GLMRIS

GREAT LAKES AND MISSISSIPPI RIVER INTERBASIN STUDY

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A P P E A R A N C E S

MODERATOR:

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USACE, Chicago District

PANEL:

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C O N T E N T S

P R O C E E D I N G S

MS. FLEER: Good afternoon, everyone. I'd like to welcome everyone to this afternoon's meeting about the Great Lakes and Mississippi River Interbasin Study, also known as GLMRIS. My name is Lauren Fleer. I'm with the U.S. Army Corps of Engineers Chicago District, and I'm going to be moderating today's panel.

So before we get started, I'm going to just address a few minor housekeeping issues. Out the door and to your left is the bathrooms, and then out the door and to either side is the exits. When you arrived today, there were a few materials available at the welcome table. The first was the meeting agenda printed on green paper which shows what we have planned for this afternoon. Secondly, there was some frequently asked questions on a blue sheet of paper. And thirdly, there was a summary of the GLMRIS Report shown here, which is basically an abbreviated version of the much lengthier study that the Corps of Engineers released on January 6th. The full study as well as the summary report are both available at our website, which is glmris.anl.gov which is the first web address shown on the back of the pamphlet, so if you'd like more information at

any point in time, I'd encourage you to go to the website.

I'd like to introduce you all to our panel this afternoon. On your farthest left is John Goss, who is from the White House Council on Environmental Quality. In the middle is Colonel Frederic Drummond, who's the Commander of the Chicago District Army Corps of Engineers. And then on your right is Dave Wethington, who is also from the Chicago District of the Army Corps of Engineers and who's the project manager for the GLMRIS study.

After our panelists give some brief presentations, we're going to have plenty of time for discussion. We really have two goals in today's meeting. The first is to present the results of the GLMRIS study, but secondly and more importantly is a chance for us to hear from you, to hear your questions and your comments as well, so I want to thank those of you who have preregistered on our website to speak this afternoon, and if you did not have the opportunity to preregister but know that you'd like to make a comment or ask a question, I do encourage you to fill out a yellow comment registration form. We'll have plenty of time, like I said, to have lots of discussion afterward. So

thank you so much for coming out today. Without any further ado, I'll hand it over to John Goss.

MR. GOSS: Good to see the really concerned people here today. It's a great turnout for a very cold day. Appreciate it. Thank you to the GLMRIS team for bringing us what I think you'll see is a very thorough analysis of alternatives in the Chicago waterway. It's very complex. We need your help. We are here representing federal agencies -- Corps of Engineers, the administration -- asking the region to look at these alternatives and help us narrow the list down. We really need to get it down to one alternative if possible that the GLMRIS team could then move forward on design and hopefully get moving on this timeline. As you're going to see, it could be quite long for some of these options.

And also, we're hoping that we can develop a consensus from the interest groups, from the states, from everyone who's concerned about this. So try to think about what is it that is doable and fundable and really has potential for congressional action as an alternative that we can move forward with.

Also, I'm going to give you just a quick

update on what's under Alternative 1, which are the continuing Asian carp controls. I do work for the White House Council on Environmental Quality and I've had for the last three years the privilege of coordinating the regional group that has worked on Asian carp control, and I want to thank Minnesota DNR for being very major contributors to that team of people with their expertise and actually leading on a number of areas in developing strategies. We have a four-part strategy, which is an effective electric barrier, extensive monitoring, developing new control technologies, and the long-term solution is the GLMRIS study which we're here today with, replacing the original electric barrier this year and next year with a new one, working also with the barge industry.

We've had some recent findings that some small fish may still be moving through the electric field, and we're going to have to work on that, and the barges may in fact be able to move some fish toward the electric barrier or into it. So we're going to have a task force come up with a way to solve that challenge. We're also field testing other technologies besides the electric barrier that could be fish barriers, deterrents such as carbon

dioxide, ozone, possibly chlorine, possibly some other things that we have teams of people researching right now.

Commercial harvesting of bighead and silver carp continues. Over 50,000 fish were taken by commercial harvesters in the two or three lock pools below the electric barrier to continue to keep the pressure of the fish population off the barrier. And we continue to monitor above the barrier between the barrier and Lake Michigan very extensively and doing eDNA testing on a regular basis also. That has expanded around the Great Lakes and many of the tributaries also in the last year.

The Corps did complete a risk assessment on the other possible water connections across the Continental Divide from New York to Minnesota. We had 18 of those that were fully evaluated. Only one of those rated as a high risk, and that was in Fort Wayne, Indiana, between the Maumee and the Wabash River, and we do have a control strategy being designed now with working with NRCS and Indiana DNR to develop a permanent barrier for that one high-risk location, and the other states are working on the medium risk locations. Just wanted to assure you that we haven't forgotten about those and we're

working on strategies to close all of those connections also.

There is a National Carp Control Plan which would include the Mississippi River, Ohio River, Missouri, all the other areas of the country threatened by Asian carp. Unfortunately, it's had very minimal funding in the past, so as you're thinking about what the options are, I think in Alternative 2 you'll see that it proposes doing as many best management practices as possible. That would include in your area here on the Mississippi, on the Ohio, further away from Chicago to help work on this carp population and eventually moving towards restoring our native fish populations.

We also need the help of all the states who are in this area outside the Great Lakes. There are 13 species that are talked about in the report as being the highest risk of concern. Ten of those are in the Great Lakes threatening to move to the rivers, to your areas, and certainly responses and concern expressed in comments from all of the areas outside the Great Lakes states are really important if we're going to get the political momentum to get funding and authorization to move ahead on these actions that are proposed.

Just a few closing thoughts for me. Collaboration is really important to finding solutions, so think what projects can move forward with the most support. We've gotten a lot of help from industry groups, from environmental groups, and we'll continue to rely on their comments and recommendations and particularly on the states that are partners in the project for their comments. We need to move quickly while we've got some interest and momentum and get something recommended to congress that we can all agree on.

Just as a final thought, the Great Lakes have had a lot of success on some very major challenges and projects. Sea lamprey control is probably the best example of invasive species control that everyone has contributed to since the 1950s. Great Lakes Water Quality Initiative, working with our Canadian partners is a really significant accomplishment, as is the Great Lakes Compact to protect our water levels. The Great Lakes Restoration Initiative, which the Obama administration has supported strongly and it has been funded again in the 2014 budget, is providing the resources for a wide range of restoration projects that ten years ago we didn't know might

ever be possible, so we want to add Asian carp control and invasive species control to that list. With your help, I think we can accomplish that. Thanks, and we do have a website if you want to check on projects, asiancarp.us, and we want to thank Fish & Wildlife Service and Katie, who's here today who manages that website. Thanks.

COLONEL DRUMMOND: Well, good afternoon, everyone. I'm certainly glad to be here in the Twin Cities area to bring you the GLMRIS Report and to have an open and frank discussion as John had talked about. Before I go into that, I'd like to make a quick announcement. I know we have representation from the Mississippi River Valley division here. Thank you for coming in. As well as we got representation from the St. Paul District. The DPM's here, thank you, as well as the St. Paul Deputy Commander, Major Thompson, he's here. Been a very good friend of mine. Colonel Deschenes is here from Rock Island, so we've got good representation. Rock Island works very closely with Chicago because we both jointly own part of the Chicago Area Waterway System.

So why are we here. GLMRIS is a complex study that examines opportunities to prevent aquatic

transfer of any ANS, not just the fish like Asian carp that you hear about in the paper, but other species. John hit on it a little bit. You're going to hear tonight the term 13. Ten of them are coming from the Mississippi River, from the Great Lakes down to the Mississippi, and then three are moving up from the Mississippi into the Great Lakes. The GLMRIS Report's going to outline a variety of potential prevention methods and presents an evaluation of criteria to help members like you sort of understand the various alternatives. The purpose of the GLMRIS Report is to paint an objective picture of several alternatives to offer decision-makers, stakeholders, and the public like yourself with information about these alternatives. This report is very unique in comparison to most Corps of Engineer reports in that it identifies a range of options and is adaptable for incorporation of future technologies, and Dave will hit on several of these tonight.

Apart from the GLMRIS Report, the Corps of Engineers is going to stay heavily involved in the Asian Carp Regional Coordinating Committee, which we have been, and I'd like to tell most folks, in the last two and a half years of my dealing with the

ACRCC, it is probably one of the flattest organizations in the federal government. And when I say "flat," you know, my PM has a direct line to the ASA. John Goss has got a direct line to Nancy Sutley, and so the system is very flat and various levels of government have listened in this ongoing problem.

You're going to hear tonight a little bit about shared responsibility, and we do believe that this whole GLMRIS Report, what it's going to do is outline a range of options and technologies. It's going to require a shared responsibility from everybody, whether it's state, local, state DNR, and other organizations.

Just wanted to point out, you know, we've been doing this on the road here for the last two weeks. The GLMRIS Report came out on the 6th of January. The first day, we briefed 53 representatives in congress and their various staffs, got the information, started that. The report's been published in well over 7,000 media stations, so the information is getting out.

Tonight when you came in, you should have received what we call a small executive summary book. It's about 25 pages in length. I call it a

good primer. Once you start reading this, it's going to really make you want to go to the full report, which is 232 pages. And then if that's not enough, we have the Tom Clancy novel of about 10,000 pages of technical data. So there's a lot of information out there, and by all means, I would encourage you, after this brief tonight, to go back to the website and just sort of analyze this and digest it. You'll see that the range of options has got a little bit for everybody out there.

What's going to happen now, I'm going to turn it over to Dave Wethington. He's the PM. He's going to go through about 18 slides, about 20 minutes, and then we're going to turn this mic around and we're going to have a discussion with you, because that's why we're out here. We want to hear from the public. We want to hear your thoughts and ideas. And Dave will tell you also, throughout the next 30 to 45 days, how you can get online and submit your thoughts and ideas as you further analyze this very -- what I call a very complex report covering the Chicago Area Waterway System and prevent, you know, the interbasin transfer of aquatic nuisance species. So without further delay, I'd like to turn it over to Dave. Dave?

MR. WETHINGTON: Thank you, sir. Can everybody hear me all right? Yeah, it's pretty loud. Actually turned this mic on earlier. They gave me a live-air mic, which is dangerous because I'll start moving around.

I want to thank everyone for coming tonight to spend a little bit of time with us. I think one of the most important things that come out of tonight are what Colonel Drummond and John Goss already mentioned to you: The idea that aquatic species control is a shared responsibility and that your voice is important are really the two key things for us to understand this evening.

I want to spend a few minutes talking about the GLMRIS Report itself, the process that we used to come to these eight alternatives I'll present as well as really outline them so that you can help answer questions, ask questions, and we'll try and keep you engaged.

So the scope of the study, we were given authorization to begin GLMRIS in November of 2007. We received funding to actually begin the study in about midyear 2009. My name is Dave Wethington. I've been the project manager for the GLMRIS study since its inception in 2009. I'm very lucky to have

a very talented team of engineers, scientists, biologists, and many others who helped put this report together. I think Colonel Drummond mentioned the expanse of the team. We have over 19 different districts that were involved in putting this together. Somewhere around a hundred different people, a hundred individuals, touched this report in some way.

The scope of what we were trying to do was identify a range of options or technologies that were available to prevent the transfer of aquatic nuisance species between the Great Lakes and Mississippi River basins. That basin divide, that interbasin line that our focus was on, is outlined in kind of the brown color behind me.

The goals of our study were two-fold. Number one, try and prevent aquatic nuisance species transfer. We did that through the application of a range of different options and technologies and then, with the implementation of those options and technologies, investigate what kind of impact those may have on the existing uses and users of the Chicago Area Waterway System and, if there were adverse impacts identified, ways to mitigate or to kind of compensate or overcome those adverse impacts

directly as a result of those alternatives.

As both Colonel Drummond and John mentioned, stakeholder engagement has really been a key aspect of GLMRIS since its inception. We formed an executive steering committee in late 2009, early 2010 which was comprised of federal agencies and governmental agencies and regulatory agencies. It helped oversee the formulation of this study to make sure that we were plugged in with all of those folks who needed to be plugged in at the federal and state level in coming up with this range of alternatives. Your input was equally as important, which is part of why we are here today.

In July of 2012, we received legislation, intervening legislation, that kind of modified the scope of our study a little bit. It asked to do a few things. Number one, it asked for us to complete the study on an expedited timeline: Within 18 months. We received the legislation on July 6th of 2012 and 18 months later, on January 6th of 2014, turned in a completed report. It asked us to focus our efforts on the Chicago Area Waterway System, the CAWS, as we call it. Now, you'll see this line behind me, and Mr. Goss spoke to it a little bit previously, but there are other aquatic pathways

that may align along that interbasin divide. We've done a lot of great work as the Corps of Engineers and partnering with other agencies to identify where those potential pathways may lie. Those other pathways, which are primarily episodic, which means that they usually only form during significant precipitation events when you have a headwaters of a couple streams combining to form a temporary pathway, as well as a couple of them which are terrainial, but they're much simpler in terms of the connection itself than the Chicago Area Waterway System, perhaps something like a farmer's ditch.

So this legislation asked us to really focus on the most complex issue with regard to the other pathways, focusing on the Chicago Area Waterway System. It also asked us to evaluate hydrologic separation or the placement of a physical barrier to potentially prevent the transfer of species within the Chicago Area Waterway System.

Now, the CAWS, as we call it, is a very -- kind of a complex multiuse waterway. Some of the primary uses are listed up there behind me: Navigation, commercial cargo navigation, recreational boating, water supply, water conveyance. Something that I didn't know coming

into being project manager of this study is that somewhere between 65 to 85 percent of the total volume of the Chicago River is actually comprised of municipal treated wastewater, and so the Chicago Area Waterway System serves as a very important conduit to move water out of the system through Chicago. It also serves as a very, very important tool for flood risk management. While water normally flows from Lake Michigan into any one of these five points and flows downstream toward, eventually, the Mississippi River, when we have significant precipitation events, significant rainfall within the Chicago area, we are able to operate the Chicago Area Waterway System such as we can draw down the water or, during significant precipitation events, backflow water such that water can come out back into Lake Michigan from the city. This is a very important tool for the nearly 9.2 million residents that live in the Chicago area as well as the surrounding suburbs.

The Chicago Area Waterway System is the primary aquatic pathway between the two basins, and so it serves as the primary connection for potential aquatic nuisance species transfer. The GLMRIS Report itself provides a range of alternatives

designed at a conceptual level. It also provides for mitigation -- so again, those adverse impacts which are a direct result of any implementation of alternatives -- at that same kind of conceptual-level design. It provides cost estimates for each one of the potential alternatives, and the cost estimates are best used for comparing among the different alternatives. While we used a Corps of Engineers cost estimating process to estimate the costs among the various alternatives, because of the conceptual-level design, they're really best used, again, as a comparison tool among the different alternatives.

The most important use of the report itself is a tool for decision-makers. I'll speak to it near the end of my presentation, but we list a number of evaluation criteria or elements of each alternative that can be utilized to evaluate and look at tradeoffs among different alternatives. Examples include total cost, time to implement, potential other impacts, economic impacts, environmental impacts, etc. There would be additional analysis, additional detail work, design, perhaps completion of environmental compliance documentation if you were to proceed with the

implementation or construction of any single one of these alternatives.

So, again, we're at a conceptual level of design, conceptual level with costs, but enough information and enough data to provide decision-makers, members of the public such as yourselves, enough insight into kind of the pros and cons of each one of the alternatives.

Very briefly, looking at how we put together the range of alternatives in GLMRIS, we did three things. Number one, we identified the pathways. Here the focus was primarily on the Chicago Area Waterway System. Second, we looked at what species were potentially of concern. We identified over 200 species, and of those, 35 were of particular concern for potential transfer between the basins. Of those 35, we identified 13 that were high or a medium risk with regard to their ability to transfer to the opposite basin and become established and have some sort of adverse impact if they did establish. We also evaluated possible controls. Since we knew what species we had, we knew the pathways we were working with, we could look at the full range of possible controls, and we went out to the public, we went out to the technical

experts to get a range of potential controls. Of those controls, we identified over 90 individual types that could be potentially applied. We screened them down based on input, again, from the public and from technical experts.

So we took this information on the connections, on the species, and the controls and put that all together utilizing background information about economies with regard to commercial cargo navigation or recreational fishing to help provide the wealth of information that's within the GLMRIS Report.

Before I get into speaking about each of the individual alternatives, I want to spend a moment with the technologies. Over on the far right-hand side, you'll see a description or a picture of the physical barrier. It's a pretty simple concept: We use some sort of a physical structure to prevent untreated surface waters from either basin to intermix. You may be familiar with the concept of electric barrier, but in GLMRIS, we've taken that idea and kind of turned it up a notch. We include the construction of an engineered channel that allows us to refine and optimize the construction of the barrier system as compared to

how it's being implemented near Chicago today. Currently the barrier is placed at the bottom of an unimproved channel, but having a constructed channel allows us to place the arrays of the electric barrier in different configurations, so perhaps construct insulated properties into the barrier so that we don't have issues with stray current.

In the GLMRIS report, we also came up with some novel applications of existing ideas. The GLMRIS lock on the upper left-hand corner is one of those examples. The idea of the GLMRIS lock is fairly simple. It takes a traditional lock chamber and introduces a pumping action such that water is flushed through the lock, cleaning it of floating aquatic nuisance species. How does it treat the ANS treated water? From an aquatic nuisance species treatment plant. Again, a conceptual idea based on existing technologies in drinking water. We use screens, filters, and UV light to inactivate potential aquatic nuisance species that make it through the treatment train. So you combine something like a GLMRIS lock with an ANS treatment plant with an electric barrier to try and address as many different species as you can.

On the upper right-hand side are really the

most simple way to look at what species are potentially transferred in the basins. We've done a lot of specific research identifying 13, you know, fish or algae or viruses, but really, when you look at how aquatic nuisance species move in a channel, they can swim, they can float, or they can hitchhike, "hitchhike" meaning they can move through like on a barge train or with navigational rec nav boats, etc.

So we use each one of these potential technologies, either alone or in combination, to try and address as many of those methods of movement of aquatic nuisance species. So I'll spend the next few minutes going over each of the alternative activities. I believe that everyone has one of those summary books. You can follow along if you'd like. The lower left-hand corner of this screen will tell you what alternative I'm on and the book will have limited additional information, but I would also like to put forth the full version of the GLMRIS Report. It is on our website. The location of the website is on the back of your summary book: glmris.anl.gov. It's on the back of the book. It's got a lot of fantastic information about the report itself as well as the other pathways, and it's

really a very helpful tool.

So Alternative Plan 1 is what we call the baseline alternative or the no new federal action. I prefer to call it the staying activities alternative because there's, in fact, a lot of action that is currently going on. There are efforts being implemented by federal, state, and local resource agencies at controlling, managing, trying to prevent aquatic nuisance species from moving around within the basins or the rivers.

Baseline activities also include Corps of Engineers specific work, such as the operation and maintenance of existing electric barriers, the construction of a new barrier, or other activities that are supplemented through the Great Lakes Restoration Initiative Program, such as the monitoring and the fishing that John Goss described a little bit earlier. This baseline alternative we use as a yardstick to measure the additional risk reduction that is potentially achieved by each of the subsequent alternatives. This establishes our baseline. This is what is going on currently and what is expected to continue over the next 10, 25, or 50 years.

Alternative Plan 2 is a nonstructural

technologies alternative. And very simply, these are potential control technologies that could be implemented without the construction of a physical structure. What kind of activities would they include? Active management. Something like John described as fishing down carp populations or, as the picture at the top kind of depicts, the identification of where perhaps an aquatic invasive plant may be in a certain area and the application of that aquatic herbicide to control the spread of that plant, thereby preventing the transfer of that plant between basins.

It includes elements of education and outreach: Why is it a good idea to clean your boat when you move it from one waterway to the other or why is it a bad idea to just dump the bait bucket over the side when you're done after a day of fishing.

It includes things like education and outreach, laws and regulations, things like the promulgation of the Lacey Act to prohibit live transfer of certain aquatic nuisance species of concern. Bilge and outflow management is another very important non-structural measure.

So as mentioned earlier, the successful

implementation of these and of any of the other alternatives I'll be presenting today truly is a shared responsibility. It's anglers such as yourselves or boaters such as yourselves that can help make this be a successful route to at least trying to slow down if not completely prevent aquatic nuisance species transfer. Unfortunately, I can't stand here today and tell you that this full range will be successful at preventing this -- the transfer of aquatic nuisance species. What they are, however, is best management practices, and so we include the implementation of non-structural controls with each one of the following alternatives and we include the estimated cost, which was comprised by coming up with average cost per state, multiplying it by the number of states that these potential technologies could be implemented at along that Great Lakes and Mississippi River basin divide.

Alternative Plan 3 is the first of your two technology alternatives. What this alternative does is very simply identify control points within the system. Here's one on the upper part of the system and the lower part of the system that can be utilized to control the two-way or bidirectional transfer of aquatic nuisance species. Very simply,

it implements an aquatic nuisance species treatment plant that reroutes the flow of the channel at those two points through that treatment plant; hence, flow bypass. The aquatic nuisance species treatment plant is effective at removing aquatic nuisance species of concern from the water at each one of those points. In order for navigation to continue as part of this alternative, we have also included the implementation of a GLMRIS lock. Again, that's that flushing lock structure with electric barriers in those constructed navigation channels book-ending that lock on either side. Those electric barriers control the transfer of swimming aquatic nuisance species like fish from coming into that lock chamber area and, again, the lock chamber uses a flushing action to clear the lock of aquatic nuisance species that are floating within the chamber. These two control points we believe serve as effective controls for a number of the aquatic nuisance species of concern.

Now, if you were having -- if you're going to design an aquatic nuisance species control treatment plant, you would likely design it for a dry weather flow, so the flow that you see most often coming through that point in the river. When

Chicago has a significant precipitation event, you will see the flow in the river increase exponentially, and so in order to deal with those significant volumes of water, in order for that control point to remain effective, you need to find a way to channel and contain that water until it is able to be treated appropriately. You need a number of additional tunnels and reservoirs within this area to control for those large possible precipitation events. For this reason and for the reason for that mitigation, we see an estimated completion time of about 25 years with estimated costs of nearly $15.5 billion.

The second of the two technology alternatives is what we call the CAWS buffer zone alternative. What this concept does is take the idea of aquatic nuisance species control and, instead of having single point for two-way control, spreads them apart, initiating a one-way control point book-ending either side of the Chicago Area Waterway System. The map on the left demonstrates several control points at or near the shore of Lake Michigan that will institute the one-way control of aquatic nuisance species in from the lakes, whereas there is another control point downstream, what we

call the Brandon Road control point, that would inhibit the passage of species upstream. Again, the implementation of this is through GLMRIS locks and aquatic nuisance species treatment plants.

You also notice that there are a couple of physical barriers that are implemented at or near northwest Indiana. The reason for this is because the two streams that are being controlled at those points are primarily not navigable. You can get through them in a canoe or a Jon boat, perhaps, but there doesn't need to be this significant recreational or cargo traffic that goes through, so the implementation of a physical barrier in those two points with the appropriate mitigation for this flood risk is most appropriate at those locations. Because you have a much smaller amount of tunnel and reservoir conveyance that is necessary for that flood risk mitigation, you have a relatively quicker time frame for implementation, at about ten years, at a relatively lesser cost of about $7.8 billion.

If you look within your books, in the gray tables either in the lower right-hand or lower left-hand corners, those will identify what the different kind of levels of cost are and there will be one that speaks to the total cost of aquatic

nuisance species control measures and there are others that will speak to the costs attributable to flood risk mitigation, and you can see how flood risk mitigation in Alternative Plan 3 and 4 contributes significantly to the overall cost.

I'd also like to draw your attention to this one alternative before I move on to kind of give an example of adaptive management. We use adaptive management and the ability to kind of look at how we can implement different types of controls in the future as they become available. Here we have a range of different technologies that can be applied at either side of the system depending on what species are being targeted. We also uniquely have a way for advance risk reduction if, for example, there was only concern about species coming up from the Mississippi River basin toward the Great Lakes. Since there is only a single control point down here at Brandon Road and no associated mitigation, it is possible that the potential exists that this particular structure could be constructed more quickly than that ten-year time frame at a cost less than 7.8 billion. However, in order to get that full two-way control of species that is initially anticipated by this alternative, you're

looking at that estimated time of completion of ten years and about $7.8 billion.

Alternative Plan 5 is the first of two hydrologic separation alternatives. In this alternative, we place physical barriers, hydrologic blocks, if you will, at four points at or near the lakefront, as the title suggests. Again, because we lose the ability to move water freely through the system and there is additional controls and technologies that are necessary to mitigate for potential water quality impacts, you see significant estimated time for completion and a significant estimated cost of about $18.4 billion.

When approaching the other ways to try and physically separate the basins, the team really thought about, you know, hey, we've got these significant costs attributable to mitigation in both the technology alternatives as well as the lakefront hydrologic separation alternative, so how can we get to cracking this nut of flood risk management within the Chicagoland area. So what the team decided to do was place two barriers at or near where the original kind of hydrologic divide would be. We call it a divide; it's kind of overestimating it. Chicago is a very marshy, flat area, and so we're

dealing with a very hydrologically complex topography because it's so flat. However, we were successful in identifying these two locations as places to potentially minimize that flood risk management impact.

However -- there's always a "however" -- when you open up the Chicago River to Lake Michigan from this point on and from this point at Alsip on, you open up a bit of a can of worms. There are two significant water reclamation plants, up on the north side here and on the south side here that contribute significant flows, somewhere around 300 or so million gallons per day at each particular water reclamation plant. Now, I know Chicago has a storied past of having historically bad wastewater and that Chicago needs to clean its water better. I'm not here to talk about that today. I'm here to talk about what would happen if Chicago, like Milwaukee or like Detroit, put in the same kind of water into Lake Michigan.

If you have two water reclamation points with each at 300 million gallons a day for a total of 6 to 700 million gallons a day of clean, treated wastewater, you would still be having a significant load of pollutants to Lake Michigan. You would be

loading things like nutrients, like some particular organic pollutants, things that water reclamation plants or water treatment plants don't even clean today, like pharmaceuticals, and so what we've chosen to do, instead of adding this new load of potential pollutants into a significant natural resource, was reroute the system to points downstream, maintaining the existing flow of the water stream.

We did this for another reason, which is actually kind of very essential to the Corps's mission. I mentioned there was a significant volume of flow from each of those points. This waterway feeds the Illinois waterway which then feeds the Mississippi River, and so we wanted to maintain this volume of water for navigation. In opening up the Chicago River and associated channels to Lake Michigan, you also open up several combined outfalls as well as a host of some potentially contaminated sediments which, taking the conservative approach, we chose to mitigate such that there are not adverse impacts to the water quality of Lake Michigan. So while we did not have significant costs for mitigating for flood risk to the nearly 9.2 million residents of the Chicagoland area, there are

significant costs for mitigation to water quality impacts to Lake Michigan, which are exemplified by that 25-year time frame and the estimated cost of about $15.5 billion.

The last two scenarios, 7 and 8, are hybrid scenarios, and we look at essentially placing a physical barrier on either the upper part of the system or the lower part of the system. As you can see from the title, this lower part of the system is fed by the Cal-Sag channel, whereas this upper part of the system is fed by the Chicago Sanitary and Ship Canal, so in the Cal-Sag Open scenario, we leave this lower part of the system from the lake down through Brandon Road open with the implementation of technologies while placing a physical barrier on the Chicago Sanitary and Ship Canal. Obviously, as was with previous either physical separation or technology alternatives, there would be necessary mitigation, and so that is reflected on the map on the right-hand side, contributing again to a total estimated time of about 25 years implementation and total estimated cost of about $15.1 billion.

The alternate, while it still has a very similar length in time for implementation, in order

to get all those mitigation efforts up to speed prior to implementation of physical barriers, it does have a significantly smaller cost, about half that of the previous hybrid scenario.

At the outset, I mentioned that the GLMRIS Report is really best as a tool for decision-makers and I mentioned evaluation criteria, and these are examples of some of the criteria that are in the report. If you look up the report itself, if you look at the end of the executive summary or look at table 4.2 in the report, there will be a matrix, a table, multicolored, that will give you really a quick snapshot of what's in the report. It will talk about each one of these potential criteria, but you'll certainly want to go back and read in detail for each alternative what the potential environmental impact or economic impacts may be as well as how does that duration of implementation translate to potential risk reduction for that particular alternative.

Before I conclude today, I want to touch on a couple points that I hope I've had the opportunity to cover during my presentation. First, mitigation -- so ensuring that there is not adverse impacts as a result of construction of any one of

these alternatives -- is really the critical driver for cost and for timing. Residual risks will exist with any one of these potential alternatives. While our charge was to look at the prevention of aquatic nuisance species transfer within an aquatic pathway, there are other ways for aquatic nuisance species to transfer between the basins. Human mediated transport. Physically bringing an aquatic nuisance species from one basin into the other. If you don't think it happens, trust me, it does. Duration of implementation. A lot of these, we talked about 25 years for potential implementation, and I realize, I understand that may be too long, but that's a significant risk.

And so this is part of the conversation we're here to have with you today is the identification of what is the biggest concern. What alternatives may help buy down that risk while we get toward the ultimate kind of consensus goal, whatever that may be, toward long-term aquatic nuisance species management if you look at adaptive management throughout the number of different alternatives to see how technologies could adapt and which technologies would be utilized as we move out into the future.

Again, I'll hit on that kind of final topic that aquatic nuisance species control is a shared responsibility. That's why we're here today, that's why we're here speaking to you is because your input, your viewpoints are very important. No matter what, there will be a significant investment, whether it's from our taxes, our waterways, or whatever, toward the future implementation of any one or more of these technological alternatives. Same goes for any of the non-structural alternatives, and non-structural alternatives are even more important that you, as the anglers, the boater, are engaged and involved and understand how you play a role in aquatic nuisance species control. For this reason, we're taking this message to a number of different cities throughout the Great Lakes and Mississippi River basins. We've spent a lot of time in the Great Lakes and now we're headed over to kind of the other side of the house. We're starting up here in the Twin Cities, heading down to St. Louis a little bit later this week, and ending the week at New Orleans.

I do encourage everyone and anyone to please visit our website. We have an open comment period through the end of March -- or I'm sorry --

through the 3rd of March where you can go onto the website and basically make a comment. If you don't get a chance to comment today, it doesn't matter. The comments aren't weighted more here today than they are anywhere else, than on the website. Again, your input is very important.

And with that, please do stay in touch with GLMRIS. You can find information that I spoke about today on the web. It's glmris.anl.gov. You can find us on Facebook, follow us on Twitter, send us an e-mail at any time, and with that, I'll turn the show back to Lauren and we'll look forward to a discussion. Thank you.

MS. FLEER: Thanks very much to Dave and to Colonel Drummond and John Goss, all our panelists, and to all of you for being here. Let's now open it up to your comments and your questions. I think what we'll do is we'll start with the folks who have had the chance to register, either on our website or here today. When I recognize your name, please approach the mic, and I'd like to let everybody know that we have a court stenographer here today who is taking, basically, a record of all the comments and questions and presentations today to be included in our website as part of the public

record of this meeting, so please, if you could, when you begin your comments, if you could start with your name, any organization you might be here to represent, and as well as your ZIP code, your five-digit ZIP code, so we can get an accurate documentation of the meeting here today. I want to apologize ahead of time if I mispronounce anybody's name, and otherwise, let's get started.

I have first Jared Teutsch followed by Peter Sorensen. If you could, just approach the mic when you're ready.

MR. TEUTSCH: Jared Teutsch, Alliance for the Great Lakes, 60602. I'm starting to feel like a groupie of you guys because I've been to so many of these public meetings. First off, thank you again for hosting a public meeting across the region, which I think is so critically important for people to have an opportunity to see, really, the first of its kind, of this kind of report, the great work that the Corps has done into this report, recognizing that this isn't even a full feasibility study so there's more pieces of the puzzle to add after this process. Certainly, the Alliance for the Great Lakes is in full support of separation, so we certainly like, let's say -- I think option six

probably comes the closest to what we've tried to put forward in our communications in terms of what we support, what we believe is the best option for not only the Mississippi, but also the Great Lakes. As you stated when you were talking about -- we're talking about high risk species, there's more high risk species actually going into the Mississippi basin, certainly would move up the upper Mississippi basin into Minnesota, into the Land of 10,000 Lakes, so, you know, Minnesota probably more than any other area has a lot more to lose from an ecological standpoint, but also from an economic standpoint that they have and the quality of their environment. So we recognize that, we urge that that separation move forward as quickly as possible.

Also, as you noted, 25 years is an unacceptable timeline for many of us. I think we also recognize the history that the Corps has done things in a much shorter timeline. You guys have a great history of accomplishing great feats, including reversing the Chicago River, and we're hoping that you're going to re-reverse the Chicago River in your process of looking at this.

I guess I would just -- I would close with a question, and I don't know if you can answer it

for us today, but I'm just curious, as this process moves forward and we move forward from the public comment period, hearing from stakeholders, how do you see -- and maybe you've done this already -- responding to the senate's letter that was sent around from all eight Great Lakes states, 16 senators -- all 16 senators, which is unheard of, really, in this time -- and asking, really, that question of what do you propose to do for next steps? So I'll leave it at that.

MR. WETHINGTON: Sure. Thanks, Jared. Yeah. I believe that the Assistant Secretary of the Army responded to that letter from the 16 senators and said something probably very close to the kind of concept that aquatic nuisance species control is a shared responsibility and that it really does require, while the Corps of Engineers, you know, kind of, in our opinion, has served the leadership role in putting together the information within this report, the future implementation of any one or more of these alternatives will require that shared responsibility, will require, you know, folks to kind of sign up and be responsible and help with that future implementation, so while we are certainly happy to provide support within our

specific mission areas, we do anticipate that there will be others who will need to kind of come forward to the table and help us make that decision. We're looking for that kind of collaborative consensus on a path forward. Looking forward to working with folks like John Goss, the Asian Carp Regional Coordinating Committee, other potential groups that may help build consensus, like Council of Great Lakes Governors, toward that collaborative path forward.

MR. TEUTSCH: Great. Look forward to it.

MR. WETHINGTON: Thank you.

MR. TEUTSCH: Thank you.

MS. FLEER: Thanks very much. I have Peter Sorensen followed by Jill Crafton.

MR. SORENSEN: Peter Sorensen. I'm really here as a private citizen who thought I was just registering and not speaking, but I'm happy to speak anyway and I had some questions.

COLONEL DRUMMOND: Go ahead.

MR. SORENSEN: My ZIP code is 55108. That's where I live. And I had a couple questions. There is a concept of aquatic nuisance species treatment plant addressed in this, which I really

haven't heard of before.

MR. WETHINGTON: Sure.

MR. SORENSEN: Maybe you could sort of fill us in on what that might be and how it would be developed and how efficient you think that might be.

MR. WETHINGTON: Sure. We use the concept of aquatic nuisance species treatment plant based on existing drinking water purification technologies. Very simply, using a treatment train of screens, filters, and UV light to inactivate aquatic nuisance species down to a virus size. So those species that are fish would get screened out by screens, things like plants and other larger floating species may be pulled out by those filters, and anything that passes through, like -- in the water, like an algae or like a virus, would be inactivated very similar to the way our drinking water is cleaned. The City of New York just opened up a huge drinking water plant that uses UV light to clean and disinfect that drinking water process, so the aquatic nuisance species treatment plant would be utilized to specifically address species of concern within the water.

MR. SORENSEN: So there would be some risks? That's a new technology that --

MR. WETHINGTON: It is.

MR. SORENSEN: Some of it's new; some of it isn't?

MR. WETHINGTON: The technology is implemented for drinking water.

MR. SORENSEN: Right. Right. I'm sorry. I guess I'll take my three minutes for questions, maybe, but another question I had, and I'm sure it's in the larger report, but surely some of these, like the separation scenarios, can be phased in so the risk would be reduced in stages and not all or nothing?

MR. WETHINGTON: Well, the concern with that is the mitigation. And with regard to physical separation, both of those have significant components for mitigation for either flood risk or for environmental quality. And so in order to, for example, maybe even get a permit to build a physical barrier and a channel, you would likely need to have that mitigation complete so that mitigation -- you know, so that when you place a physical barrier in the channel, you're not flooding out, you know, some of the nearly 9.2 million residents in the Chicagoland area or you're not contributing significant new environmental impacts to a natural

resource. And so all those components, you likely have to have those mitigation measures in place prior to achieving that final risk reduction --

MR. SORENSEN: Sure.

MR. WETHINGTON: -- step.

MR. SORENSEN: But still, there would be a phasing-in process; it's just hard to quantify it?

MR. WETHINGTON: There may be ways to phase in incremental risk reduction.

MR. SORENSEN: Right. Right.

MR. WETHINGTON: You could do other things in advance of construction of a physical barrier, such as non-structural technologies and the implementation of other types of technologies.

MR. SORENSEN: And then maybe my last question would be is it conceivable that deterrent technologies could be developed simultaneously as something like an alternative --

MR. WETHINGTON: Absolutely.

MR. SORENSEN: -- separation was in place so it's not a --

MR. WETHINGTON: Your --

MR. SORENSEN: The hybrid, basically?

MR. WETHINGTON: Absolutely. The

current technologies are currently being evaluated by the Asian Carp Regional Coordinating Committee and other potential research organizations, which once they have been established and determined to be suitable for large-scale environmental physical use, they could be implemented.

MR. SORENSEN: And sorry, I have one more, but, you know, looking at climate change, the levels of water in the Great Lakes are surely going to fluctuate, and I was wondering if that was also addressed.

MR. WETHINGTON: Yes.

MR. SORENSEN: How that will --

MR. WETHINGTON: Fluctuating water levels have been addressed within the technology alternatives and the conceptual alternatives for the implementation of each one of these within the report, as much as we know about climate change and what we can expect, given that there are significant --

MR. SORENSEN: So I guess my last would be just to comment, and that is given all the uncertainty and even there may be invasion arising from other places that we haven't even thought of, just would seem in my opinion that to go for the

gold standard, the separation.

MR. WETHINGTON: Thank you.

MR. SORENSEN: The separation basins.

MR. WETHINGTON: Thank you.

MS. FLEER: Thanks very much. Jill Crafton followed by Andrea Kiepe. Just your name and ZIP code. Thank you.

MS. CRAFTON: My name is Jill Crafton, and I'm with the Isaac Walton League. I'm also on a watershed district board here. My life is here --

MS. FLEER: ZIP code, please?

MS. CRAFTON: 55438. But I also was raised in the lower peninsula of Michigan and have a stake in property in the Pentwater area south of -- that's my 444 -- 499 -- oh, shoot. Whatever that is.

(Reporter interruption.)

MS. CRAFTON: I'll try to speak up. I have a Michigan address and a Bloomington address and have been involved in Asian carp group here that's been working on trying to keep that from coming up the Mississippi, but I digress.

I represent the Isaac Walton League, I chair a Great Lakes committee within the Isaac Walton League, and we have members from across the

basin from New York to Minnesota and all states in between, and we support a permanent physical separation between Lake Michigan and the Mississippi River, and while we do not reject any of the other options as possible strategies, none of them have proven effective yet.

I remember last time I was with you guys, in 2009, I was concerned about funding for the electric barrier and it was like iffy, and we were really concerned about that. All deterrents, electric and acoustical barriers, lock and dam modifications are simply not yet adequately verified as able to meet the goal of stopping Asian carp 100 percent. Our committee represents members from across the Great Lakes basin and we've been strong advocates for the need and development of emergency ballast water treatment capacity for ballast water treatment that fails compliance with existing and future standards as well as closing the pathway between Lake Michigan and the Mississippi River to prevent the aquatic invasive species.

Additionally, we underscore the urgency noted in the letter from the 16 Great Lakes senators from November 6, 2013, making it clear they are requesting that the Corps act very quickly as well

as bring all relevant stakeholders -- local, state, regional, and federal -- to work together cooperatively. The frustration with the lack of urgency reflected in their letter echoes the exasperation of citizens within the Great Lakes basin. We deserve better from an agency that receives billions of dollars in taxpayer dollars annually. The Great Lakes and the Mississippi River are not naturally connected. Moreover, the occurrence of more rainstorm events increases the likelihood of flooding in this area and potential conditions for Asian carp to gain access to Lake Michigan.

Asian carp are an immediate threat and require immediate action to stop their spread. Therefore, the Isaac Walton League of America urges the Corps to work urgently with relevant stakeholders to reach an effective permanent physical hydraulic separation. And I thank you for the opportunity to comment.

I work with Peter Sorensen. He's been getting common carp out of our watershed district and I just feel discouraged after your report that we'd have to wait 25 years. I guess at this point, I'd like to bid it out and see who else could maybe

come up with something quicker. It just -- I mean, we're paying -- what? 25 million annually for sea lamprey containment? It just -- 25 years just seems totally ir -- you know, just out of bounds. I would also just encourage you, with the -- you know, that any local or any relevant stakeholder that might have a piece of this action have important information. I know within my watershed district, I've learned to reach out to cities, counties, water resources specialists within any of those areas. They know the lay of the land and they can sometimes come and really cut down on the time it takes, and then you can form partnerships and get more done, so I would really, you know, underscore that. That's all. I guess that's basically it. Basically, the three -- quickly, you know, the physical separation and good relevant stakeholders that can make this a good process.

MR. WETHINGTON: Thank you.

MS. FLEER: Thank you. Andrea Kiepe will be followed by Steve Chaplin.

MS. CRAFTON: Can I submit my letter now, or --

MS. FLEER: Yeah. Sure.

MS. KIEPE: Hello. My name is Andrea

Kiepe. I'm a private citizen.

MS. FLEER: Name and ZIP code?

MS. KIEPE: And I'm from ZIP code 55408. Thank you so much for your time and consideration.

I actually grew up on the Mississippi River. I was born in Missouri, south of St. Louis, and so I know what bad water quality is like and it's one of the reasons I moved to Minnesota 20 years ago. I just grew up on a family farm where the importance of water cannot be overstated and the importance of taking a really pragmatic approach to environmental protection was how I was raised, and to my mind, that's I think why we have to go with Alternative 6. I think that when you look at some of these other approaches, you get into the whole penny wise/pound foolish thing and it's worth it to spend the money for the full separation and to really address all 13 of the ANS of concern. I think you should just do it right the first time and really safeguard and steward the investments that we've already made and that we continue to make in restoring the Great Lakes and the uses, you know, that approach directly from the Clean Water Act and maintaining, you know, the uses of bodies of water.

To me, that's really the bedrock of how we should be approaching this decision. And, I mean, I would love to see fisheries restored on the Great Lakes and I would love to see the existing tourism, recreation, fishing, and all of the, you know, frankly, metropolitan water uses in Minnesota be preserved as much as possible. So I really urge you to go with Alternative 6. I think that it's also nice that there are going to be some local benefits for flood control there and since, you know, one of the ways I celebrated my engagement was to go swimming at midnight in a full moon in Lake Michigan, you know, the fact that it's going to avoid 700 million gallons of wastewater discharge into Lake Michigan is kind of a benefit, too. So thank you so much and please consider Alternative 6.

MR. WETHINGTON: Thank you.

MS. FLEER: Thank you. I have Steve Chaplin followed by Darrell Gerber.

MR. CHAPLIN: My name is Steve Chaplin. I'm a senior conservation scientist with the Nature Conservancy. We'll be providing written comments later, but I wanted to talk about more specifically some of the concerns that we have here in Minnesota. Now, we realize the driving force in

all of this is the Asian carp moving into the Great Lakes system and its impact potentially on the $7 billion, you know, Great Lakes fisheries there. But I'd also -- but I'd like to speak about the ecological impacts here in Minnesota that movement of aquatic invasive species can have from the Great Lakes into Mississippi River systems. The Corps themselves have identified 29 species that threaten to move from the Great Lakes, and that's just imminently. And I suspect over time that number will only rise and perhaps dramatically rise, and they include such things as your Asian roughy that's a concern of the biologists and conservationists here in Minnesota. We don't want to see that get into Minnesota. If past history is any guide, there are things to be concerned about.

The zebra mussel, which was a Great Lakes species that moved into them and then on up into the Minnesota lakes is something that is causing a great deal of problems here in Minnesota. I spend a little bit of time every summer on Lake Le Homme Dieu up in Alexandria, and that lake has gone from a great lake to swim into one now that's hard to swim because you end up cutting your feet as you swim out from the beaches out there.

So what I'd like to recommend is that any solution that comes out of this should provide ecological separation. We're not insisting on hydrological barrier, but it has to be ecologically separated so that species aren't moving between the two basins. It must cover all aquatic invasive species, not just the carp or a few of the most spectacular ones, but we don't have any idea what a lot of these other species' impacts are going to be in the future. It must stop species moving in both directions and it must begin to reduce the impact as soon as possible. We agree that it needs to happen in the short term. In the next two to four years, we need to start seeing some reductions of threat, certainly not in a 25-year timeline. And we do need to have interim solutions so that perhaps, you know, we might have an ideal long-term solution, but we also need to think about things we can do right now to stop that.

And then the final thing is that I think these need to be cost effective and socially acceptable. That's going to be important because this is a long-term effort to keep aquatic invasive species from moving between one basin and the other, and without the political support and the social

support that you're going to have to have, both in the Chicago area and in the entire basins, I don't see that this is going to be successful, so thank you for the opportunity to speak.

MR. WETHINGTON: Thank you.

MS. FLEER: Would you provide us your ZIP code as well?

MR. CHAPLIN: 55113.

MS. FLEER: Thank you so much. I have Darrell Gerber next. And your ZIP code and your name?

MR. GERBER: Okay. Thank you. My name is Darrell Gerber, and I'm a water program coordinator at Clean Water Action Minnesota, and my ZIP code is 55409. And thank you for coming to Minnesota today to give us an opportunity to see the presentation firsthand as well as, you know, be able to make our comments in person. And thanks for coming on such a cold day and still doing this.

The study provides an important look at the methods for preventing the movement of the aquatic invasive species between the two basins, the Great Lakes and the Mississippi River, and, you know, I think it's important to recognize that that threshold, that for the first time, there is

actually a serious federal recognition and consideration of separation of those two basins and wanted to thank both the members of congress who made the request for this focus and also the Corps of Engineers for actually delivering on it and, you know, providing this report and the information.

So as mentioned before, Asian carp has definitely captured most of the attention around this report. You know, I think that's what everybody always talks about, but this is also important for the other 11 species that you really looked at and, you know, like a lot of people have mentioned, the only separation is the one that will be able to handle all 13 of those species. The Chicago area is certainly a long ways away from Minnesota, but, you know, there's certainly a lot that we have at stake here for this. First of all, the Great Lakes are a regional, national, and international resource. They support an economy that is actually larger than most countries. And more personally, as an example, I actually learned to paddle-board this summer in Milwaukee, and it was actually at the Great Lakes conference which I think both of you were at and it was in one of the backwaters there of Lake Michigan, and,

incidentally, one of the places that the Asian carp would really, really like if they were to get in there, and certainly paddle-boarding is not something that you would be doing if you had Asian silver carp in particular in that water.

And Minnesota, also being at the headwaters of the Great Lakes, an example is the St. Louis River is something that's at stake, another place that provides one of those really nice habitats that the Asian carp would look for. We've been spending numerous millions of dollars to restore that. It's one of the biggest and largest areas of concern around the entire Great Lakes. We're actually on a pathway to finish that in 25 years, and this would be a direct threat to that success. Also, a large portion of Minnesota, as you recognize, lies in the Mississippi River basin with direct connections to the Illinois River and its tributaries near Chicago. And the zebra mussel is a really good cautionary tale of what is at stake if we don't stop the movement of those other invasive species the other direction. As they moved around the state here, they've caused innumerable damage to both the ecosystem and the property values around all of the lakes and streams that they go.

And separation, again, is the only option that really deals with that. And separation certainly comes with a price tag, but what is at stake is actually more valuable. In Minnesota, the fish -- the $4 billion fishing and boating industry is at risk directly from the introduction of these invasive species, but it also, as you recognize, has additional benefits, too, with the reduction of the sewage going into the lakes and other pollution and flooding. So we look to congress, both -- congress today to take these steps necessary to begin work on the separation process, but then also look to the Corps of Engineers, the local, state, and federal partners, to really begin any of the work that you possibly can now and don't wait for congress and start working together to bring separation into reality.

I think I was realizing when we were thinking about 25 years that you think 25 years ago, the bands that were then popular then are now doing reunion tours. We don't want to have that today for Lordes or somebody else.

MR. WETHINGTON: Thank you.

MS. FLEER: Thanks very much. So at this point, we've heard from anyone who was

registered to speak, but we have plenty of time and so I'd really like to invite anyone who's already spoken or who hadn't registered to participate in the discussion. Maybe while you're collecting your thoughts, I'll also remind you that through March 3rd, the comment period will be open, so please feel free to leave a comment on our website. Also, this comment registration form available at the front table will give you instructions about how to submit a comment by mail if you wish to do so that way.

Sir?

MR. NELSON: Can I?

MS. FLEER: Please.

MR. NELSON: Thank you. Just in case I decided to open my big mouth.

MS. FLEER: Thank you.

MR. NELSON: Thank you. My name is Lee Nelson. I'm with Upper River Services. We are barge operators here in the Twin Cities. I'm also a member of AWO, American Waterways Operators, and thank you very much for having these meetings and for coming here to the Twin Cities.

As you have indicated and as others have indicated, this is one big system, and it is exactly

that: A system. And that's what we're talking about and we're talking about will it continue to be a system or will it be separated. The official document, as has been indicated, is quite long and quite extensive. As such, I would ask and I think fellow members of AWO would ask that we be given an extra 60 days or so to get through this. Everybody's busy and we do want to give it proper consideration. We have been working with all of you for the last many years on the topic, and we aren't trying to minimize it at all. It's very, very important. We know that the work the Corps did was fast-tracked to say the least, and as such, we want to give this due consideration, so an extra 60 days would be greatly appreciated. You know, you had 18 months to produce this. Give us four months to go through all that you produced, and we'll get things in.

You have a number of very interesting alternatives and we want to go through them. As has been spoken to today, but what gets moved commercially through that system is vital, certainly to the Chicagoland area if not the rest of the nation, because it is all related due to it being a system. That can't be minimized, nor can the

importance of finding a way to make certain that we don't create environmental devastation, and so our goal is to work with everybody to reach a conclusion where we support a thriving environment and a thriving economy. Thank you very much.

Oh. By the way, my zip code, 55107.

MR. WETHINGTON: Thank you.

MR. NELSON: Sorry about that.

MS. FLEER: Appreciate it. Thank you.

MR. NELSON: Thank you.

MS. FLEER: So I'd like to invite anyone else who may have a question or comment to come forward.

(No response.)

COLONEL DRUMMOND: So at this point, you know, normally when we have a little bit smaller crowd, we try to ease and relax a little bit. I'm certain there's a lot of questions out there that folks want to be answered, so, you know, we do have a little bit of time. If nobody comes up, then I start asking Dave questions to sort of facilitate discussion, and he doesn't really like that because I put him on the spot.

But, you know, the first obvious one that I heard tonight is time. I think Dave hit on it a

little bit. You know, the 25 years is predominantly predicated on many of the things that we're seeing in the Chicagoland area right now. For instance, we got two large reservoirs, one being built in McCook which is about 10 billion gallons, and then another one that's called Thornton reservoir which is being built and should be completed in about 2017 that's 7.5 billion gallons. So when Dave talks about mitigation, our engineers, the cost estimate and the cost data is very, very accurate because, you know, we've been building the tunnels and, you know, we have a relatively good idea of the timeline. Dave may have mentioned it, I didn't hear it, but, you know, the Corps of Engineers runs off two things: Authorities and appropriations. So as you can imagine, we may have the authority to do it, but if we don't have the funding commensurate with the level of work that we got to do, then it obviously slows building reservoirs down over time. So, you know, and this is -- this report I think, you know, based on the data that we have out there, the mitigations are very important.

And the other thing I'll throw out and a gentleman had mentioned, you know, the environmental concerns. In the last two and a half years since

I've been in Chicago, we've had two, maybe three 100-year flood events, torrential downpours. We just had one last April. And it causes a significant disruption to the city and the upper Des Plaines area as well as the branch rivers and the main canal, and I think Dave had explained the reverse flow scenarios that present Chicago with a whole host of very complex decision-making skills that go on between Metropolitan Water Reclamation District, who is the main owner of the canals, myself, and Colonel Deschenes down here on trying to help manage the system to the best we can. And I perhaps didn't mention tonight but I know Dave did in his second slide, it is a very, very complex undertaking, and I've heard a lot of good opinions tonight that could perhaps help us as well as key stakeholders and government officials analyze the best way to go about this.

Dave, do you want to talk any more about mitigation or have we --

MR. WETHINGTON: I think you got it, sir.

COLONEL DRUMMOND: I got it? You know, so we provided in the back, as you get ready to depart tonight, you can look at the eight options

up there and sort of see the range of options and technologies.

Earlier today, we had very good discussion with your DNR, who I might add is a very active member in the ACRCC. In the time I've been here, the Minnesota DNR is actively involved in all this. In fact, they had great suggestions on risk mitigation because they understand what's going on as well as we know that they got various programs that are going on in the state right now, and so I would just add the comment that I made today is all these different things that they're doing in the State of Minnesota has a directed affect on everything that we're talking about here, and that is individuals, folks like yourself, coming up with good ideas and various states trying these ideas out and then, as you see in the back, these range of options come with a caveat of technology, so as technology is coming in, we throw them in through ACRCC and we try to adapt our situation to, you know, adaptive management principles to do the best we can to deal with the threat that is being discussed.

And I think there was a good point, a couple gentlemen had mentioned, you know, there is

ten invasive species which we have analyzed as either being medium or high coming down from the Great Lakes through the Mississippi and then the three going up. But honestly, you know, throughout most sessions we've been into, the common thread is the Asian carp. And so, you know, there is what I would consider a very good suite of options up there for you, the public, to advise your local politicians as well as stakeholders on how we want to address this. It does come with a hefty tag, and I think several of you here -- ma'am, you up in front -- Isaac Walton, we've run into them at several different forums and their voice is well heard, but this is how we let our administration know, you know, what is important, not only to the Great Lakes, but to the Mississippi River basin, which is key, as this gentleman over here said, to a whole host of different commerce activities that go on in this country.

You know, this Chicago Area Waterway System was built in the late -- started in the late 1888s. Back then, I think -- Glen, you can correct me -- I think we had roughly about 670 to 700,000 people in Chicago. They reversed that river because there was a dilemma, and it's called dysentery and there was

all kinds of problems going within the waterway, so the folks back then made a decision to do that. So here we are, flash forward plus a hundred years later, and we're faced with another environmental issue, and I'm not biased to any of them up there. You know, my job is get out here and ensure the public understands what my engineers are seeing, and I think Dave hit it a little bit earlier and I think it's an important point. You know, 19 different districts were involved in this, a whole range of engineering skills all the way from Jacksonville, Florida, which is the center of an invasive species expertise all the way up to Seattle through our local districts in Rock Island and St. Paul who provide information into this report. These engineers, I go to work every day and I see them day in and day out. They have the same passion and respect for the Great Lakes and the Mississippi River as anybody else in the room that I've been touring, so, you know, each one of them in this room that has a red lanyard, and we're also surrounded by some distinguished folks out of St. Paul who are in this room, has the same desire, and that is, you know, exactly what our charter asked us to do is present a range of options and technology to prevent

the interbasin transfer of ANS. So I'm done talking. Anybody come up? Yes, sir. Come on.

MR. NELSON: Do you want me to come down or I can ask from here?

COLONEL DRUMMOND: You probably need to come down so she can --

MR. NELSON: I was just trying to keep it going for you. I just have a couple questions.

COLONEL DRUMMOND: Yes. Go ahead.

MR. NELSON: And, John, maybe this gets directed at you, but a couple years ago, we were hearing more talk about a bio bullet, and I know that's kind of species specific, but is there an update on a bio bullet that -- because I know there was work being done down in La Crosse, I think Wisconsin DNR was involved. Is that a fair question? And then I got another one that I'll ask.

MR. WETHINGTON: Okay.

MR. GOSS: Yeah. The U.S. Geological Survey science team has identified what they think could be very Asian carp specific, that would be affecting only the digestive system and be lethal to Asian carp, and so they have tested preliminarily. They are still working on what the thickness of the coating and exactly what material would work best on

the coating on the toxin would be, but certainly we're working with them to move it forward, hopefully to registration, and so that -- it has to go through a pretty extensive review process with the EPA.

MR. TEUTSCH: Your three minutes ran out, John. I think your mic cut off.

COLONEL DRUMMOND: That's basically it.

MR. NELSON: Okay. They are making progress?

MR. GOSS: Still on?

MR. NELSON: All right. Alternative 2 talked about education and showed boat ramps and such and we heard many people talk about -- they're all off. Okay.

COLONEL DRUMMOND: We can hear you.

MR. NELSON: I don't care. We heard many people talk about zebra mussels and zebra mussels up at Alexandria. Unfortunately, a lot of zebra mussels and Eurasian milfoil that spread in Minnesota were spread via pleasure boats, and have you figured out a better way to modify human behavior? Because a number of us are very frustrated about that, and the fear that everyone

has and I'm sure everybody in this room, we can cut everything off we want physically, you can cut the waterways, you can cut them in half, but people have the fear that they may still move them, and has anybody figured out how to modify behavior?

MR. WETHINGTON: So what you speak to --

MR. NELSON: Are we going to close all the boat ramps?

MR. WETHINGTON: What you speak to is part of that shared responsibility. It certainly is an issue and it will be. It's one of those residual risks that remain. You make a very, you know, elegant point where you can spend billions of dollars on a physical solution toward preventing the transfer of aquatic nuisance species via aquatic pathways, but that could all be undone by the carelessness of a few or many. And so that's something that's part of why engagement sessions like this are important, and continued education and outreach, you know, by local resource agencies, state resource agencies, will certainly continue to be a very necessary part of this long-term strategy on aquatic nuisance species control.

MS. CRAFTON: We need some

decontamination units is what we need.

MR. NELSON: Have to have people use them, unfortunately.

MS. CRAFTON: It's a start.

MR. WETHINGTON: I'm going to caution -- hold on.

MS. CRAFTON: Sorry.

MR. WETHINGTON: Because we have a stenographer here and the microphones went out, if we're going to speak, we need to try and still go through the motions of one at a time, please.

MS. CRAFTON: Internal conversation.

MR. WETHINGTON: Okay.

MS. FLEER: Just to give a signal by a show of hands if you'd like to make a comment or question, please. Go ahead. If you'd identify yourself again and your ZIP code as well?

COLONEL DRUMMOND: Could we have another mic? We're dead.

MR. WETHINGTON: Can you check?

MR. GERBER: Darrell Gerber, 55409. I was wondering, some of the technologies, like the GLMRIS locks and the water treatment system, have those been demonstrated, actually used anywhere to actually address these species of invasive species

and kind of what is the, you know, percentage of reduction that have been shown for both of those?

COLONEL DRUMMOND: Yeah. I knew my discussion would spur some. There it is.

MR. WETHINGTON: So the GLMRIS lock itself has been conceptualized at our Engineering Research and Development Center down in Jacksonville. We have a number of experts who did a little bit of back-of-the-envelope modeling and said this is certainly something that would work. The idea of using a plug flow concept, which is what this is, is very traditionally accepted in chemical engineering fields, process engineering. I'm a chemical engineer by training. So it is used in scale and, for example, in process engineering for cleaning chrome plating baths, getting chromate out of a bath. This would be taking a similar idea, scaling it up to a large size. Has it been implemented to prevent aquatic nuisance species transfer? The answer is no. Lock and dams or Corps lock structures have been used for environmental purposes to help combat saltwater intrusion, for example, so we have modified navigation structures for environmental purposes, so it's not completely outside the realm of being -- yeah, being possible.

However, certainly additional work would need to be completed and detail design to try and really get to how you would scale it up: Size of pumps, flow rates, lockage times, etc. All that, while we hope it would be very similar to what exists today, would need to be further developed.

MS. FLEER: Thank you.

COLONEL DRUMMOND: Any other comments?

MR. WETHINGTON: Any other questions?

COLONEL DRUMMOND: Thoughts?

MS. CRAFTON: Yes. Just need people to want to get this done. I guess that's the biggest thing is that anybody involved should be "we can do this" kind of person as opposed to --

COLONEL DRUMMOND: Well, and I know, I think, exactly, you know, what you were saying earlier. It's about the discussion, and right now, John hit on it. I mean, right now is the time to continue this discussion so organizations like yours and like yours, it's absolutely vital you get on the website, you get us your opinion and we document it as such in public meetings. John?

MR. GOSS: I think the message of urgency has gotten through to all of us. We have to look at what can be done two years, four years, as

well as the long term.

MS. FLEER: Any other?

COLONEL DRUMMOND: So I think they're going to work on the mic a little bit. So we got a little bit of time, and normally when we close out like this, we will stay around for the entire period, and feel free to engage each and every one of us on certain topics, and perhaps you didn't want to get up here and, you know, discuss it with us. I will tell you it's my pleasure being here at the Twin Cities. I think it's important to open up the dialogue with the members of the public. You know, this is just not our politicians' responsibility. We owe it to them as the public also to have a candid conversation, to help them work through this -- what I would call probably the most complex topic I've seen in my time in the military, because it is. It's wide-ranging, the entire Great Lakes all the way down to the bottom of the Mississippi, and it affects a whole host of individuals that are out there, so your voice absolutely counts, and I would always end on the note that we threw a lot of information at you tonight. We will certainly take your points, sir, back on the 60 days, but take the time, digest 25 pages, go to the 232 pages, and then

if you feel that you need to dive into the 10,000 pages, there's a whole lot of appendices, take a little bit of time to download that stuff off our website and, you know, just sort of sit back and analyze what we, in concert with many other organizations, came up with over the last 18 months. This is -- as Dave said, it's shared responsibility, and the Corps of Engineers had a lot of input through state agencies, the ACRCC, as well as members of the ESC as we went through this process. So it was certainly not in a -- you know, the Corps of Engineers back in their own cubicle. We had a lot of input, very good input, that helped us to get to where we needed.

Perfect timing. I will get ready to -- Dave, do you got anything else you'd like to add?

MR. WETHINGTON: Toss it to Lauren to --

MS. FLEER: Okay. Would any of our panelists like to make any final comments?

MR. GOSS: No.

MS. FLEER: No? In that case, I want to thank everyone very much for coming out on such a tremendously cold day. We will be around for, you know, several more minutes, as long as people want

to engage and find out more. Please stop by our table on the way out and help yourself to any of the, you know, reading material that we brought for you today and also please remember that the public comment period does extend through March 3rd and so please feel free to make a comment at the website or by mail if you wish. And thanks from all of us again.

(The meeting concluded at 5:40 p.m.)

C E R T I F I C A T E

I, Karen J. Macaulay, hereby certify that I am qualified as a verbatim shorthand reporter;

That I took in stenographic shorthand the foregoing proceedings at the time and place aforesaid;

That the foregoing transcript is a true and correct transcription of the proceedings, to the best of my ability;

Witness my hand and seal this 4th day of February, 2014.

_____
KAREN J. MACAULAY
Registered Diplomate Reporter
Notary Public
Carlton County, Minnesota

