joyce Foundation was secured to support the current phase of the project and, as noted above, funding is being provided by the GLRI for our facilitation team.

9. *Has there been any spin-off work or follow-on work related to this project?*

As discussed above, our work on the CAWS has entered a third phase in which we are working with the Advisory Committee to reach consensus on near-term control measures and a long-term, permanent solution. This is a clear outgrowth of previous efforts supported by the GLFT and the other funders. Our aim is to complete this phase by the end of 2015, with the development of a consensus-based, long-term solution to prevent AIS movement through the CAWS.

Communication/Dissemination

10. *List publications, presentations, websites, and other forms of formal dissemination of the project deliverables, tools, or results, including those that are planned or in process.*

- Technical memo on interim barrier options
- Briefing paper on water quality elements for the mid-system alternative
- Technical Memo: Chicago Area Waterway System Strategic Financial Planning Model: Model Structure and Preliminary Results
- White Paper on Non-Physical Deterrents to Prevent the Passage of Invasive Species
- Review of the Great Lakes and Mississippi River Interbasin Study
- GLC and Cities Initiative comments to the Army Corps of Engineers on GLMRIS
- Final Report on Hydraulic Modeling of Chicago Area Waterways System to Assess the Impact of Hydrologic Separation on Water Levels and Potential Flooding during Extreme Rainfall Events

11. *Please characterize your efforts to distribute and encourage use of products, processes, programs, etc. developed through this grant.*

As discussed above, products and processes from the project are used with the Advisory Committee and, when appropriate, key recommendations are made to the Great Lakes congressional delegation. Given the stature of the Advisory Committee, we are confident that its recommendations will be widely accepted in Congress and will be the focus of ongoing advocacy efforts by regional organizations.

Reflections

12. *Please describe any unanticipated benefits, challenges or surprises, and/or important lessons learned over the course of the project.*

The project has been extremely helpful in informing the GLC's policy positions on Asian carp prevention and the CAWS. In March 2014 the GLC adopted a resolution recommending near-term control measures and calling on the CAWS Advisory Committee to help develop a long-term solution. This was distributed to the Great Lakes Congressional Delegation and was a highlight of our Great Lakes Day in Washington and associated congressional office visits. With the release of the Corps' GLMRIS report it provided an important, timely statement reflecting consensus among the states and provinces. A private meeting was held with Assistant Secretary of the Army (Civil Works) Jo-Ellen Darcy to review the resolution and urge the Corps to continue work on both near-term control measures and a long-term solution. The resolution also influenced legislation currently being developed in the House and Senate that provides direction to the Corps and other federal agencies on Asian carp prevention activities. The technical analyses supported by the GLFT have been instrumental in assessing the feasibility and efficacy of prospective near-term control measures and guiding ongoing discussions on a framework for a long-term solution.

As a result of the interest in an interim barrier option, we are faced with the challenge of balancing investment in and advancement of this option with that of long-term separation. Members of the Advisory Committee differ in their expectations for an interim option. Some members would like to see interim measures become the final solution to the problem of AIS in the CAWS because it is less costly and disruptive to the status quo. Others recognize that this is only a partial solution as it does not prevent movement of AIS in both directions and does not address broader concerns such as water quality. These perception issues are something we will need to give careful consideration to as we move forward.

A new challenge that we are managing as we move into the next phase of our work is defining the role of the GLC and Cities Initiative in the context of the new consensus-building process. Our organizations are on record supporting separation as the best long-term solution and our work to date has focused on developing and refining alternatives for separation. However, a number of the Advisory Committee members do not currently support physical separation and we are concerned about keeping those members at the table as we attempt to reach consensus on short- and long-term solutions. In order to do this, we have opened the

process to consider other alternatives, in addition to physical separation, that might accomplish the goal of preventing AIS transfer through the CAWS. This complements the shift in our role, discussed above, from being the convener of the Advisory Committee to being equal members, with our facilitation team now serving as neutral brokers of the process. In addition, while our organizations are clearly on record recognizing separation as the most effective solution, we are now more committed to a consensus-building process with the Advisory Committee than advancing a particular outcome.

13. *What recommendations (if any) would you make to other project directors working on similar efforts or to the GLFT?*

Having access to consultants to provide technical expertise on key issues (e.g., water quality, flooding) and to coordinate with technical staff in state and federal agencies has been vital to providing credible analyses on challenges associated with separation in the CAWS. Effective facilitation of the Advisory Committee is also critical, and is very time consuming. Working with diverse stakeholders with strong—and often conflicting—perspectives underscores the importance of professional facilitation, conflict resolution and mediation, particularly when this is aimed at generating consensus recommendations. Bringing on a mediation team has lessened the burden on the GLC and Cities Initiative and enabled us to participate more effectively as equal members of the committee.

Attachments

14. *Please attach any reports or materials developed through the grant.*

Note: The materials listed below and attached were produced as part of the overall project with support from the GLFT and three other funders.

1. Advisory Committee membership list
2. July 2012 Advisory Committee Meeting Agenda and Highlights
3. October 2012 Advisory Committee Meeting Agenda and Highlights
4. April 2013 Advisory Committee Meeting Agenda and Highlights
5. October 2013 Advisory Committee Meeting Agenda and Highlights
6. January 2014 Advisory Committee Meeting Agenda and Highlights
7. March 2014 Advisory Committee Work Group Meeting Agendas and Highlights
8. May 2014 Advisory Committee Meeting Agenda and Highlights
9. July 2014 Advisory Committee Meeting Agenda and Highlights
10. Agenda for workshop on financing options (June 2013)
11. Workshop presentation on financing options (June 2013)
12. Notes from interviews with stakeholders on financing options (August 2013)
13. Technical memo on interim barrier options (October 2013)
14. Briefing paper on water quality elements for the mid-system alternative (October 2013)
15. Briefing memo for Chicago Deputy Mayor Stephen Koch on the future of the Chicago Area Waterway System (November 2013)
16. Technical Memo: Chicago Area Waterway System Strategic Financial Planning Model: Model Structure and Preliminary Results (December 2013)
17. White Paper on Non-Physical Deterrents to Prevent the Passage of Invasive Species (January 2014)
18. Review of the GLMRIS Report prepared by the GLC-Cities Initiative consulting team (January 2014)
19. GLC and Cities Initiative comments to the Army Corps of Engineers on the GLMRIS report (March 2014)
20. Great Lakes and St. Lawrence Cities Initiative Resolution on Stopping Asian Carp (January 2014)
21. Great Lakes Commission Resolution on Preventing the Interbasin Transfer of Asian Carp and other Invasive Species (March 2014)
22. Advisory Committee Charge and Operating Principles (July 2014)
23. Report on Hydraulic Modeling of Chicago Area Waterways System to Assess the Impact of Hydrologic Separation on Water Levels and Potential Flooding during Extreme Rainfall Events (July 2014)
24. Advisory Committee letter to Congress on short-term control measures (August 2014)