IN THE SUPREME COURT OF THE UNITED STATES

Nos. 1, 2 and 3, Original

STATE OF WISCONSIN, ET AL., PLAINTIFFS

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF MICHIGAN, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF NEW YORK, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

ON RENEWED MOTION FOR PRELIMINARY INJUNCTION

APPENDIX TO MEMORANDUM FOR THE UNITED STATES IN OPPOSITION

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SECOND DECLARATION OF JOHN W. PEABODY

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1. My name is John W. Peabody. I am a major general in the United States Army, and I currently serve as the Commander and Division Engineer of the Great Lakes and Ohio River Division of the United States Army Corps of Engineers (USACE). I submit this sworn Declaration in support of the United States' Memorandum in Opposition to the State of Michigan's Renewed Motion for Preliminary Injunction and as a supplement to my January 4, 2010, Declaration in this matter.

Summary

2. Since my January 4, 2010 Declaration, as discussed below, the Asian Carp Regional Coordinating Committee (ACRCC), with full USACE support and participation, further developed and published an aggressive action plan. This action plan addresses short term and long term actions to impede Asian carp migration into Lake Michigan and prevent a sustainable Asian carp population from developing.

3. In addition to continuing to operate and improve the electric fish dispersal barrier system, USACE and its federal partners are proceeding with other actions. Based on a study effort begun in the fall of 2009 and my subsequent recommendation, in January 2010, the Assistant Secretary of the Army for Civil Works approved the construction of barriers along the Des Plaines River and the Illinois and Michigan (I&M) Canal to prevent the bypass of the fish barrier in the event of flooding that could cause overflows into the Chicago Sanitary and Ship Canal.

4. USACE, along with our partner agencies, is working diligently to develop and execute additional precautionary and prudent actions, as described in this declaration and elsewhere, as quickly as possible, based on the best information available, in order to effectively address the potential threat that Asian carp pose to the Great Lakes. When additional or new information becomes available, which in the judgment of appropriate experts represents a significant threat that a sustainable population of Asian carp could become established in Lake Michigan and the likely consequences of such a threat are adequately understood, I am prepared to make recommendations related to lock closure and to consider any other appropriate actions.

Actions of the Asian Carp Regional Coordinating Committee

5. On February 8, 2010, the inter-agency Asian Carp Regional Coordinating Committee (ACRCC) released the Draft Asian Carp Control Strategy Framework. This Framework can be found at http://www.asiancarp.org/regionalcoordination. The Framework sets forth short and long term actions for preventing Asian carp migration in one planning document. Both state and federal agencies will implement the actions outlined in the Framework.

6. The Framework was presented to many Great Lakes Governors at a meeting at the White House on February 8, 2010, including Governors Granholm (MI), Doyle (WI), Quinn (IL), Rendell (PA), and Lieutenant Governor Fisher of Ohio, as well as a representative from the office of Governor Daniels (IN). Some of the governors were personally present, while others participated telephonically. In addition to reviewing the comprehensive Framework, during the meeting the federal government emphasized the need for collaborative and active state and federal participation to prevent Asian carp from establishing a population that poses a threat to the Great Lakes. I participated in that meeting telephonically, along with Assistant Secretary of the Army for Civil Works, Jo-Ellen Darcy, on behalf of USACE. The Environmental Protection Agency (EPA), the United States Department of the Interior (DOI), the White House Council on Environmental Quality, the Department of Transportation, and the United States Coast Guard also had senior officials participate in this meeting.

7. On February 9, 2010, along with other representatives of the ACRCC, State Department of Natural Resource representatives from Illinois, Michigan, and Wisconsin,

and representatives from interested non-governmental organizations, I testified before the House Transportation and Infrastructure Committee about USACE efforts to address the risk that a population of Asian carp could become established in the Great Lakes. A copy of my written testimony is included as Attachment 1.

8. On February 10, 2010, the United States Department of Justice hosted a telephonic meeting of representatives of the Attorneys General from Michigan, Ohio, Wisconsin, Indiana, Pennsylvania, New York, and Minnesota. I participated in that meeting along with representatives of EPA, the United States Fish and Wildlife Service (FWS) and the Coast Guard. At that meeting we reiterated the information provided to the Great Lakes Governors regarding the Framework.

9. The ACRCC recently hosted public meetings in the Great Lakes region to discuss the Framework. Those who could not attend were encouraged to submit questions via the internet. USACE participated in these meetings. I attended the first one, held in Chicago on February 12, 2010, and Assistant Secretary of the Army for Civil Works Darcy attended the second meeting in Ypsilanti, Michigan on February 17, 2010.

Assessing Measures to Control Carp Migration Including Potential Lock Closure

10. As described in my January 4 Declaration, USACE is using the near-term Efficacy Study, planned to be completed in September of 2010 after various interim reports and recommendations, and the longer term Great Lakes and Mississippi River Interbasin Study (GLRMIS, or the "Inter-Basin Transfer Study") to conduct the necessary science-based research which will address critical information requirements needed to inform recommendations and decisions, and to assess how to balance competing interests. This process forms the basis for continuing to develop recommendations and

execute associated actions as set forth in the Framework, and as required by study authorities and applicable law and policy. USACE intends to take action on the most promising and viable recommendations as quickly as possible within our capabilities and resource availabilities.

11. The Great Lakes and Ohio River Division and the Chicago District of USACE have been and will continue to accelerate the normal study procedures and processes to focus on various alternative actions that possess near-term promise of being effective. We will then cycle out interim study reports with recommendations to decision-makers so that we can take actions as quickly as information, technologies, and capability allow. For example, using the Efficacy Study, we completed the first interim report in late 2009, resulting in an approved action to construct barriers along the Des Plaines River and Illinois and Michigan Canal to prevent Asian carp from bypassing the fish barrier in the event of a flood. Construction of these barriers is projected to begin by June of 2010 after acquisition of necessary real estate interests. USACE intends to make and develop recommendations from our study efforts into actionable plans as quickly as the development of adequate information, resources, and compliance with applicable laws, regulations and permitting requirements allow.

12. All possible alternatives are being actively considered, to include permanent lock closure, which USACE intends to address under the Inter-Basin Transfer Study and which would require Congressional authorization. Some of the key information requirements needed to assess the need for and efficacy of lock closure are listed below, in the form of a series of questions to be addressed with a reasonable degree of confidence. The needed information associated with these questions could evolve and

change, or result in new information requirements as our study efforts progress. The current fundamental issues that must be addressed or further evaluated include:

a. Are Asian carp present above the fish barrier?

b. Are Asian carp present in numbers that may be able to develop into a sustainable population?

c. Would such a population likely be able to migrate past an area of low plankton that may exist in the Lake Michigan area around Chicago?

d. Would Asian carp be able to establish a sustainable population in Lake Michigan, and if so, where and how?

e. What is the likely impact of Asian carp on Lake Michigan and the other Great Lakes?

f. What are the likely impacts of closing the locks?

The Corps will incorporate the answers to these questions into recommendations for additional action as the development of information related to these issues warrants.

13. I am not currently recommending closing the Chicago area locks for an extended period of time that would preclude their use for navigation. This assessment is based on the information currently available including the eDNA results discussed below; on Congressional authorities requiring USACE to operate and maintain the lock structures for navigation and other purposes, which inform the Assistant Secretary's use of Section 126 authority; and consultation with state and federal partners. At this time, USACE has insufficient information to conclude that Asian carp are actually present above the fish barrier or to conclude that there is an imminent threat that a sustainable

population of Asian carp may establish itself either above the dispersal barrier or in Lake Michigan if the locks are not closed.

14. Furthermore, it is incumbent upon USACE to assess any potential actions to prevent the harm that Asian carp could cause in light of potential harms those actions might cause to other interests. This assessment must take into account the authorized purposes of the Chicago Area Waterway System (CAWS) structures for water diversion, navigation, and flood control. USACE will continue to re-assess this issue as information develops, but in making this assessment at this time, I have balanced the potential harms to competing resource users against the threat to the Great Lakes. Any USACE recommendation whether to close the Chicago-area locks will be reviewed and decided on by Assistant Secretary Darcy, who has the decision authority under Section 126 of the 2010 Energy and Water Appropriations Act, until that authority expires in October of 2010.

The Corps' Near-term Plans Pursuant to the Framework

15. My January 4, 2010, Declaration outlines the four-pronged strategy that USACE is following to address this issue: (1) operation, maintenance, and improvement of the electric dispersal barrier system, (2) monitoring for the potential presence of Asian carp, (3) using the Efficacy Study process to recommend near term solutions, and (4) using the Inter-Basin Transfer Study to develop long term solutions. Since that Declaration, USACE plans and actions have evolved and are continuing to mature. The Corps, along with other agencies, will continually evolve and modify its plans and actions in response to new information. While significant questions remain regarding the presence of Asian carp in the CAWS, neither USACE nor its partners are waiting to take

action as is illustrated by the recent release of the Framework, the ongoing fishing efforts of the FWS and Illinois Department of Natural Resources (IDNR), USACE advancement of its study authorities toward decision documents and action execution, and the partners' plans for near-term actions. As described above, in late 2009 I recommended, and on January 12th the Assistant Secretary of the Army approved, the installation of engineering measures to block the passage of Asian carp via potential flood waters from the Des Plaines River or the I&M Canal into the Chicago Sanitary and Ship Canal (CSSC).

16. Currently, USACE is focusing on near term efforts to prepare for warmer weather when fish become more active. As described in the Framework, USACE is working actively with our state and federal partners to assess and take actions that will control, reduce, or eliminate any populations of silver or bighead carp that may exist above the dispersal barriers. These efforts are intended to impede the migration into the Great Lakes of any Asian carp that may be present above the fish barrier and to reduce the risk that a sustainable population could become established. If Asian carp are present above the fish barrier, this approach is important as USACE understands that Asian carp population reduction, and if possible elimination, are central aspects to combating the risk that a viable population of Asian carp could become established.

Modified Structural Operations Approach and Other Near Term Actions

17. As part of this ongoing expedited evaluation that is a component of our Efficacy Study, USACE, in collaboration with our partner agencies, is considering an approach we are calling "Modified Structural Operations." This involves the potential to change the manner in which existing structures in the CAWS, such as locks and dams,

sluice gates and pumping stations are operated in order to impede Asian carp migration into Lake Michigan and suppress any Asian carp populations that may be present.

18. This approach is still under development so definitive solutions have not been determined. Some alternatives under consideration include developing a schedule identifying periods during which locks are available for and closed to navigation, synchronized with actions by other agencies to suppress Asian carp populations that may be present; reducing the total number of lockages by increasing the volume of cargo or navigation vessels per lockage; applying new control mechanisms that would deter fish passage but still permit navigation traffic to pass, such as acoustic, bubble, and/or strobe light barriers to deter fish from entering the locks.

19. An important element of this approach is to synchronize modified structural operations in ways that would allow other agencies, such as IDNR and the FWS, to undertake efforts, such as intensive netting, electro-fishing, or applying toxicants and otherwise making the water uninhabitable for Asian carp, to suppress any Asian carp populations that may be present. If our study investigations determine that these approaches can be developed into viable actions, the Modified Structural Operations approach is likely to be executed in stages as quickly as information requirements, the maturity and availability of technologies, internal capabilities, and resources allow.

20. In this same evaluation, USACE is considering whether there are any near term mechanisms that could be implemented in the Little Calumet River to impede Asian carp passage. As discussed in my January declaration, prior to placing any structures in the Little Calumet River or in any other waterway in the CAWS, the Corps would have to consider the potential impacts to flooding that such structures might have. The Corps is

also considering whether screens could be installed at the locks and sluice gates during flooding events that cause reverse flow of waters from the CAWS northward into Lake Michigan, in ways that would not induce flooding in the vicinity of the locks.

21. USACE intends to cycle out interim reports as quickly as is feasible consistent with the need to have confidence in the information requirements, proposed solutions, and to minimize negative impacts to stakeholders. For example, we are considering whether there are any technologies that could be put in place near the locks or at other strategic locations, such as barrier systems that employ one or a combination of acoustic, bubble, and strobe light technologies, even before we have finished evaluating the potential for Modified Structural Operations. We expect to be able to make a recommendation to Ms. Darcy regarding these barriers in March. In order to accelerate this effort, USACE recently formed a special "Red Team" to assist the Chicago District in hastening this evaluation.

22. As part of evaluating potential near-term actions, on February 5, 2010, the USACE Chicago District sent a scoping letter to relevant state and federal agencies and the interested public to solicit comments on the general ideas being considered in this expedited study of Modified Structural Operations. In addition, the Chicago District has hosted two meetings to collect relevant information from the navigation industry that will inform recommendations about how lock openings might be modified. USACE expects to continue involving the public as the process moves forward.

23. My intention is to make initial recommendations regarding Modified Structural Operations and other appropriate measures to Assistant Secretary Darcy in the near future, in time to permit her to decide on actions that could begin this spring.

Following this initial recommendation, USACE will aggressively continue to pursue other possibilities for action as evaluations are completed and other capabilities are identified for implementation. The Modified Structural Operations concept is also likely to evolve in its application as on-going study efforts uncover more and better information, and other relevant technologies and capabilities. Once study efforts are mature enough to form an adequate basis to evaluate the various alternatives with adequate confidence, they will be used to inform further recommendations.

Other USACE Actions Related to the Chicago Harbor Lock

24. As Mr. Shamel Abou-El-Seoud of the Chicago District explains in his declaration, the Chicago Harbor Lock is programmed for major rehabilitation from November 2010 through April 2011. This action was programmed for execution in mid-2009 once American Recovery and Reinvestment Act funds became available. As with any man-made structure, the locks and their components need to be properly maintained and periodically replaced or rehabilitated, in order to keep them in proper working condition. Because of the aged and extremely deteriorated condition of the Chicago Lock gates, the purpose of this project is to rehabilitate the lock gates to ensure their operability. The maintenance period of November through April was chosen because this has the lowest impact to users of the structure for navigation, and will ensure the long-term viability of the locks for the purposes of navigation, flow diversion, and flood damage reduction. Failure to take this action could result in a catastrophic and sudden failure, as occurred on the Ohio River at two different structures in the last six months. This could also result in the unregulated flow of Lake Michigan waters into the Chicago

River and subsequently the CSSC, as well as the potential long-term loss of the project for use by navigation and for flood risk management.

Continued Assessment of eDNA Research

25. The federal partners continue to work actively to more completely assess the probative value of the eDNA research being conducted in the CAWS in collaboration with the University of Notre Dame and the Nature Conservancy. In the meantime, the federal partners are not waiting to fully understand eDNA's meaning. The ACRCC is continuing to use eDNA evidence as a basis for precautionary and prudent actions, in the event that eDNA at some future point does result in the ability to draw conclusions regarding the presence of Asian carp.

26. On December 15 and 16, 2009, the EPA conducted a technical and quality systems audit of the eDNA methodologies and processes carried out by the Center for Aquatic Conservation Laboratory at the University of Notre Dame, and their report was provided to USACE on February 5, 2010. The goal of this audit was to assess the procedures and processes being used by the laboratory. The EPA Audit team concluded: "Our team believes that the eDNA method you are using is sufficiently reliable and robust in reporting a pattern of detection that should be considered actionable in a management context. We have a high degree of confidence in the basic [method] you are using for detecting silver and bighead carp environmental DNA." The EPA audit team also made several specific recommendations for general quality system improvements, as detailed in Dr. Elizabeth C. Fleming's Declaration. However, in its report, EPA also stated that "[t]he audit report did not address interpretation of the eDNA results in regards

to the presence or absence, proximity, or abundance of silver or bighead carp, the presumed source of eDNA."

27. This EPA report gives USACE high confidence in the technical ability of the University of Notre Dame laboratory to follow appropriate methodologies and processes, although the report did "not address interpretation of the eDNA results in regards to the presence or absence of" Asian carp. At this time, USACE therefore cannot rely on the EPA report in order to conclude that eDNA evidence confirms the presence of Asian carp.

28. As elaborated upon in Dr. Fleming's declaration, by this spring USACE, working through its Engineering Research and Development Center (ERDC), expects to increase eDNA sample processing capacity from about 40 per week up to 120 samples a week, in order to better monitor possible Asian carp presence and to provide information that will aid in focusing limited resources and our on-going efforts. This effort will be executed cooperatively between ERDC and the University of Notre Dame.

29. As I explained in my January 4 Declaration, USACE is pursuing additional research, through ERDC and supervised by Dr. Fleming, that will amplify understanding of the eDNA results. Dr. Fleming addresses these efforts in more detail in her declaration. USACE is also pursuing further validation of the research in accordance with USACE water resources policies and authorities. Civil Works Review Policy EC1165-2-209 requires that all technical, scientific and engineering information that is relied upon to support recommended decision documents undergo an intensive Independent External Peer Review (IEPR). This is especially important where there are public safety concerns; a high level of complexity; novel or precedent setting approaches;

or the Chief of Engineers determines that the project is controversial, has significant interagency interest, or has significant economic, environmental and social effects to the nation. We hope to be able to develop our peer review approach for the eDNA research by March and complete it by June, or sooner.

Evolving eDNA Information

30. Since my first declaration in this matter, the University of Notre Dame has provided the Corps with additional reports describing the results of DNA testing of various samples of water collected from the CAWS. The small numbers of positive samples to date were collected in the locations indicated in the attached map (Attachment 2). While these eDNA results indicate that Asian carp may be present, the FWS and IDNR have so far been unable to confirm the eDNA results by finding any live or dead Asian carp above the fish barrier system during their focused fish netting and electro-fishing efforts, efforts which have been conducted since the first positive results above the dispersal barrier were reported.

31. These fishing efforts have continued in recent weeks and will continue to focus on areas above the fish barrier where fish biologists believe Asian carp are likely to congregate if they are present, as well as on specific areas based on indicators from positive eDNA results. Both FWS and IDNR regularly update USACE regarding these efforts and I understand that none of the intense Asian carp netting and electro-fishing operations above the barrier have captured any Asian carp as of this writing.

32. The eDNA results above the fish barrier, by themselves, do not establish that the dispersal barrier system has failed to prevent the migration of Asian carp through the fish barrier, and no person or organization has presented any credible evidence to

USACE that the fish barrier has failed. While USACE will continue to evaluate the effectiveness of the fish barrier in further research, neither do the eDNA results alone establish how an individual of a target species may have come to be present in the sampled area, if they are indeed present. If these species of carp are above the barrier, other explanations for their presence could include the 2008 flooding into the CAWS from the Des Plaines River, releases of live fish by individuals, or the presence of Asian carp before the dispersal barrier became operational, among other possibilities.

Conclusion

33. The fish barrier remains our most important immediate defense mechanism against Asian carp migration, but USACE is working with our partner agencies to transition to a multi-tiered defense. Efforts to prevent Asian carp from establishing a sustainable population that threatens the Great Lakes are collaborative, involving numerous federal, state, and local agencies. This effort requires the synchronization of structural, chemical, biological, and other methods to be effective. In order to achieve success, all federal, state and local entities must apply their authorities, capabilities and resources as part of a comprehensive plan to address this challenge. USACE will continue to apply its authorities and capabilities to achieve success.

I declare under penalty of perjury that the foregoing is true and correct.

Executed February 24, 2010

JOHN W. PEABODY
Major General
U. S. Army

Exhibit 1

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

STATEMENT OF:
MAJOR GENERAL JOHN PEABODY
COMMANDER, GREAT LAKES AND OHIO RIVER DIVISION
U.S. ARMY CORPS OF ENGINEERS

BEFORE:
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
UNITED STATES HOUSE OF REPRESENTATIVES

ON

ASIAN CARP AND THE GREAT LAKES

FEBRUARY 9, 2010

Madam Chair and members of the Subcommittee, I am Major General John Peabody, Commander of the Great Lakes and Ohio River Division, U.S. Army Corps of Engineers. Thank you for the opportunity to testify about ongoing efforts to address the risk to the Great Lakes posed by the migration of two species of Asian carp, the silver and bighead, through the Chicago Area Waterway System. Asian carp represent a grave threat to the Great Lakes fisheries and aquatic resources, including those managed by the National Park Service in areas such as Sleeping Bear Dunes National Lakeshore, Isle Royale National Park and Apostle Islands National Lakeshore. The Army Corps of Engineers (Corps) remains committed to use all available authorities, capabilities, and resources to combat this invasive species. The Corps cannot do this on its own, but continues to work intensively with, and leverage the full capabilities of Federal, State, provincial, bi-national, and municipal agency partners. I would like to briefly describe the Corps of Engineers' role in this important effort, current actions that the Corps is taking, plans for the immediate future and near term, as well as the Corps' longer term strategy.

The Corps' principal role in this effort has been to address potential migration of Asian carp via the most direct pathway, the Chicago Sanitary and Ship Canal, by building, operating, and improving the electrical dispersal barrier system at Romeoville, Illinois. This fish barrier is the largest fielded operational electrical dispersal barrier in the world and constitutes a complex and dynamic project with significant research and development components. It currently consists of two separate barriers, Barrier 1 and Barrier 2A, with a third, Barrier 2B, under construction. Barrier 1 was built as a demonstration barrier for the purpose of preventing migration of the aquatic nuisance species from Lake Michigan into the Chicago Area Waterway System and has limited operational parameters. It has been operating at its design capacity since 2002. Today, Barrier 2A currently stands as the primary impediment to Asian carp migration. Corps of Engineers' laboratory testing shows that the operating parameters we are applying at Barrier 2A are effective at repelling Asian carp. However, we continue to research the optimal operating parameters and will make adjustments to Barrier 2A as research indicates. Any changes will be preceded by a thorough safety review in conjunction with the U.S. Coast Guard. American Recovery and Reinvestment Act

funds have accelerated construction of Barrier 2B by a year; construction is now scheduled to be completed this fall. This barrier will ensure redundancy in the system for maintenance and unexpected actions.

The electrical barriers must be turned off periodically for maintenance. The barrier maintenance, which took place in early December, was successfully completed thanks to the synchronized application of rotenone by the Illinois Department of Natural Resources and the cooperation of multiple federal, state, and provincial entities. Application of rotenone ensured that Asian carp would not pass through the barrier during the brief maintenance period. The single Asian carp discovered following this operation was found below the barrier system. This is an outstanding example of the multi-agency collaborative efforts necessary to be successful in this challenging effort.

It is important to recognize that the electrical barriers do not provide a guarantee that Asian carp will be prevented from entering Lake Michigan. Essential to the Corps' operation of the barriers are actions to ensure their efficacy and to address possible bypasses by Asian carp. Section 3061 of the Water Resources and Development Act of 2007 authorizes the Corps to carry out an "Efficacy Study" in order to develop recommendations for permanent solutions to Asian carp bypass scenarios as well as other potential barriers and impediments to Asian carp migration in the Chicago area. Recent authority, Section 126 of the 2010 Energy and Water Development Appropriations Act, allows the Secretary of the Army to approve measures recommended in the Efficacy Study and other emergency measures as necessary until October 28, 2010 – one year after passage of the bill.

Under these authorities, the Corps has already taken action to address possible bypass of the electrical barriers. On January 12, 2010, the Assistant Secretary of the Army (Civil Works) approved an interim report that recommended emergency measures to address potential bypasses of the barriers. The Corps plans to begin construction of those emergency measures this spring. The recommended structural solutions include installing specially designed fence and concrete barriers at locations along the Des Plaines River adjacent to the Chicago Sanitary and Ship Canal where bypass of the fish barrier could occur during flood events, such as the flooding that most recently occurred in September 2008. The Corps also plans to block flow through the Illinois and

Michigan Canal at the natural flow divide to prevent circumvention of the barrier via that pathway. The current schedule provides that construction will be completed by this fall. The Final Efficacy Study will evaluate other potential measures of improving the efficacy of the fish barrier in the Chicago Area Waterway System, such as additional electrical barriers or other types of behavioral barriers, controlling ballast water and other potential transit pathways, modified lock operations, and Asian carp population control. The study will be completed this fall. These critical activities are being funded through FY 2010 appropriations provided to the U.S. Environmental Protection Agency (EPA) for the interagency Great Lakes Restoration Initiative. In support of the Initiative, which includes invasive species prevention as one of its highest priorities, EPA allocated $13.5 million to the Corps for implementation of the recommended emergency measures and additional monitoring.

Monitoring Asian carp migration is an essential part of the inter-agency effort. As part of a comprehensive review of the Corps' activities begun in the Fall of 2008, we determined that the tools available at that time, principally netting and electro-fishing conducted primarily by our partner agencies, could tell us the locations where fish were likely located in abundance, but not necessarily how far they had migrated up the system in smaller numbers. As a result, the Corps canvassed the scientific community for alternative methods, and discovered the University of Notre Dame's environmental DNA (eDNA) research in May of 2009. The University's Dr. David Lodge, along with his team and partners from The Nature Conservancy, agreed to apply their emerging technology to assist us in our efforts to improve understanding of where Asian carp may be located.

Results of eDNA research are an important tool in our ability to confront this threat. Asian carp eDNA testing remains to be fully validated and results should be considered preliminary. Further, the identification of eDNA in a waterway cannot, at present, tell us such things as the size of any Asian carp population, how recently Asian carp have been there, whether the DNA came from a living or dead fish, or whether Asian carp tissue or DNA might have been transported in ballast or bilge water, or via other mechanisms, from some remote location. Because eDNA is a new approach to assessing the presence of Asian carp and is being applied operationally before

standard independent scientific review could occur, the Corps continues to collaborate with the University of Notre Dame to determine what eDNA does and does not tell us and continues to research how to improve the usefulness of this technology to inform management decisions. This effort is consistent with the Corps' policy of ensuring that its technical, engineering, and scientific work undergoes an open, dynamic, and vigorous review process to ensure confidence in our decisions and policy recommendations – especially when those decisions may have dramatic consequences. While eDNA is important to the overall effort it is important to recognize that it is a technique for improving our ability to detect the presence and map the distribution of Asian carp and not by itself a tool for prevention.

On January 27, 2010, the Corps received a summary Audit Report on the eDNA scientific process and the reliability of the testing and surveillance methods from the U.S. Environmental Protection Agency. Although the report made recommendations for future method development and quality system improvement, the U.S. Environmental Protection Agency auditors expressed overall "confidence in the reliability of the eDNA protocol implemented" by the University of Notre Dame laboratory. The Corps looks forward to intensely reviewing the final Audit Report to inform our judgments and additional research that may be needed.

Sampling by Dr. Lodge's team has returned positive results for DNA from silver and bighead Asian carp, the two species of concern, in various locations. Identification of Asian carp DNA in the Brandon Road pool in August 2009, which is just over 6 miles downstream of the electrical barriers, triggered the Corps' decision to increase the operating parameters of Barrier 2A. Between August and November 2009, all returned results for Asian carp sampled above the fish barrier were negative. On November 17, 2009 Asian carp DNA was reported as having been detected in the Cal-Sag Channel and Calumet River near the O'Brien Lock, in three areas ranging from 10 to 30 miles upstream of the fish barrier. An intensive fishing effort followed and although over 1,000 fish were caught near the O'Brien Lock, none of them were Asian carp. Recently, positive detections of Asian carp eDNA have also been reported north of the fish barrier near the Wilmette Pumping Station and lakeward of the O'Brien Lock. The Corps continues to consult with and rely upon the assessment of our partner agencies,

including the U.S. Fish and Wildlife Service, Illinois Department of Natural Resources, and the U.S. Environmental Protection Agency in evaluating these results.

In the meantime, the Corps of Engineers, working through the Asian Carp Regional Coordination Committee, is urgently developing additional measures to apply in the Chicago Area Waterway System once warmer weather in the spring prompts increased fish activity. Measures the Corps is discussing with our partner agencies include modified operations at existing locks and controlling works, installing other types of barriers near the locks, assessing options to block the alternate pathways of the Grand and Little Calumet Rivers, and supporting efforts to reduce or eliminate Asian carp populations that may be present. Such supporting efforts may include intensive fishing efforts around the navigation structures and the application of rotenone by partner agencies. All measures under consideration will be evaluated taking into account stakeholders' use of these structures, especially by public health, security and safety agencies, such as the Chicago Fire and Police Departments, and the Department of Homeland Security, as well as for purposes of flood risk management, navigation, and water quality. To be effective, any measures would have to be taken in concert with actions by other agencies on matters within their expertise and authority to eliminate or reduce the numbers of any Asian carp that may be in the vicinity. The National Invasive Species Council (NISC) was established by Executive Order 13112 to coordinate federal actions on invasive species. The Secretaries of the Interior, Agriculture, and Commerce are the co-chairs of NISC. The Secretary of Defense is a member of NISC. The Corps of Engineers works with its NISC partner agencies to stop the spread of Asian carp and other invasive species.

Finally, building on all of these efforts, the Corps has a long term strategy. The Corps is undertaking the Congressionally-authorized Great Lakes and Mississippi River Interbasin Study to explore the options and technologies that could be applied to reduce the risk of aquatic invasive species transfer throughout multiple points between the Great Lakes and Mississippi River basins. This study will include the possibility of ecosystem separation and will analyze the impact that alternative possible plans would have on the current uses of the Chicago Area Waterway System, including the Chicago Sanitary Ship Canal. The Corps plans to conduct this study in close coordination with

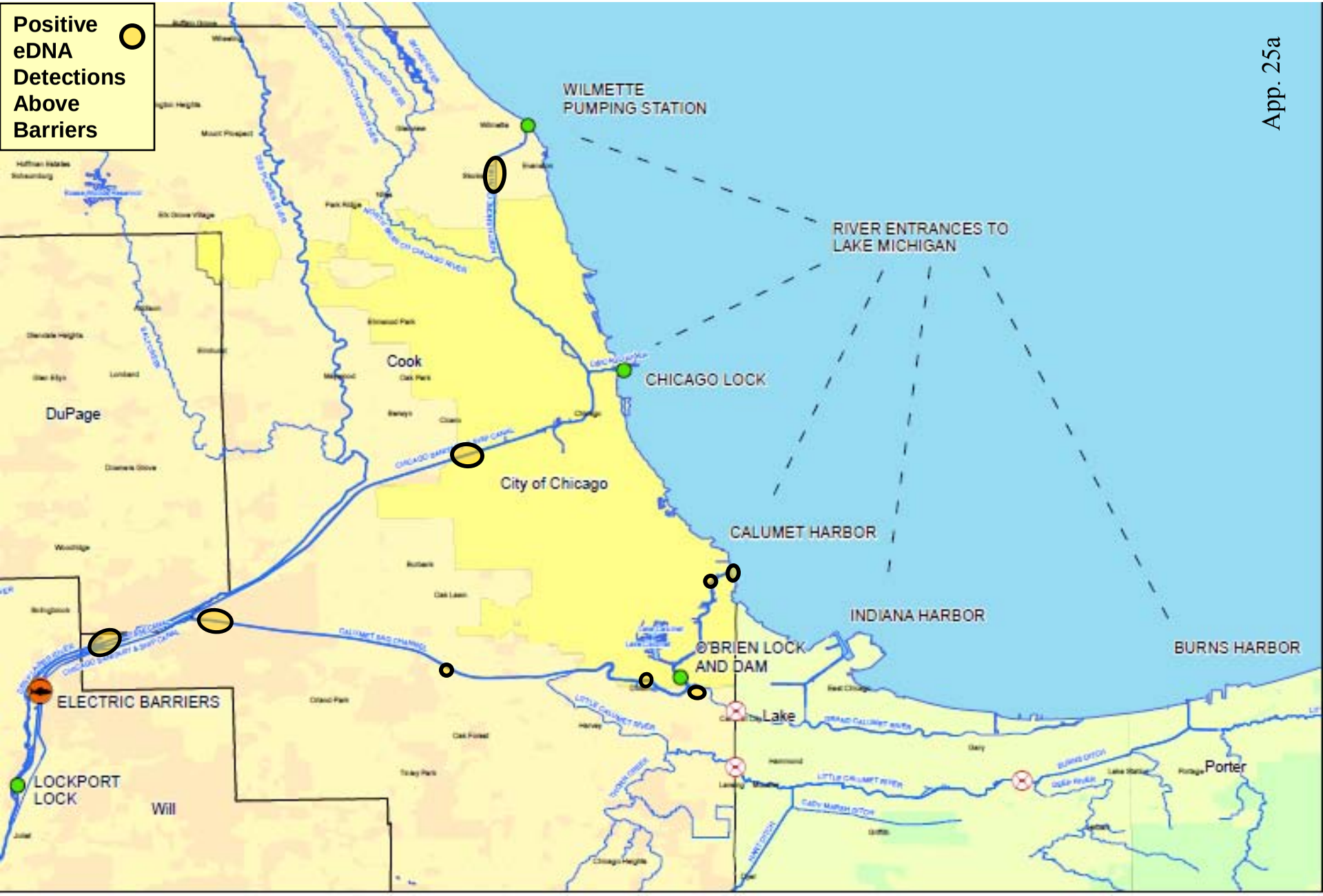
partner governmental agencies, such as the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service and the U.S. Coast Guard. The initial area of emphasis will focus on the Chicago Area Waterway System and is anticipated to be completed as an interim report before the final study is complete.

In conclusion, the fish barrier remains our most important immediate defense mechanism against Asian carp migration, but the Corps is working with our partner agencies to transition to a multi-tiered defense. Efforts to prevent Asian carp from establishing a population in Lake Michigan are collaborative, involving numerous federal, state, and local agencies. This effort requires the synchronization of structural, chemical, biological, and other methods to be effective. In order to achieve success, all federal, state and local entities must apply their authorities, capabilities and resources as part of a comprehensive plan to address this challenge. The Corps will continue to apply its authorities and capabilities to achieve success.

Madam Chair, this concludes my testimony. I would be happy to answer any questions you or other members of the Subcommittee may have.

Exhibit 2

Positive eDNA Detections as of 22 Feb10



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STATE OF MICHIGAN, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF NEW YORK, PLANTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

DECLARATION OF DR. ELIZABETH C. FLEMING

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1. My name is Dr. Elizabeth C. Fleming. I am a member of the Senior Executive Service (SES), Director of the Environmental Laboratory, and Civil Works Business Area Lead at U.S. Army Engineer Research and Development Center and am responsible for approximately $150 Million in research investments for the U.S. Army Corps of Engineers. Under my leadership and direction, the Engineer Research and Development Center Environmental Laboratory's $65 Million - $85 Million research programs have been of great value to the U.S. Army Corps of Engineers and are recognized nationally and internationally. As the needs and priorities of the

U.S. Army Corps of Engineers and our nation have changed, the Engineer Research and Development Center Environmental Laboratory adapted its research to meet the needs presented by those changes. The Environmental Laboratory is one of seven labs comprising the Engineer Research and Development Center and has been named Army's "Large Lab of the Year" five times in the last eight years. Environmental Laboratory research transcends the U.S. Army Corps of Engineers' mission spectrum of peace to war, nationally and internationally, in all U.S. Army Corps of Engineers mission areas. Under my leadership at the laboratory level, the most significant contributions have been to the Environment, Water Resources, and Warfighting missions. As the Civil Works business area lead, I support our nation's requirement for maintaining water resources projects through the System-Wide Water Resources (SWWRP), Environment, Flood Damage Reduction, Navigation, and Infrastructure business lines among others. I ensure that our research provides cutting-edge, innovative solutions to the most critical challenges facing our customers. Our customers and partners include the U.S. Army Corps of Engineers, the Department of the Army, the Department of Defense (DoD) and other DoD agencies, other Federal agencies, state and municipal governments, private and international partners, and academia.

2. I direct 220 federal and approximately 70 – 100 contract personnel in the planning, programming, coordination, execution, and evaluation of a cutting-edge, environmental engineering and sciences research and development program. As Director, I provide top-level leadership to ensure the Engineer Research Development Center's environmental engineering and science research, both basic and applied, addresses the nation's most critical challenges. Development of diverse teams with customers, stakeholders, and partners is my strategy for

effective Engineer Research and Development Center research and development and the business therein.

3. I am responsible for thousands of square feet of research facilities, including the Hazardous Waste Research Center, a Toxicology Center, Sediment Research Facility, and the Aquatic Center in Vicksburg along with several remote facilities. The Hazardous Waste Research Center is the only Department of Defense Part B permitted Resource Conservation and Recovery Act research facility. I am responsible for offsite facilities including the Eau Galle Aquatic Ecosystem Research Facility in Eau Galle, WI, and the Lewisville Aquatic Ecosystem Research Facility in Lewisville, TX.

4. My laboratory personnel, research products, and facilities undergo annual peer review by academia, NGOs, and other Federal agencies. Annual peer reviews assess technical excellence, product quality and relevance, and strategic plans and directions through week-long evaluations of the Environmental Laboratory and Civil Works Business Area. Specific review points include the quality and scientific leadership recognition of our engineering and scientific staff, visits to key facilities, briefings of our technical programs, and strategic directions. My laboratory has fifteen geneticists, approximately eight with PhDs, who specialize in DNA analyses. The only Senior Scientist (Senior Executive Service equivalent) for Genetics and Toxicogenomics in the USACE reports to me. My laboratory employs approximately ten PhD level fisheries biologists and engineers with approximately 150 years cumulative experience in the field of fish behavior and response.

5. I am responsible for overseeing USACE's cooperative agreement with the University of Notre Dame's (Notre Dame) Center for Aquatic Conservation Laboratory, headed by

Dr. David Lodge, for USACE's interpretation of the research in the context of ERDC's expertise and for further development of the partnership with the Laboratory.

Background of USACE Involvement with eDNA Research

6. In the spring of 2008, in response to the need to further evaluate the potential for Asian carp to migrate up the Chicago Sanitary and Ship Canal System, ERDC posted a Statement of Interest (SOI) with the Great Lakes and Northern Forest Cooperative Ecosystem Studies Unit on "Aquatic Invasive Species Risk Assessment for the Chicago Sanitary and Ship Canal." Notre Dame was one of three organizations that responded to the SOI. Evaluations of all the preliminary proposals were conducted by USACE's Chicago District and ERDC (May 2008), and Notre Dame was asked to submit a more detailed proposal. During an evaluation meeting with Chicago District on the Risk Assessment project in early 2009, Notre Dame personnel described an emerging monitoring approach that identified carp DNA from water samples. After discussions between the Chicago District and Notre Dame, the District requested that Notre Dame conduct water sampling to test for Asian carp DNA. The "Surveillance of Asian Carp Using Environmental DNA" (eDNA) agreement was finalized by ERDC and Notre Dame in August 2009. The agreement called for Notre Dame to collect and test water samples using their eDNA methods at 30 sites between Dresden Lock and Dam (river mile 275) and the electric barrier (river mile 300). That agreement has since been modified to account for additional sampling locations above the dispersal barrier and for other research reasons.

7. The Chicago District, ERDC, and Notre Dame recently modified (Cooperative Agreement W912HZ-08-2-0014; Modification P00006; 11 Feb 2010) the current cooperative agreement to address five additional elements:

a. Increased processing rate of eDNA;

b. Increased return rate and reporting of samples;

c. Evaluation of optimal sampling effort for eDNA;

d. Development of a plan to transition eDNA monitoring to ERDC and a schedule for the monitoring program; and

e. Development of a Statement of Work for eDNA calibration experiments to expand the understanding of eDNA results.

8. Scientific research typically follows a process that includes a hypothesis regarding a topic, predictions about experimental or observational results based on the hypothesis, gathering of data, analysis of data, assessment of prediction accuracy, revision of the hypothesis, conclusions, and iterations if necessary. This process allows for revision and fine-tuning of hypotheses as predictions are tested and more information becomes available, and allows for an increasingly better understanding about the phenomenon or topic of interest. Hypotheses regarding the robustness and information content associated with positive eDNA detections are currently being formulated by Notre Dame (7e. above). In scientific research processes and terminology, this would involve further gathering and analysis of data to be used in testing predictions and assessing hypotheses regarding the inferential power of the eDNA method. This is a critical process in making sure that strong scientific conclusions are made and appropriate management actions undertaken.

ERDC's Review of eDNA Research Techniques

9. ERDC has reviewed EPA's report, "Laboratory Audit Report, Lodge Laboratory, Department of Biological Sciences, University of Notre Dame," of its quality assurance / quality control audit of Notre Dame's procedures and processes. This audit, conducted on

15-16 December 2009, was a technical and quality systems audit of the eDNA methodologies and processes carried out by the Center for Aquatic Conservation Laboratory at Notre Dame. The report was provided to USACE on 5 February 2010. The specific goals of this audit were to: (a) Provide an independent assessment of method performance and reliability by observing and evaluating sampling and analytical procedures and laboratory processes; (b) Assess if there is sufficient documentation of the sampling and analytical procedures to facilitate reproduction of the procedures by another laboratory; and (c) Provide a forum for discussion and possible recommendations pertaining to laboratory procedures and quality systems. The EPA Audit team concluded: "Our team believes that the eDNA method you are using is sufficiently reliable and robust in reporting a pattern of detection that should be considered actionable in a management context. We have a high degree of confidence in the basic PCR method you are using for detecting silver and bighead carp environmental DNA." In its report, EPA states that "[t]he audit report did not address interpretation of the eDNA results in regards to the presence or absence, proximity, or abundance of silver or bighead carp, the presumed source of eDNA." This EPA report gives USACE a high degree of confidence in the technical ability of the Laboratory to follow appropriate processes and methodologies.

10. The EPA audit team also made several specific recommendations for general quality system improvements:

(a) Document standard operating procedures for all routine field and laboratory procedures associated with the project;

(b) Document staff training for technicians/analysts;

(c) Document supervision of analysts/technicians (e.g., by having the supervisor or mentor co-sign laboratory notebooks);

(d) Improve documentation of routine laboratory activities including documentation of reagent use (e.g., by recording lot numbers of primers, polymerase, extraction kit components);

(e) Develop more detailed documentation of PCR setup and gel analyses with respect to mapping positions to sample ID;

(f) Describe the laboratory quality system and practices in a general laboratory operations manual or quality management plan;

(g) Develop a project-specific quality assurance project plan; and

(h) Use laboratory notebooks with permanently bound pages designed to withstand bench conditions and designed to be archived.

Despite recommendations in this audit report for future method development and quality system improvement, the auditors express overall confidence in the reliability of the eDNA procedures implemented by the laboratory.

Need for Peer Review of eDNA Research

11. USACE is also pursuing further confirmation of the eDNA research in order to be able to base solutions on the findings of that research. In accordance with our Water Resources Policies and Authorities, Civil Works Review Policy EC1165-2-209 requires that all technical, scientific, and engineering information that is relied upon to support recommended decision documents undergo an intensive Independent External Peer Review (IEPR). This is especially important where there are public safety concerns, a high level of complexity, novel or precedent

setting approaches; or the Chief of Engineers determines that the project is controversial, has significant interagency interest, or has significant economic, environmental, and social effects to the nation. This type of IEPR, to which the eDNA research technology will be subjected, is managed outside the USACE and panel members will be selected by an outside organization using the National Academies of Science policy for selecting reviewers.

Meaning of eDNA Findings & Calibration Studies

12. As explained above, given the short time that Notre Dame has been using its research, the eDNA research has been neither subjected to USACE's required peer review process (EC 1165-2-209) nor has further research been conducted to amplify understanding of results. The scientific research process of hypothesis formulation, predictions, gathering of data, analysis of data, assessment of prediction accuracy, revision of the hypothesis, conclusions, and iterations, if necessary, is not completed. Positive eDNA findings cannot be correlated to probabilities of presence, numbers of fish, etc., until validation/calibration of robustness of the eDNA approach is addressed. Hypotheses are currently being formulated by Notre Dame regarding positive eDNA findings but that research has not yet been conducted. Examples of the calibration tests that might be investigated include effects of temperature and water quality, hydraulic residence time, age of the fish, and population size. This information is critical to understanding positive eDNA findings and relating those findings to risk assessment (probabilities that bighead and silver carp are migrating north) and management decisions. Notre Dame, in consultation with ERDC and the Chicago District, is proposing to develop a Scope of Work (SOW) that will identify the calibration research that should be conducted. This SOW should be completed by 31 March 2010 (7. above).

13. Specifically, positive eDNA results do not answer critical questions such as:

a. How long ago was a carp present?

b. Did the DNA come from a live animal?

c. How many individuals are in a particular area?

d. How did the DNA arrive at the location from which the sample was taken, including natural and manmade transport mechanisms?

14. Because of these and other questions, additional testing is necessary to compliment the eDNA monitoring in order to understand the conclusions that should be drawn from positive eDNA findings and the subsequent management actions that should be undertaken. ERDC has proposed the need for research which will include investigation of how factors affect the strength of the eDNA signal for silver and bighead carps. Factors to be investigated include water temperature, background eDNA from non-target species, number and size of individuals of target species, location and volume of water sample, time since introduction of target species, and time since removal of target species. We propose to consider three scales of controlled experimental areas (tanks, artificial streams or small flumes that replicate actual water flow, and larger artificial streams or large flumes) and experimental areas in natural habitats that contain known abundances of Asian carps.

ERDC's Role in Future Monitoring Using eDNA

15. In order to begin working with Notre Dame to answer the many outstanding questions, ERDC has proposed to LRD that ERDC would work with Notre Dame personnel to develop a schedule for the transfer of a portion of the eDNA monitoring to ERDC. This transfer will include development of a field sampling program, a training schedule for transfer of filtration and laboratory processing methods, eDNA detection assays, and contamination prevention procedures (i.e. Quality Assurance/Quality Control). Once the ERDC monitoring

program is fully operational, the intent is to perform comparative sampling trials by the two laboratories to further prove the hypothesis that eDNA is an effective method for selectively identifying bighead and silver carp. This comparative sampling trial will include replicate samples (to test repeatability of results), blind samples (samples that have tested positive by one laboratory, sent to the other without results), and blank samples (clean water). A draft transition plan is to be developed by Notre Dame by 26 Feb 2010 (7. above). Once the transition plan is final and has been executed, ERDC anticipates processing 120 samples per week in addition to the 60 samples continuing to be processed by Notre Dame.

I declare under penalty of perjury that the foregoing is true and correct.

Executed February 24, 2010

Elizabeth C. Fleming

Dr. Elizabeth C. Fleming

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DECLARATION OF REBECCA J. MOYER

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1. My name is Rebecca J. Moyer. I am the Lead Economist in the Great Lakes and Ohio River Division (LRD), U.S. Army Corps of Engineers (Corps). My position serves as LRD's senior expert in economics and social impacts for water resource projects. My primary duties are managing quality assurance and providing technical consultation for economic evaluations and social impact assessments performed within LRD by its subordinate districts. Additional duties include serving as a technical director of the

Corps' Planning Center of Expertise for Inland Navigation (PCXIN) and a national instructor of the Corps' Planning Principles and Procedures course. I have held this position in LRD since November 2007. My prior position was at Corps' Headquarters in Washington, D.C., as the LRD Regional Integration Team planning program manager. My 23-year career with the Corps has included assignments at all levels of the organization -- districts, planning centers of expertise, division, and headquarters. My previous positions have included economist, plan formulator, policy compliance reviewer, and planning program manager. My technical and policy experiences have been primarily concentrated in planning and economics for shallow and deep-draft navigation. My educational background includes a M.A. degree in political science (public administration emphasis) from Marshall University and a B.A. degree in economics and political science from Miami University.

2. I am familiar with the facts relative to the above captioned civil action. Below I discuss my involvement with the economic impact analysis in the declarations provided by the United States in response to Michigan's first Preliminary Injunction Motion. I have also read the Affidavit of John C. Taylor, Ph.D. (herein referred to as Dr. Taylor).

3. Dr. Taylor has significantly understated the potential cost impacts from proposed closures of the Chicago and O'Brien Locks. I understand that his analysis was developed on an expedited timeline with publicly available data and professional judgment. However, his findings represent an incomplete assessment of the potential

economic impacts in that his assessment does not give adequate consideration to: the shipping characteristics of the impacted commodities; the characteristics of the facilities receiving them; the likely responses of impacted industries (particularly the impacts that additional transportation costs would likely have on production levels and regional outputs); or the impacts to both recreational boaters and commercial vessel operators, such as dinner cruises and ferries.

Corps of Engineers' Approach and Estimates of Economic Impacts

4. The Corps continues to study the economic consequences of various actions to address Asian carp migration. These efforts will add to and improve upon the information currently available.

5. From December 1 through December 14, 2009, I provided technical oversight of a team of LRD economists tasked with identifying potential economic impacts of possible closures of the Chicago and O'Brien locks. The resulting economic impacts estimates, developed on an expedited timeline, relied on readily available data from previous Corps studies, the Corps' Waterborne Commerce Statistics and Lock Performance Monitoring System data, and professional judgment. The initial economic impact estimates, while intended as preliminary, were developed in a manner consistent with the Federal standard prescribed in the Principles and Guidelines (P&G), established pursuant to the Water Resources Planning Act of 1965 (Pub. L. 89-80), as amended (42 U.S.C. 1962a-2 and d-1). These Principles and Guidelines establish standards and procedures for use by Federal agencies in

formulating and evaluating alternative plans for water and related land resources implementation studies.

6. To account for possible national economic development (NED) losses resulting from closure of Chicago and O'Brien locks, the LRD economist team used transportation rate data previously developed by transportation specialists at the Tennessee Valley Authority (TVA) for the Ohio River System and the Great Lakes/St. Lawrence Seaway Navigation System. These estimated rates were developed at a movement level (for this purpose, movement is defined as an annual tonnage for a unique commodity and origin-destination pair) and reflected prevailing costs and actual practices within the systems.

7. Transportation rate savings presented by the Corps are measured as the cost difference between the existing waterway routing and the least cost alternative routing – the additional transportation cost in the absence of the waterway. Estimated rate savings are ultimately affected by the availability of alternatives – the more flexibility offered by multiple available transportation options, the lower the transportation savings (i.e. transportation rate differential). Where few alternatives exist, the estimated rate savings would accordingly be higher. In the Chicago vicinity, particularly the Calumet River region, transportation options are often limited. Shippers consciously located their operations on the water and many are captive to water and truck transportation because they have no rail service.

8. The Corps does not typically assume that trans-loading infrastructure or facility-side accommodations are available where such facilities do not exist and are not under construction, as Dr. Taylor has done in his assessment. The P&G directs that only waterway investments currently in place, under construction or authorized for construction are assumed in place over the period of analysis.

9. Furthermore, the Corps evaluates its navigation projects within a systems context as directed by P&G, recognizing that the inland waterways function as an integrated transportation network and any site-specific solution which relieves a bottleneck or remedies an issue at one location could shift the problem elsewhere on the system. The Corps' systems approach necessitates use of full origin-to-destination waterway transportation rates, an approach which Dr. Taylor criticized.

10. On the basis of available transportation rate data, the LRD economist team initially estimated the annual transportation rate savings for Chicago and O'Brien locks at $192 million. For traffic demands, the team used a 5-year average tonnage (years 2003 through 2007), recognizing that more recent data included the effects of a world-wide recession, and was therefore not suitable, standing alone, for long-term decision-making. Rate savings ranged from $8 - $52/ton for the Chicago vicinity depending on the commodity hauled. This variation is related to the characteristics of individual commodities that determine the handling equipment used at terminals, need for storage, equipment required for hauling the cargo, and availability of alternatives.

11. With the benefit of more time and access to additional transportation rate data developed by TVA for the Illinois Waterway, and in response to Dr. Taylor's assessment, the LRD economist team revised its initial estimate, referencing 2008 traffic data (to provide a common basis of comparison with Dr. Taylor) and more site- and commodity-specific transportation rate savings that better represent the distribution of commodities at O'Brien and Chicago locks. Even during this recessionary traffic year, the same year used by Dr. Taylor, the LRD economics team estimates, based on 2008 traffic and available transportation rate data, that transportation rate savings at O'Brien and Chicago locks would be $167 million.

12. Additional impacts to commercial vessels, such as ferries and dinner cruises were estimated by LRD economists, based on currently available data, at $19.0 million annually. Chicago Lock traffic averages nearly 702,000 passengers on commercial vessels. These vessel operators would likely be adversely affected by a Chicago Lock closure, which would eliminate their ability to transit from the Chicago River to Lake Michigan and the Navy Pier. Recreational boaters are also important users of the locks, especially in summer months. Recreational vessels used the Chicago and O'Brien locks an average of nearly 60,000 times per year over the period 2003 through 2007.

Dr. Taylor's Approach and Estimates of Economic Impacts

13. A key assumption supporting Dr. Taylor's $70 million impact estimate is that all traffic can and will divert to a "route-around the locks" alternative, with minimal additional costs (ranging from $7 - $10/ton) incurred for trans-loading and for final delivery by shuttle truck, rail or pipeline. Dr. Taylor recognizes that no trans-loading facilities currently exist below O'Brien lock or within Calumet Harbor and contends that one could be built and the cost recovered by adding a modest $1/ton to the cost of barge movements, with the remainder of the additional costs attributed to added handling and final delivery.

14. The cost of the route-around is going to be heavily dependent upon the shipper's facility (access to rail, truck, and availability of appropriate loading/off-loading equipment) and the commodity – some of which require specialized handling and storage. On the basis of information developed by TVA transportation rate specialists for the Illinois Waterway, Ohio River System and for the Great Lakes System rate studies, the Corps estimates that the actual costs for some major commodities could be on the order of $20/ton higher. Additional handling and terminal costs could be on the order of $10/ton (where Dr. Taylor indicates $5/ton) and truck hauls to destination could cost around $10/ton (where Dr. Taylor estimates $5/ton).

15. Whereas the Corps' analysis was informed by detailed data not available to the general public in its un-aggregated form (e.g. Corps' Waterborne Commerce, Surface Transportation Board (STB) rail waybill, and shipper surveys), Dr. Taylor's analysis

relied on publicly-available national transportation data, including a study published by the Texas Transportation Institute (TTI). Dr. Taylor further indicated that the TTI national average rate savings of $11/ton supported his estimates of $9-10/ton in additional costs for diversions. However, the TTI estimates give much more weight to the major national waterway flows of coal and grain. The higher rate savings estimated by the Corps for Chicago and O'Brien locks relative to the national average reflects the fact that commodities dominating the trade in the Chicago area require more specialized handling than bulk coal and grain flows that dominate the national waterway trade.

16. In making such a broad assumption on diversions with incomplete cost and commodity traffic data, Dr. Taylor's analysis masks the significant short-term ramifications and understates their associated costs. No infrastructure exists currently to accommodate the "route-around the locks" alternative suggested by Dr. Taylor. A minimum of two facilities would be necessary to accommodate the diverted traffic, one on the lake side of the locks and one on the river side of the locks. Two facilities would be necessary because traffic from the Great Lakes would require a trans-load facility on the lake-ward side of any barrier and traffic to the Great Lakes would require a trans-load facility on the Chicago Area Waterway System (CAWS) side of any barrier.

17. Given only two trans-loading facilities, each would have to be outfitted with equipment to offload and store solid and liquid commodities. A third accommodation

would need to be made for cement, with a talcum powder-like consistency that requires specialized barges and handling equipment. Some brittle commodities may not tolerate the additional handling. In any event, it is unlikely that these facilities could be sited, permitted, constructed and open for business in less than a year.

18. It is important to note that the transportation, production and logistical advantages of waterway transportation are not completely captured by a transportation rate analysis. To illustrate, a petroleum refiner in the vicinity relies on moored tank barges for storage augmentation. In the absence of barge access, this business must make an investment in storage facilities. Barge operators also offer shippers the opportunity to move fabricated products too large for and/or prone to damage on rail, while at the same time allowing manufacturers of these products to compete in relatively distant markets. Such is the case of condensing tubes manufactured in Wisconsin and destined for power plants in the Tennessee River valley.

19. Corps evaluations focus on the margin, measuring the incremental changes that could occur from our proposed actions. In focusing our analyses, we define the areas of impact, recognizing that our actions could have local, regional, and national impacts. Certainly, the closures of the Chicago and O'Brien locks proposed by Michigan would have national and regional implications, but the impacts will be felt first at a local level, before radiating into regional and national impacts.

20. At the local level, we cannot dismiss the impacts of an additional 1,000 trucks per day on area roads. Dr. Taylor took a micro-view in his assertion that diverting all traffic overland would necessitate only 12.5 miles of truck travel to ultimate origin/destination, but then took a macro-view in discounting the impacts of the additional trucks on the roadways, pointing out that hundreds of thousands of trucks already move in the region. The additional 1,000 trucks per day would likely travel on secondary roads, not multi-lane superhighways. The additional 1,000 trucks in that concentrated area daily would likely have a significant impact to local traffic. Existing traffic non-withstanding, those 1,000 trucks alone lined up bumper-to-bumper would extend nearly 10 miles. In the smaller, though equally urban environment of Pittsburgh, Pennsylvania, an analysis of waterway traffic diversions completed by the University of Tennessee for the Corps found that marginal increments of additional truck traffic in a city already experiencing highway traffic congestion can cause significant problems.

21. Dr. Taylor's analysis neglects to consider the production efficiencies afforded by low-cost waterway transportation by freeing up resources that can be used to expand businesses and increase employment. With regard to production efficiencies, Dr. Taylor's analysis implies that the additional costs of transportation will be absorbed by the impacted industries with no change in outputs. The notion that impacted industries will maintain the same levels of employment and commodity tonnage will remain unchanged when industries' transportation costs could increase significantly is contrary to basic microeconomic tenets. Resources that must be redirected to

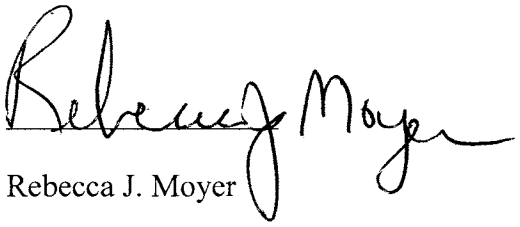
accommodate increased transportation costs must be pulled from current uses. It is possible that industries will respond by reducing production and employment, relocating from the area, or shuttering the business altogether. Dr. Taylor further contends that the additional transportation costs would create more jobs in trucking than would be lost in waterborne shipping. However, it is possible that the industries relying on the commodity movements, as well as the supporting navigation enterprises, would suffer a net loss in employment. A net increase in trucking jobs would be unlikely if production declines and the volumes of tonnage diminish.

22. In summary, the Corps estimates that potential losses from lock closure will likely be significantly higher than Dr. Taylor's estimates, reflecting the fact that truck transportation is often the only viable alternative to waterborne transportation, and when rail is available, it often involves lengthy hauls around the lakes versus a vessel which can take a much more direct route from origin to destination. Dr. Taylor's analysis masks the significant short-term ramifications and understates their associated costs – no infrastructure exists currently to accommodate such changes in transportation networks in the near-term. It is unlikely that all waterborne traffic could easily terminate on the lake or on the river downstream of O'Brien Lock and complete the leg by rail or truck to its ultimate destination for $9-10 per ton, resulting in impacts of less than $70 million annually. Dr. Taylor's analysis gives little consideration to the likely responses of impacted industries, shipping characteristics of the impacted commodities or the characteristics of the facilities receiving them. Furthermore, Dr. Taylor does not consider the impacts that additional transportation

costs would likely have on production levels and regional outputs. Additional economic impacts to recreational boaters and commercial vessel operators, such as dinner cruises and ferries, went unstated. All of these issues underscore the need for thorough review of the complex factors in order to fully understand the potential economic impacts of lock closure.

Under penalty of perjury, I declare that the foregoing is true and correct.

February 24, 2010



Rebecca J. Moyer

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DECLARATION OF MICHAEL COX, USACE

Clarifications to Declaration of January 4, 2010

1) I hereby reaffirm and clarify my declaration dated January 4, 2010 in order to address Michigan's characterization of my declaration in its February 4, 2010 Renewed Motion for Preliminary Injunction. Specifically, footnote 15, page 27 of Michigan's Renewed Motion for Preliminary Injunction states that "Mr. Cox notes that 'additional heaters and pressure steamers' are being purchased and will allow a reduction in cycling times for the lock gates.

Mr. Cox's declaration at least suggests there is a solution to keep the lock gates functional even when not opened periodically. In any event, the Army Corps of Engineers which specializes in the construction and operation of these structures should have the ability and expertise to solve this problem if it applies itself with the necessary vigor."

2) My January 4, 2010 declaration did not suggest that there is a solution to keep the lock gates at the Chicago and O'Brien locks functional when temperatures fall below 32 degrees Fahrenheit and the gates are not opened periodically. I stated in my declaration 1) that "...we have been looking at ways to reduce or eliminate gate cycling but we have not found a reliable method so far" and 2) that "...cycling times have been reduced during moderate weather (slightly below freezing)." We (the Corps of Engineers, Rock Island District) have reduced the cycling frequency at the O'Brien Lock from once every four hours to once every six hours when the temperature is between 28 and 32 degrees Fahrenheit without adverse impacts or excessive ice formation. The Corps has not found a reliable method that enables any additional reduction of gate cycling at temperatures below 32 degrees Fahrenheit, much less a complete elimination of gate cycling at those temperatures. I am currently not aware of any equipment will keep the lock gates functional in freezing conditions without cycling the gates in the manner set forth in my January 4, 2010 declaration.

3) The Corps' Cold Region Research and Engineering Lab (CRREL) has conducted research into controlling the formation of ice around lock gates. CRREL has designed and tested several methods over the years for controlling formation of ice at lock gates. The Corps has attached an experimental system for controlling the formation of ice that was designed and

produced by CRREL and outside manufacturers to a lock wall at Starved Rock Lock. Unfortunately, this unit has not proven fully effective thus far (because of configuration and operability), and additional investigation is ongoing.

4) The Corps is in the process of purchasing additional heaters and steamers in an effort to further reduce the frequency with which lock gates must be cycled in freezing weather to maintain their operability. We are working with CRREL to determine what equipment, if any, would be most effective for our uses, and that decision has not been made yet. We intend to base our determination of the appropriate type of equipment, if any, for maintaining lock function in freezing weather upon any modification in lock operations. In addition, the winter season, during which the locks may need to be cycled to maintain operability, will end in March. It is unlikely that even an existing system, such as the system installed at Starved Rock, could be installed before October 2010.

5) The Corps of Engineers, led by the Chicago District, and many other agencies are continuing to work to find ways to impede Asian Carp migration. The Rock Island District is working with the Chicago District and CRREL to develop technology and techniques that may reduce or eliminate the threat to lock gates and accompanying equipment posed by ice formation. In addition, the Rock Island District is supporting the Chicago District's efforts to look at numerous conceptual designs of screens that might be installed to further restrict pathways at the locks and controlling works. We are identifying and evaluating the value, benefit, and logistical challenge of each concept.

I declare under penalty of perjury that the foregoing is true and correct, pursuant to 28 U.S.C. § 1746.

Executed on February 24, 2010

Rock Island, Illinois

Michael D. Cox

Michael Cox

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DECLARATION OF SHAMEL ABOU-EL-SEOUD

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1. My name is Shamel Abou-El-Seoud. I am the Chief of the Construction-Operations Branch for the Chicago District, U.S. Army Corps of Engineers. I have held this position since April 2003. My responsibilities include managing and directing the Civil Works construction contract administration, the operations and maintenance of the Chicago Harbor Lock and seven harbors along the southern end of Lake Michigan, and the Emergency Management Readiness response planning and execution. I have been

with the Chicago District for thirty two years. Prior to this position, I was the Chief of the Programs and Project Management Branch, Assistant Chief of the Engineering Division, and Chief of the Engineering Management Branch. I am a graduate of Michigan State University where I earned a Bachelor's Degree in Civil Engineering, and I am a Registered Professional Engineer.

2. The Chicago Harbor Lock is scheduled to be closed for necessary repairs from November 1, 2010, through April 15, 2011, based on the Corps' Chicago Harbor Lock Major Rehabilitation Evaluation Report for Fiscal Year 2001 dated March 1999, as revised. The closure is required to replace all four of the lock's existing sector gates and operating machinery with new gates and operating machinery. This was funded on July 15, 2009, with American Recovery and Reinvestment Act funds. The scheduled start date is contingent upon fabrication of the new lock gates. The Corps issued a notification of the closure of the Chicago Lock to navigation on January 20, 2010 to over 100 parties, including local, state, and federal agencies, commercial navigation interests, recreational users, environmental groups, and members of the general public. This repair project will not impact O'Brien Lock and will not impair the use of the sluice gates at the Chicago River Controlling Works for flood control or water quality purposes.

3. The time period for this long-planned replacement was chosen to coincide with the off-season for navigation traffic through the Chicago Harbor Lock and with a time period of historically decreased flood risk. The bulk of navigation traffic through the Chicago Harbor Lock is commercial tour boats and recreational vessels, with the majority of use from April through October. For example, in 2009, the following lockages were recorded by month at the Chicago Lock: 302 (January), 93 (February), 87

(March), 548 (April), 1708 (May), 1908 (June), 2153 (July), 2059 (August), 1751 (September), 1113 (October), 404 (November), and 67 (December).

4. Bulkheads will be placed on both sides of the lock gates in order to de-water the gate bay and allow removal of the lock gates. Because the bay will be de-watered, it will not be subject to freezing from water, and so is not required to be constantly cycled during rehabilitation operations next winter. The Chicago District has a plan in place to respond in the event of major flood events that would require the flow capacity of the locks to be available. The Corps will station a floating barge carrying a crane by the lock and will use the crane to remove the bulkheads for flood control, if necessary. The floating barge and crane will cost approximately $12,000 per day. The bulkheads would have to be taken out, on an emergency basis, in order to accommodate significant flood waters.

5. Replacement of these lock gates and operating machinery is critical to the integrity of the Chicago Area Waterway System. This equipment has not been replaced since the lock was constructed in 1938. If these lock gates fail in a closed position, water could not be released into the Lake during a major flood event, thus significantly increasing the flood risk for the Chicago area. If these lock gates fail in an open position, water will flow from Lake Michigan into the CAWS in an unregulated manner. Further, the gates would not be available to assist in impeding the movement of Asian carp or other aquatic nuisance species, should that use turn out to be a feasible continuing use of the gates, if they fail due to lack of repair.

I declare under penalty of perjury that the foregoing is true and correct.

February 24, 2010

Shamel Abou-El-Seoud

IN THE SUPREME COURT OF THE UNITED STATES

Nos. 1, 2 and 3, Original

STATE OF WISCONSIN, ET AL., PLAINTIFFS

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF MICHIGAN, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF NEW YORK, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

ON RENEWED MOTION FOR PRELIMINARY INJUNCTION

DECLARATION OF CAPTAIN LUANN BARNDT, USCG

DECLARATION

1. I hereby reaffirm and clarify the information set forth in my declaration dated January 4, 2010 and filed in support of the Memorandum for the United States in Opposition to Michigan's Motion for Preliminary Injunction, (App. 136a-151a).

2. The United States Coast Guard is assigned to perform 11 missions: Search and Rescue; Ports, Waterways and Coastal Security; Drug Interdiction; Aids to Navigation; Living Marine Resources; Marine Safety; Defense Readiness; Migrant Interdiction; Marine Environmental Protection; Ice Operations; and other Law Enforcement missions. See 14 U.S.C. generally.

3. Coast Guard vessels lock through the Chicago and O'Brien Locks to fulfill the Coast Guard's missions, which protect public health and safety. As explained below, if the locks are shut or bulkheaded closed, Coast Guard boats may not be able to respond to emergencies in a timely fashion.

Use of Locks During Summer Months (April to October)

4. During the peak recreational boating months between April and October, the number of boats operating on the Chicago Area Waterway System (CAWS) is much greater than during the winter months. There are more waterfront marine events, tourism, etc. The ability for the Coast Guard's boats to lock through becomes extremely important and impacts our ability to respond to operational needs. If the locks fail or are otherwise effectively inoperable (as they would be if they were bulkheaded), the Coast Guard's response times will increase throughout the year, including the busier summer months. This could cause an increase in risks to mariners and the general public.

5. Currently, the Coast Guard Station Calumet Harbor (which is on the lake side of the O'Brien lock) is rated for two ready boats in the summer months. In the summer, this means at any time, two boats and two boat crews are on call to respond to emergencies. During peak boating season, from Memorial Day to Labor Day, Station Calumet Harbor stands up a seasonal Station Chicago, referred to as Station (small) Chicago (see paragraph 51 of my first Declaration) which has docks on both the lake side and river side of the Chicago Lock.[1] During that time, Memorial Day to Labor Day, one of Station Calumet Harbor's two ready boats and crews is deployed to Station (small) Chicago. If, for example, there are two emergencies on the river side, the Coast Guard is able to split these assets and move the boats between Stations as needed, because the lock gives the Coast Guard the operational flexibility to respond to either side of the locks.

Use of Locks During the Winter Months (November to March)

6. Even though most recreational boats are pulled out of the water from November through March (or head south for the winter), and Search and Rescue cases significantly decline, the Coast Guard is still required to respond if an emergency arises. In the winter months, for Station Calumet Harbor, the readiness standard is reduced to one ready boat, meaning the boat uses the locks to respond to emergencies on the river side in a timely manner.

[1] Paragraph 52 of my January 4, 2010 declaration refers to the Station (small) Chicago as being on the lake side of the Chicago lock. To clarify, Station Small Chicago straddles the Chicago Lock. The Coast Guard's assigned docks are located on the river side of the lock. However, the Coast Guard docks its boats on both the river side and the lake side, as space permits and circumstances warrant. For example, if an event is occurring on the lake side of the lock and there is the potential for search and rescue operations to occur on that side, the Coast Guard would preemptively dock a boat on the lake side of the lock.

7. Depending on water conditions, in the winter months, the Coast Guard patrol forces pull the boats out of the water and keep them on trailers. The boats have aluminum hulls and foam collars and are not capable of operating in any ice conditions. One other factor to consider in the winter months is the condition of the boat ramps. If the boat ramp is rendered unusable due to ice conditions, the boats cannot be deployed. In those conditions, the Coast Guard uses the only other option it has - air assets to affect safety and security missions. These assets are not ideal in an urban environment but in the event of an emergency, we will use any asset we have available to save lives. Additionally, these aircraft are flying from either Traverse City, or Detroit Michigan.

8. In the event the locks are closed for maintenance in winter (as the Corps intends to do next year from November, 2010 to April, 2011), the Coast Guard will keep a ready boat on a trailer at Station Calumet Harbor and respond to operational requirements as weather and resources allow. This could lead to increased response times by an average of 90 minutes, while the locks are closed for maintenance. The Coast Guard understands that this temporary increase in response times during the winter, when there are fewer search and rescue operations, may be necessary to conduct repairs that are necessary to preserve the continued operation of the Chicago Lock, which generally provides for faster response times.

Michigan's Request that the Coast Guard Dock Vessels on Both Sides of the Locks

9. Michigan's brief states that the obvious solution is to dock vessels on both sides of the lock. This is not as simple as stated. In order to maintain the Coast Guard's Response Readiness standard, a Station is usually manned 24 hours a day, 7 days a week, 365 days a year. The minimum response capability for that Station calls for one boat in readiness status, while another is in maintenance status or training. By putting one boat on either side of a closed lock, as discussed above, one is effectively splitting the available assets, such that in effect, until those boat assets are augmented from elsewhere, the Response Readiness standard will not be met. In order for the Coast Guard to meet the mission of a two-hour response time under such conditions, an additional Station would need to be resourced and manned.

10. In order for the Coast Guard to stand up a separate unit to support full-time Coast Guard operations in the CAWS, the Coast Guard would have to acquire the requisite property and make site improvements, which would cost approximately twenty to thirty million dollars. The Station would be operational an estimated 3 years after receipt of funding for property. A full-time new Station Chicago located river-side would require 25 dedicated personnel. The Coast Guard would be unable to staff this Station year-round using existing personnel at Station Calumet Harbor. These personnel would have to be drawn from other Coast Guard Stations, thereby decreasing the donor Stations' respective response capabilities.

11. The United States Coast Guard used its discretionary function to allocate resources so as to best respond to its missions. Closing the Locks in the Chicago Area Waterway System, especially during the summer months, would significantly impact not only operations in the Greater Chicago area, but would impact resource allocation across the Great Lakes as well.

I declare under the penalty of perjury under the laws of the United States that the foregoing is true and correct.

Dated: 24 FEB 2010

Luann Barndt
Captain, U. S. Coast Guard
Commander, USCG Sector Lake Michigan

IN THE SUPREME COURT OF THE UNITED STATES

Nos. 1, 2 and 3, Original

STATE OF WISCONSIN, ET AL., PLAINTIFFS

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF MICHIGAN, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

STATE OF NEW YORK, PLAINTIFF

v.

STATE OF ILLINOIS AND METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO, ET AL.

SECOND DECLARATION OF CHARLES M. WOOLEY

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1. My name is Charles M. Wooley. I am employed by the United States Fish and Wildlife Service as the Deputy Regional Director of the Midwest Region (Region 3). The Midwest Region includes the states of Minnesota, Iowa, Missouri, Michigan, Wisconsin, Illinois, and Ohio. I have been an employee of the Fish and Wildlife Service for 31 years and have served as Deputy Regional Director for the Midwest Region for 6 years. In my

capacity as Deputy Regional Director for the Midwest Region, I am the line supervisor for all of the Region's biological programs, including the Region's Fisheries and Aquatic Resources Program. I report directly to the Regional Director. My responsibilities include the supervision of initiatives within the Midwest Region to manage and control aquatic invasive species.

2. The Fish and Wildlife Service, working through the Fisheries and Aquatic Resources program, provides leadership in collaborative efforts to prevent and reduce the risk of introduction, establishment, and spread of aquatic invasive species. The Fish and Wildlife Service partners with other federal, state, tribal, and local agencies to develop methods and conduct programs designed to prevent the introduction and spread of aquatic invasive species to new locations and limit the growth of established populations.

3. As discussed below, since my January 4, 2010 declaration, the Fish and Wildlife Service has been involved in numerous actions addressing the Asian carp migration, including the development of the Framework, meetings with partner agencies, electrofishing and netting, and facilitating the Management and Control Plan for Bighead, Black, Grass and Silver Carps in the United States.

Planning Efforts

4. The Fish and Wildlife Service has participated with its partner Federal, State, Tribal and non-governmental entities in developing a Draft Asian Carp Control Framework. The Framework provides actions (encompassing actions that are or will occur and potential action options) through which agencies can collaborate. This Framework is designed to be inclusive, allowing new agencies to engage in the process of implementing, developing and consulting on other possible control actions. The Framework includes a matrix of action items that are currently underway or will be implemented. While several

of the actions will be conducted by a single agency or governmental unit, most actions will be cooperative efforts. The proposed Framwork action items include short-term actions and long-term actions.

5. As set forth in the Draft Asian Carp Control Strategy Framework, the U.S. Fish and Wildlife Service is coordinating with Federal, State, Tribal, and non-governmental partners on actions to prevent the introduction and establishment of aquatic invasive species, or to mitigate resource impacts from introduce species. Under the Draft Framework, along with the other participating agencies, the Fish and Wildlife Service is proposing to engage in short term and long term activities to address the threat of Asian Carp migration into the Great Lakes. Actions in which the Fish and Wildlife proposes to participate include:

    a. Unified Action 2.1.1, Targeted Removal within the Chicago Area Waterways System;

    b. Unified Action 2.1.2, Enhanced eDNA Testing, Contract Commercial Fishing, and Conventional Monitoring in "High Risk" Locations;

    c. Unified Action 2.2.13, Increased Lacey Act Enforcement of Illegal Transport of Injurious Wildlife;

    d. Unified Action 2.2.15, Integrated Pest Management;

    e. Unified Action 2.2.16, State and Interstate Aquatic Nuisance Species (ANS) Management Plans;

    f. Unified Action 2.2.17, Activities to support Aquatic Invasive Species priorities under the Great Lakes Fish and Wildlife Restoration Act; and

    g. Unified Action 2.2.18, Competitive Funding Opportunities.

Each of these actions is described in detail in the Draft Framework.

6. In addition to the actions proposed within this framework, the U.S. Fish and Wildlife Service's (FWS) Midwest Region is currently coordinating implementation of the Management and Control Plan for Bighead, Black, Grass, and Silver Carp in the United States (Plan), which was approved by the Aquatic Nuisance Species Task Force in 2007. The Aquatic Nuisance Species (ANS) Task Force is an intergovernmental organization dedicated to preventing and controlling aquatic nuisance species, and implementing the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990. The various NANPCA mandates were expanded later with the passage of the National Invasive Species Act (NISA) in 1996. The Task Force consists of 13 Federal agency representatives and 12 Ex-officio members, and is co-chaired by the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. The Task force coordinates governmental efforts dealing with ANS in the U.S. with those of the private sector and other North American interests via regional panels and issue specific committees and work groups. The Management and Control Plan for Asian carps is available at http://www.anstaskforce.gov/Documents/Carps_Management_Plan.pdf.
7. The Management and Control Plan addresses the threat of Asian carps throughout the United States. The four species addressed by the Plan present a serious threat to North American ecosystems, including the Great Lakes, if self-sustaining populations become established in the wild. A subset of the 133 priority management actions contained within the Plan specifically addresses the challenge of protecting the Great Lakes basin from the establishment and impacts of Asian carp. As lessons are learned through implementation of this plan elsewhere in the region and throughout the nation, applicable solutions will

be adopted for the Great Lakes. The Plan contains specific actions to prevent Asian carp from entering the Great Lakes; or to contain, control, and mitigate impacts in the event of their access into the basin. The Plan uses a multi-tiered, "integrated management" approach based on timely data and current or emerging tactics and tools. Actions include the following:

a. Develop and refine effective methods for sampling populations of Asian carp, and for predicting abundance and distribution (as a risk assessment and risk management decision support tool);

b. Constrain Asian carp range expansion/population growth via development and deployment of physical and behavioral barriers to fish movement at critical geographic locations (including sonic, bubble, light, velocity, and chemical barriers);

c. Control (remove Asian carp) through:

    1) Strategic and intensive "recruitment overfishing"

    2) Development and application of chemical control tools and piscicide delivery systems to control bighead and silver carp in an effective, efficient, and work with partners to develop and implement a coordinated Asian carp public outreach and education campaign focused on preventing movement of fish.

8. On February 8, 2010, FWS participated in a conference call/meeting hosted by the Council of Environmental Quality on the topic of the environmental assessment needs and requirements related to short-term actions included in the recently-released Asian Carp Control Strategy Framework. Additional participants in the meeting/teleconference included the COE, USCG, EPA, Department of the Interior Office of the Solicitor, and

others. FWS agreed to provide expertise and support on consultations and environmental reviews required on specific near-term actions included in the Strategy when contacted by lead agencies.

9. At the request of the Army Corps of Engineers, FWS also recently began to develop a risk assessment tool to evaluate various lock opening scenarios. As part of this assessment, the Risk Assessment Team will be evaluating possible modifications to lock operations and structures to reduce the risk of Asian carp passing through locks into Lake Michican. The scenarios that FWS will be evaluating were developed primarily by the Army Corps of Engineers with some input from the Fish and Wildlife Service and Illinois Department of Natural Resources (IDNR). The assessment will be performed by a team of twelve specialists from various state and local entities. FWS began its work on the assessment on February 19, 2010.

Response Actions

10. On January 13, 2010, FWS personnel participated with representatives of IDNR, U.S. Army Corp of Engineers, Wisconsin Sea Grant, U.S. Geological Survey (USGS), U.S. Coast Guard (USCG), University of Notre Dame, and other partner organizations at a meeting of the Aquatic Nuisance Species Barrier Panel Task Force in Chicago, Illinois. Discussion included dialogue on recent eDNA findings in the Chicago Sanitary and Ship Canal (CSSC) and adjoining waters in the metropolitan Chicago area, and development of additional future control measures to stop the spread of Asian carp into the Great Lakes. In discussion of the control measures, FWS and other members of the Task Force discussed the need to conduct surveillance and sampling at the locations where Asian carp eDNA had recently been reported.

11. FWS then proceeded to develop a plan for sampling in locations in the Canal where Notre Dame researchers identified positive eDNA samples. Sampling pre-planning included the preparation of maps and data to guide near-term monitoring activities; selection of sampling sites was based on boat access, results of recent eDNA analysis, and status and placement of ice cover. These fishing and netting operations have a dual purpose -- both to determine whether silver or bighead carp are present above the dispersal barrier and to eradicate any existing individuals. This latter purpose is important because even if silver or bighead carp are present, we do not want to see any Asian carp above the barrier. Keeping the numbers of any Asian Carp very low will prevent the potential for an increased risk that a viable population could establish even if some individuals are present in the CAWS. FWS is working actively with its federal and state partners to ensure that any numbers of Asian carp are eliminated or remain quite low.
12. From February 1-4, 2010, FWS staff sampled three sites for Asian carp in the North Shore Channel, CSSC, and Cal-Sag Channel using floating trammel nets, sinking trammel nets, and electrofishing. To conduct sampling throughout the water column, FWS used a combination of floating and sinking trammel nets to be able to sample both the upper and lower portions of the water column. Trammel nets are set vertically in the water and have mesh of various sizes in order to trap and pre-sort different fish. Trammel nets also are sturdy and useful in capturing large and strong fish, such as Asian carps. FWS also used electrofishing, which I described in detail in my first declaration, throughout the sampling areas.

13. As discussed above, all sites sampled were adjacent to warm-water discharges as fish are more likely to congregate near these locations during winter months due to colder water temperatures.

14. As a result of these sampling events, between 100 and 200 fish were recovered. Common carp and gizzard shad were among the species captured. During the entire exercise, no Asian carp were seen or collected.

15. To complement this exercise, on February 3, 2010, FWS staff flew over a portion of the Illinois Waterway (North Channel, CSSC, and Cal-Sag Channel) in a USCG helicopter to conduct reconnaissance regarding ice cover and location of sampling sites for future near-term sampling efforts.

16. On February 5, 2010, FWS and IDNR staff met via teleconference to plan joint agency sampling efforts on the CSSC, Cal-Sag Channel, I and M Canal, and adjoining waters. The sampling began on February 16, 2010 and will continue through February 19, 2010. Sampling locations were identified, in part, through the over flights discussed in Paragraph 13.

17. To conduct the current sampling efforts, FWS is using three boats, each with a crew of three. The Illinois Department of Natural Resources (IDNR) is using four boats, each with a crew of three. As with our previous sampling, the current sampling is being conducted with sinking and floating trammel nets and with electrofishing. In addition to their employees, I have been informed that IDNR is working with a professional Asian Carp fisherman to conduct sampling. As of February 17, 2010, no Asian carp have been found in the identified sampling areas. To serve as a control, I have been informed that IDNR has deployed one of its four sampling boats to an area of the Illinois River where Asian carp are known to exist. Using the same electrofishing technique that sampling

crews are using in the other areas of the Canal, this crew was able to capture between thirty and forty Asian carps.

I declare in accordance with 28 U.S.C. § 1746, under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief, and is based on my personal knowledge and on information provided to me by employees of the United States Fish and Wildlife Service.

Executed on February 19, 2010

Ft. Snelling, Minnesota

Charles M. Wooley
Deputy Regional Director
Midwest Region
United States Fish and Wildlife Service

IN THE SUPREME COURT OF THE UNITED STATES

Nos. 1, 2 and 3, Original

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SECOND DECLARATION OF DUANE C. CHAPMAN

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1. My name is Duane C. Chapman. I am employed by the United States Geological Survey (USGS) as a Research Fish Biologist. I began working as a Research Fish Biologist in with the United States Department of the Interior in1986. In 1980, I earned a Bachelors degree in Fish and Wildlife Biology from Iowa State University. I earned a Masters degree in Zoology and Physiology from the University of Wyoming in 1985.

2. Before receiving my Masters degree, I worked with grass carp in aquaculture in the United States and in Costa Rica. The first paper I published on Asian carp was based on research I conducted on grass carp, while working towards my Masters degree. In 2002, at the US Geological Survey's Columbia Environmental Research Center, I began working almost exclusively with Asian carps, including tracking studies and other research. I have also authored or co-authored ten published or in-press manuscripts on Asian carp biology, including the book *Bigheaded Carps: a Biological Synopsis and Risk Assessment*. I am a member of the Asian carp Working Group that produced the *Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States* and am chair of the Working Group team responsible for control and mitigation sections of the *Control Plan*. I am a member of the Asian Carp Rapid Response Team for the Chicago Ship and Sanitary Canal and a member of the expert panel for Risk Analysis for Chicago Navigation Lock Operation. I also serve as the Chair of the Research and Risk Assessment Committee of the Mississippi River Basin Panel on Aquatic Nuisance Species, and am the Immediate Past-President of the Introduced Fish Section of the American Fisheries Society.

3. I worked with other US Geological Survey biologists to prepare a biological synopsis of bighead and silver carp, which was published as a book by the American Fisheries Society. That publication provides as complete an understanding of the biology of the fish as was available in 2007. USGS and others have added to our understanding of Asian carps since that publication, but much of the information I report here can be found in that publication.

Establishment of Asian carp in the Great Lakes

Survival and maturation of individual Asian carp in the Great Lakes

4. I believe that individual Asian carps can survive and mature in the Great Lakes. Five or six bighead carp are known to have been captured from Lake Erie. I have length and weight data from only two of those fish, but those two were exceptionally fat and apparently healthy fish. A bioenergetics model has been completed (by non-USGS scientists) that predicts that bighead and silver carp would not be able to survive by filterfeeding on the plankton available in the open waters of Lake Michigan or the other larger Great Lakes, but that they would find adequate nutrition in Lake Erie, and in some bays and inlets of Lake Michigan. That model indicated that a chlorophyll concentration over 10 µg/L would be required for survival of bighead and silver carp. The model is in conflict with information from other sources. Notably, in Lake Balaton, Hungary, where (since the invasion of zebra mussels) chlorophyll concentrations have averaged 6 to 8 µg/L, bighead and silver carp are extremely large and fat, and are apparently successfully filterfeeding on available plankton. Furthermore, anecdotal information indicates that bighead and silver carp have potential feeding behaviors other than filterfeeding on plankton. USGS research beginning in 2010 will evaluate the potential of bighead and silver carp to use other feeding behaviors to survive in the Great Lakes. At this time it remains unclear if Asian carps could find adequate nutrition in the open waters of Lake Michigan, Huron, or Superior. However, even if planktonic or alternative food sources are inadequate in the open waters of those lakes, Asian carps are quite mobile and could likely select habitats within the basin that do have the food resources they need.

5. Likewise, I do not believe that ambient temperatures will be too low for survival and maturation of Asian carps in at least some parts of the Great Lakes. The latitudes and air

temperatures found within the Asian range of bighead and silver carp encompass most if not all of the area of the Great Lakes. Russian research in the 1980s indicated that Asian carps need approximately 2700 degree-days (daily mean water temperature in degrees Centigrade times number of days) annually for maturation and spawning. Large expanses of the Great Lakes, even open water areas, provide well over that minimum annual amount of heat, and Asian carps are quite mobile and capable of selecting waters that are best suited to their survival.

Potential for establishment of a population of Asian carp in the Great lakes

6. The likely survival and growth of individual Asian carp does not necessarily mean that, even with a large propagule pressure, Asian carps would successfully invade the Great Lakes and develop extremely large populations that would cause undesirable economic and environmental problems. This remains an unknown.
7. There are no environments similar to the larger Great Lakes elsewhere in the world where Asian carps have been introduced.
8. Completion of the life cycle and substantial population growth depend on many variables that cannot be adequately evaluated, and unforeseen variables are likely to play a part in this equation.
9. It is impossible to predict with precision whether Asian carps will be able to adapt, produce a large population, and become problematic in the Great Lakes. Nevertheless, as we stated in our book on bighead and silver carps, if Asian carps do develop a large population in the Great Lakes, we believe that substantial undesirable consequences to fisheries and recreation will occur.

10. We have no evidence that bighead carp have reproduced in Lake Erie, although because of the cryptic nature of small populations of Asian carps, the possibility cannot be entirely discounted. Some have stated that the presence Asian carps in Lake Erie without evidence of reproduction is an indication that Asian carps do not pose a threat to the Great Lakes. I do not agree. I believe the presence of such a small number of Asian carps is not adequate evidence upon which to evaluate the propensity of Asian carp to establish a population in the Great Lakes. I believe it would be unusual, but not impossible, for such a small number of fish to be successful in establishing a breeding population in Lake Erie.

11. Many Lake Michigan tributaries in which Asian carps might spawn are not likely to provide adequate conditions for survival of the early life stages, which might provide a buffer against the establishment of Asian carps. There are many unknowns. We do not know the degree to which pheromones play a part in spawning events, or how much sex pheromone is needed to draw a suitor, from how far. Asian carps are typically mass spawners, with many fish spawning in the same place, but we do not know if large numbers of fish are required in the wild for spawning to occur.

12. We cannot be completely sure that Asian carps have not already entered the Great Lakes in sufficient numbers to establish a successful breeding population. Nevertheless, there is no evidence as yet that this has occurred.

13. The best understanding of the current situation is that minimizing the number of invading individuals will minimize the chance of establishment of Asian carps.

Spawning requirements of Asian carps and the Great Lakes

14. Although bighead and silver carp primarily reside in slow or non-moving waters of lakes or off-channel habitats of rivers, they are thought to require large rivers for reproduction. Asian carps spawn in rivers, in locations of high water turbulence. The eggs and young larvae drift in the current. They are slightly heavier than water but remain in the drift because of the turbulence of flowing water. If the eggs and preswimming larvae sink to the bottom and remain there they are generally not thought to survive. Thus it is generally believed that a long river with adequate current to keep the eggs and larvae adrift through this period is required for reproduction of Asian carps and survival of their eggs and larvae. Based primarily on river length in places where Asian carps have been known to successfully establish populations, 100 km is often given as a rough estimate of the minimum river length required. There is some uncertainty as to whether Asian carps would require this river length under all conditions. We do not understand what causes mortality of eggs and larvae that sink to the bottom of rivers; under laboratory conditions, resting on the bottom does not kill Asian carp eggs. Nevertheless, although Asian carps are widely introduced around the world, we can identify no place in the world where Asian carps are currently established without access to a river of approximately 100 km.

15. While I am not an expert on the Chicago Area Waterway System (CAWS), the information I have does not seem to indicate that the CAWS would be a likely place for spawning of Asian carps to occur. Given our current understanding of Asian carp early life history, there does not seem to be enough distance within the canal, even if current and turbulence variables are adequate, to support survival of eggs and larvae within the CAWS.

16. Asian carps have precise spawning requirements that may or may not be adequately provided in the Great Lakes. We do not know how native and introduced predators in the Great Lakes will interact with Asian carps. No aquatic predators in the Great Lakes (except the also-introduced and problematic sea lamprey) have the ability to prey substantially on adult Asian carps, but juvenile Asian carps may be preyed upon by many resident predacious species. We do not know if adequate nursery habitat exists for juvenile Asian carps in or near the tributary rivers in which Asian carps might spawn. Perhaps most importantly, we do not know if the complex stimuli which act on Asian carps to induce spawning behavior will function adequately in the Great Lakes.

Temperature and timing of spawning

17. There is evidence that some Asian carp spawning events have occurred at temperatures of as low as 14 or 15C (59F) and as high as 30C (86F). Most spawning apparently occurs between 18 and 28C (64-82F). In China, most spawning occurs in June and early July, and generally the fish are believed to spawn only once per year. Our research has shown that Asian carps in the United States can spawn at virtually any time during the warmer months, at least May through September if temperature is adequate, and that individual fish may spawn a portion of their annual production of eggs over several different spawning events each year.

Identification of potential spawning rivers of Asian carps

18. In our book on the bighead and silver carp, we identified the United States' tributaries of the Great Lakes (excluding Lake Ontario) that had 100 km of undammed flowing water, the rough minimum river length thought to be required for survival of the eggs and larvae of Asian carps. We found 22 such rivers, and all of the examined lakes had tributaries

with this minimum length. The actual river length required is likely a function of current speed, longitudinal particle dispersal coefficient, and age of larvae at the stage when they leave the drift. In 2009, we developed data that gives strong indication that larvae leave the drift at very roughly 100-130 hours post-fertilization, but the developmental rate of eggs and larvae is strongly dependent on temperature, and we do not yet have a precise understanding of the time between fertilization and specific developmental stages. This year, USGS plans to perform research that provides a more precise understanding of the developmental rate of bighead carp and its relation to temperature. Using these data and data collected on Great Lakes tributaries which may be potential spawning sites, we should be able to determine the suitability of Great Lakes tributaries for spawning of Asian carps and survival of the eggs and larvae. If we know which rivers might be used by Asian carps for reproduction, it will be possible to monitor those rivers (using eDNA or larval fish collections) for attempts to spawn by Asian carps. If Asian carps are found to use these rivers, it may be possible to deny those rivers to most spawning Asian carps through application of barrier technologies.

Numbers of individuals required for successful invasions

19. Although successful species invasions can result from an introduction of only a very few individuals, this is not believed to be the norm for species invasions by vertebrate organisms. Most successful invasions into expansive habitats (habitats other than small islands for terrestrial invaders or small bodies of water for aquatic invaders) occur after repeated introductions or introductions of a relatively large number of individuals. For example, intentional introductions of striped bass and American shad to the west coast of the United States were only successful after repeated introductions of thousands of fish.

20. Invasion scientists use the term "propagule pressure" to indicate the number and quality of invading organisms, and propagule pressure is considered to be directly proportional to the success of invasions. Minimizing the number of invading individuals is key to preventing successful establishment of a species.

21. One successful invasion of an Asian carp to a reservoir is thought to have been the result of an escape of only about 50 fish, but 1) we cannot be sure that there were no other unrecorded releases that contributed to the establishment of that population, and 2) Lake Michigan is very, very much larger than any reservoir.

Movements in the CAWS at winter temperatures

22. I have acquired data from two sources that provide and summarize water temperatures in the CAWS over several years. I have also received responses from US Fish and Wildlife (USFWS) and Illinois Department of Natural Resources employees regarding water temperatures in portions of the CAWS where attempts to capture Asian carp are underway. The CAWS is dominated by effluents except during periods of high precipitation. These effluents result in warmer water than would normally be expected at Chicago's latitude during the winter months. According to available summaries, mean water temperatures in most parts of the CAWS during the winter months range between 6 and 10C (43-50 F). Temperatures measured by USFWS employees in the CAWS reach fished last week (February 14-20, 2010) never dropped below 10 C (50F), and temperatures of specific discharges measured 12 to 20 C (54 – 80F). At these temperatures, Asian carp in my tagging study were relatively active, fed actively, and moved somewhat randomly over moderate distances (with position changes averaging one kilometer over two to three days). However, in the CAWS, Asian carp movement

may be limited by selection of warmer waters adjacent to warm water effluents, especially if filterable food particles are present in the effluents.

Habitats that may be selected by Asian carps within the Great Lakes

23. It should be noted that in large lakes where Asian carps are established around the world, they tend to live in the open waters of the lake. In their native Asia, and in most places where they have been introduced around the world, Asian carps are lake fishes that require rivers for spawning. The Great Lakes are far larger and different in ecology from any other waters around the world, and their ecology is incredibly complex. Asian carps will undoubtedly select habitats that benefit their survival, regardless of where they exist. It should not be assumed that Asian Carps that invade the Great Lakes will live in the open waters of the lake and compete with other resident fishes in that environment, but that possibility cannot be excluded at this time. Asian carps are clearly capable of successfully invading a wide variety of rivers and lakes and can move long distances to select habitats that are conducive to their survival and growth.

Timing of potential Asian carp population growth in the Great Lakes

24. While we do not know if Asian carps will successfully establish a large population in the Great Lakes, the best information available provides evidence that if such an invasion does occur, it will probably take many years for the population to become problematic. This does not mean that we are not currently at a critical juncture.

25. Fish that invade the Great Lakes now may survive and reproduce for many generations before populations become sufficiently large to become problematic. I draw from multiple lines of logic to arrive at this conclusion. 1) A model based on the life history characteristics of many invaders of the Great Lakes, published in the journal Science,

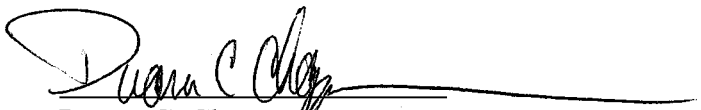
indicates that silver carp would spread slowly in the Great Lakes. 2) Invading organisms often go through a population lag phase of several generations when they invade a new environment, after which populations sometimes increase dramatically. The history of Asian carp invasion of the Mississippi River basin followed this pattern, and Asian carps were present for decades before their populations entered an exponential growth phase. 3) Mean temperatures in the Great Lakes basin, while clearly warm enough in many parts to support growth and maturation, are lower than those experienced by Asian carps in the central United States. Asian carp maturation rate will be decreased, and the length of a fish generation time will be increased. This should slow the rate of population increase in the Great Lakes, at least until a reasonably large number of mature spawners is present in the population. 4) The immense size of the Great Lakes provides so much habitat that I believe that multiple successful generations of population expansion would be required to have a substantial effect. There is some uncertainty to this prediction, but it is my strong belief that an Asian carp population expansion to numbers that would cause widespread substantial economic and environmental damage is most likely to take at least one to three decades.

26. This possible pattern of invasion provides both opportunities and problems. If Asian carps are able to establish in the Great Lakes, we may have some time to devise control methods that would prevent their eventual population expansion. Because of their feeding methods, Asian carps are not often captured by anglers. They are more net-averse than most native fishes. When at low densities, adult Asian carps are amazingly difficult to capture with any standard fisheries technique. Because of these characteristics, small populations can exist without detection. Small numbers of fish could expand over very

large distances in the Great Lakes, before conditions that precipitate a large population increase are encountered by the fish. However, it is important to remember in the coming years that failure of Asian carps to cause undesirable effects in the Great Lakes over the short term does not mean that undesirable effects have been avoided.

I declare in accordance with 28 U.S.C. § 1746, under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief, and is based on my personal knowledge and on information provided to me by employees of the United States Fish and Wildlife Service.

Executed on February 25, 2010 at Columbia, Missouri.



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