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Questions & Answers Period

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QUESTION & ANSWER PERIOD

Moderator: Stephen J. Petras, Jr.

MR. PETRAS: Well now, it is time for the question and answer portion of our program. We're going to go with that until approximately fifteen minutes before noon, at which time we're going to invite Kathryn and Irena to respond to everything that they've heard. We do have some questions that have been provided to us from our attendees, as well as others, that we think are important.

And I want to start off, we've identified before, you know, in the '60s and '70s, that point sources like wastewater treatment plants were a big problem, and there were successful solutions apparently for those. I'd like to ask Lucinda Johnson a question, and that is, given the diverse drivers and sources of nutrients driving harmful algal blooms, is there a sufficient understanding of the relative influence of each of the sources to determine whether a 40% reduction in spring loads would actually lead to fewer harmful algal blooms? I mean, we've talked now about nonpoint source, in particular, agriculture. Howard's been very direct on that as to what's happening in the western basin of Lake Erie. Lucinda, can you respond?

DR. JOHNSON: Thanks for that question, Stephen. The answer is that we are pretty confident about some aspects of that equation for certain geographies of the Great Lakes, the western basin of Lake Erie, being one. I would say that there is less certainty with respect to other parts of Lake Erie, and certainly across other parts of the Great Lakes. So, as Howard has mentioned, the numbers with respect to loadings into the western arm are fairly well-established, and I suspect that the 40% reduction is a valid number. But, that is not well-established for other parts of the Great Lakes.

MR. PETRAS: Would anybody else like to respond? Tricia, yes. And you're on mute, so.

MS. MITCHELL: Hi. Sorry, okay. I guess what I would just like to clarify is, so the 40% reduction targets really only—I know people have talked about them in terms of applying to the Great Lakes—but they really only were set for Lake Erie, and actually for specific parts of Lake Erie. And in that case, we have coordinated science between Canada and the U.S., our state and provincial agencies, we've developed dose response curves.

And one of the things I wanted to mention was, a lot of the items that—actually, I think almost all of the items—that are presented in the paper as unknowns, like atmospheric deposition, dreissenid mussels, all of those are incorporated in our models in Lake Erie. And the science is continuously being updated, so the models are being updated based on the new science. So we are, I mean, based on the best available science, we can say that if we achieve those targets, we will have a bloom similar to the 2012—which was a modest bloom—nine out of ten years. And we have an adaptive management framework in place that says, as we get new science that tells us something different, we're going to update and change our management accordingly. So, I guess I wanted to point that out.

And then, as Lucinda said, the other basins that are experiencing harmful algal blooms around the Great Lakes, its, I guess, a little bit of a different situation for each one. So, again, in Hamilton Harbor on the Canadian side, under the AOC [Areas of Concern] program, we've done a ton of science to say, "What do we need to do to get to those blooms?" And then we have Remedial Action Plans, and a process in place to get to the objective. So, I'll stop there. Thanks.

MR. PETRAS: Okay, great. Would any of the other panelists like to respond to that question? Okay, let me see.

MR. BRENNAN: Can you repeat the question, sorry, again?

MR. PETRAS: Yes, the question was—and I'm going to go back so I get it correct—given the diverse drivers and sources of nutrients driving harmful algal blooms, is there a sufficient understanding of the relative influence of each of the sources to determine whether a 40% reduction in spring loads would actually lead to fewer harmful algal blooms? Todd, do you want to, do you have anything to say on that?

MR. BRENNAN: I think Tricia handled it well. I think the answer is, yes, it depends on the geography. 40% was obviously defined for western Lake Erie. However, across the Great Lakes Basin, if . . . and that's one area I would love to hear more from Irena and Kathryn about—whether they were thinking of just applying that across the Great Lakes Basin as a blanket reduction target, just for everybody to have *esprit de corps*, a goal to shoot for. Or, they would be relevant because there's certain areas where you do have geographically devised goals.

Green Bay is another one, another EPA-designated algae outbreak hotspot. Our goal is actually a 60% reduction. So, it's more than western Lake Erie in terms of proportion, less in overall, actual load, but a 40%—regardless, I'll take 40%, 60%, I'll take anything at this point.

(Laughter.)

Because it's a flat line, if nothing, it's actually going down.

MR. PETRAS: Very good. Jim Blanchard, do you have a question? Governor Blanchard, I saw your hand, so.

HON. JAMES BLANCHARD: First of all, I've really enjoyed all of this. And I liked Howard Learner getting right to the point. So, it sounds like a very brilliant University of Michigan professor. Anyway, my question really was at the outset . . .

MR. LEARNER: Go blue.

(Laughter.)

HON. JAMES BLANCHARD: Yes. At the outset, there was a map that I think, I'm trying to remember. It was probably Kathryn's map of the Great Lakes region, and you had yellow dots and green dots, and you didn't really say what those were, I was curious.

I'm obviously aware of the western Lake Erie issue. And by the way, locally, it gets a lot of attention, so I think there's a way to stimulate political will. This is something of great concern for at least people of Ohio along the shoreline, and certainly in Michigan. And probably, I'm sure, Ontario. But, go back to that map for everybody. You didn't identify what those dots meant. I assume they're

degrees of concentration of the problem. But that first map—that’s all my question is.

MR. PETRAS: Yeah. That’s a map that, Irena and Kathryn, had in your presentation. Kathryn, can you . . .

DR. FRIEDMAN: Yup, I’m trying to bring it up, hang on one second.

DR. CREED: I can speak to that. The dots were yellow and green. The yellow were occurrence of algal blooms, and the green were occurrence of recorded toxin-producing algal blooms. And the comment was, whereas a lot of focus has been on the western basin of Lake Erie, we’re finding through newspaper reports and anecdotal evidence that this is spreading throughout the Great Lakes.

HON. JAMES BLANCHARD: Can you pull that up? Alright, here we are. Alright, so repeat exactly what you said. And remember, I’m not a scientist, I’m just a recovering politician.

(Laughter.)

DR. CREED: The yellow dots are the locations where algal blooms have been reported. The green dots are where algal blooms that are toxic, so they contain toxins like microcystin, have been reported. The interesting thing in generating this map was I was able to go to the scientific literature to get occurrences of some of these for outside of Lake Erie, in particular Lake Superior and Lake Huron, but there’s a lack of a coordinated method between the two countries to actually monitor these algal blooms and, as a result, I think it’s a challenge to manage them. That was the comment I wanted to make about this map.

HON. JAMES BLANCHARD: Alright, and I realize now at the top you did identify that. So, you’ll have to forgive me for asking such a basic question. But thank you.

DR. CREED: No need to apologize.

MR. PETRAS: Yeah, that’s a good question. And thank you, Jim, for that.

We have another question, that’s come in from Jennifer English, of the City of Defiance, Ohio. And she comments that the City of Defiance is currently working with Ohio EPA, and that they are moving on a CSO [Combined Sewer Overflow] strategy to watershed approach. She asks the question, “How can the City of Defiance have the most impact with that program?” Anybody want to comment on that?

MR. BRENNAN: Stephen, I’ll say, Jennifer, one place to look is Wisconsin, where we have a Phosphorus Rule, it was called, it was passed back in 2012. So, it sets a state-wide standard for phosphorus in all water bodies, and then geographically specific ones where that’s present, such as a TMDL, would actually provide you an even more accurate picture.

And what it also does is it provides alternative compliance mechanisms for point sources. So, what that means is, I think you are getting at, which is a water treatment plant or even an industry that finds itself usually at the bottom of a watershed is dealing not only with its pollution, but everything that’s coming above it.

And the premise is kind of simple. You can do this in different ways. There is trading mechanisms—they usually haven’t been proven to work—or, in Wisconsin, which is very unique, it is called the Adaptive Management Option, it

is actually just a watershed-based approach. And what it says is, “Hey, if you’re a big guy with a big load, it’s going to cost you a lot of money in today’s dollars to try to bring down your pollution level,” when the reality is that’s still just a small percentage of what’s flowing past your pipe from up above the watershed.

I’ll give you an example. Green Bay Metropolitan Sewage District has forecasted this may cost them \$200 million. They also forecasted, if they just worked with farmers upstream, they could probably get at that for around \$100 million. Still big money, right, but they just caught themselves a 50% discount by working with those upstream. And the idea is that if they do enough of that work upstream, what flows past their pipe eventually can get up to water quality standards, provided they’re given enough time. But, it’s all very tightly controlled by the regulatory agency, the Wisconsin Department of Natural Resources. That they can get to that water quality and actually take time to reduce, their reduction, but if everybody does their part, they get the water quality to a point where it actually saves them all money, and deals with the added source upstream. So, I would just say there’s been a ton of work that has been done on this in Wisconsin, and different approaches, so I would point you towards that.

MR. PETRAS: Great, thank you very much. Would anyone else?

MR. LEARNER: And another place you might look at would be Des Moines, Iowa, where the wastewater treatment system there has been under considerable pressure from upstream ag[ricultural] runoff, nutrient runoff, that’s required considerable expenditure to update and improve the Des Moines waterworks. It’s a similar situation to Defiance, where you are both downstream from ag[ricultural] runoff coming in from Fort Wayne, Indiana, and upstream on the Maumee, for what goes to Toledo.

MR. PETRAS: Ok, thank you. Thank you. Anybody? Chitra, did you want to comment?

MS. GOWDA: Sure, Steve, thank you.

So, just a couple of approaches here in Ontario. First of all, we have a regulatory approach through the Nutrient Management Act. It is quite a strong piece of legislation that looks at farming operations of a certain size and so on, and I’m sure there is an equivalent across the border as well. And so, within that, you need to set up nutrient management plans to address the application of manure and so on, biosolids, and nutrient management strategies, which help look at the other activities including the storage of manure and so on, on farms. It is limited to a certain size of farm, although other types of farming activities and smaller operations may be phased in, in the future.

And then in the non-regulatory approach is where an organization like mine comes into play, which is a watershed-based approach. It is based on incentive programs. Many of our stewardship programs are funded by municipalities. And that’s where we talk cover crops and so on, and on all of the agriculture best practices, and urban best practices—lots of messaging to the urban residents as well, even though the quantities might be much lower from an urban setting. And so, there’s different packages, different, you know, messaging, and different programs, working very closely with the agriculture community.

But, I think our challenge now is keeping up with the science. So, it is concerning when you see something like agricultural best practices, such as making sure we're using fertilizers with dissolved phosphorus, are actually increasing the plant-available phosphorus in the Great Lakes. And so, keeping up with the science will be a challenge for us when it comes to watershed management.

MR. PETRAS: Ok, great. Thank you very much, Chitra. Would anybody else like to comment on that question?

We do have some other questions coming in. One goes back to the western basin of Lake Erie. The question is from Shirley Tomasello, and she asks, "Could you explain more about how a total maximum daily loads, or limits in western Lake Erie work to reduce harmful algal blooms?" I think this is a technical question. Would anybody like to answer that one? I think we need some of our scientists on our panel to talk, you know, Madeline, how about you? Can you weigh in on this?

DR. MAGEE: I can't weigh in on the TMDL in Lake Erie since I'm in Wisconsin, so hopefully someone else can. I'm sorry.

MS. MITCHELL: Also, it's a U.S. instrument so we can't weigh in from the Canadian side either.

(Laughter.)

MR. PETRAS: Alright.

MS. STAINBROOK: This is Karen. I can't weigh in on the Lake Erie TMDL, because I don't think New York is part of that, but Don Zelazny could certainly correct me on it. But I could at least say what a TMDL is because it is a U.S. implement, regulatory program.

TMDL stands for total maximum daily load, and what it is, is an equation that basically looks at all the pollutant sources that are potentially impacting a water body and identifies what those sources are, and identifies what the acceptable amount would be able to continue to go to that water body while still achieving water quality standards. And so, it's kind of like a pollution diet, so to speak. So, we identify all the inputs, and then we say, "Okay, well, in order to achieve water quality standards, we need to reach this new level," and then we work towards reaching that new level. So, a TMDL is really an equation.

But what is really key and important within a TMDL is the implementation plan section, which says how we are going to actually get to what that reduction would really be. And that gets into understanding what all those sources are, and then identifying practices and actions that would then lead those sources to reduce the amount that they are, you know, contributing to that water body.

MR. PETRAS: Ok, thank you. Would anybody else like to comment on this?

MR. LEARNER: If you'd like me to take a very quick crack it, I can do that.

MR. PETRAS: Sure.

MR. LEARNER: Without teaching a whole class here on the Clean Water Act—trying to follow up nicely on the previous comment—when you have an area like western Lake Erie, the target is to avoid the impairment of waters. There has been a finding under the Clean Water Act that the waters of western Lake Erie are impaired by pollution. So, the pollution diet that was just referred to is TMDLs,

total maximum daily load, means taking the steps that are necessary to reduce the amount of inflow of phosphorus pollution, so that the waters no longer become impaired.

The science right now is that you need to reduce phosphorus pollution by 40%. So, what the TMDLs would be designed to do is reduce, in the waterways that go into western Lake Erie, the amount of phosphorus, the total maximum daily load, down to a level so that the waters no longer would be impaired. Hopefully that's helpful.

MR. PETRAS: Ok, thank you, Howard. That's very helpful. And this is . . .

MR. ALEXANDER: Hi, Stephen.

MR. PETRAS: Yes.

MR. ALEXANDER: Can I add just a little bit on that?

MR. PETRAS: Sure, Mike. Go ahead.

MR. ALEXANDER: I want to point out, too, that the TMDL doesn't offer any more regulatory control than [is] currently in place. There is an option under the *Integrated [Water Quality Monitoring and Assessment] Report* and listing methodologies, or listing water bodies that is not supporting, is what's referred to as a 5-alternative, which is a mechanism with which you don't necessarily have to develop a total maximum daily load to reach the goal of supporting the designated use that's listed.

Michigan's listed our waters as not supporting for other indigenous aquatic life, and we've also listed for drinking water at the nearshore areas. But we feel like, for our next listing, we are going to probably change our listing from not supporting to that 5-alternative because, again, with the toolbox that we have in place right now, the tools we have, the 5-alternative and using the Annex 4 and the Domestic Action Plan, is the method that we'll use to reach the goals of meeting those designated uses.

So, again, the TMDL, Howard was exactly right, it is a diet, Karen was exactly right, is the principle of the TMDL. We're doing watershed planning to identify the diet for western Lake Erie for our nonpoint sources. We've identified that portion for our point source contributions, and they have already pretty much met those goals.

The nonpoint source is the difficulty. The TMDL doesn't give us any more regulatory authority. We're still working on the planning process which identifies it at a very small scale, at the HUC 12 scale, what loadings can be and should be reduced from the nonpoint source contributions. And so that's how we're moving forward, and why Michigan, at this point, is not developing a TMDL for our portion of western Lake Erie.

MR. PETRAS: Okay this, by the way, leads to another question that has been a theme throughout, and I think a lot of the dialogue has talked about the fact that harmful algal blooms, and phosphorus, and nitrogen, it's complex. And we're focusing a lot of on phosphorus and, now that point sources seem to be under control, we're looking at agriculture and wondering, you know, why don't the farmers do something, and stop putting so much phosphorus fertilizer on their ground and draining into Lake Erie, or wherever. And the question I have for you, we've had two anonymous attendees ask a question about this particular issue.

Wetlands were filled-in with government assistance, they now fertilize that property, it's got drainage going into the Great Lakes. What do you think about incentives on agriculture to attack that issue? And what do you think about the requirements and abilities for states to meet their reductions on phosphorus, given this type of issue with agriculture? Who'd like to tackle that?

MS. KESSLER: Stephen.

MR. PETRAS: Yes.

MS. KESSLER: Stephen, this is Katrina. And I'll just say that this is a problem and a challenge that we live and breathe every day in Minnesota. We are, as noted, under our nutrient reduction plan, required to reduce water going north, going east, and going south. And our Nutrient Reduction Strategy, super specifically, says, "These are the ways we can get to our 45% reduction in phosphorus and in nitrogen," and it's just not happening.

And I think that, at the core, we're never going to buy our way out of this. So, incentives will only work . . . I would say, maybe, if you could maximize incentives, if you could get more federal dollars, more state dollars, maybe you'll get 10% adoption. And it really is getting grassroots support and buy-in for ownership of this. And I think part of it is, if we want to continue to be the breadbasket for the world and for the nation, we need to be honest about what it costs to grow food and to have that be a successful part of our economy, and factor that into the cost of things. And the Des Moines case is one that keeps coming up. If we are polluting drinking water downstream, who bears that economic burden to remove those pollutants? If we are polluting drinking water downstream in Toledo, whose responsibility is that, as society, as a whole?

I don't think government programs, alone, are going to solve this problem. And so, I think you need to look at the public-private nexus and figure out, is this a public good that we all really need to be invested in? And then, what is the private component of it? Because, at least in Minnesota, our planning and the best of our efforts to incentivize, it's showing that we are not on track to get to where we need to be.

MR. PETRAS: Thank you.

MR. LEARNER: Stephen.

MR. PETRAS: Yes, Howard.

MR. LEARNER: Let's take it this way. First, nobody wants to be against incentives, okay? Incentives are a good thing. But the fact of the matter is, as previous commenters have said, money alone is not going to solve this problem. There isn't going to be enough money to do it. And from both a moral as well as a practical and legal standpoint, if you live in Toledo, Ohio, or in Lucas County—and Lucas County is a co-plaintiff in the case before the courts, alright, so the county that surrounds, and the City of Toledo has filed amicus briefs. The question is whether someone upstream of where you are can knowingly put a chemical into your water that causes toxic algae blooms and poisons the water supply.

To use the legal example I mentioned before, if there were a factory that [was] upstream that were putting toxic chemicals into the water that was going down to your home, Steve, or into Lake Erie, you would say, "They can't do that." They should not be allowed, under the Clean Water Act, to do that. Nobody has a right,

upstream, to contaminate your water downstream—at least to the degree that it becomes toxic and led to half a million people in Toledo being without safe drinking water supply for seventy-two hours. So, the fact of the matter is, if 90% of the phosphorus coming into western Lake Erie is from agriculture, agriculture is going to need to be regulated in the same way that point sources are regulated.

A large CAFO with 10,000 hogs, or pigs, or cows that is losing manure into the waterway, conceptually, is not all that different than a large factory that's doing the same. It's a "factory farm" some people call it. This is not a Grant Wood of mom and pop on their thirty acres who are engaged in the blue-collar farming that we've discussed for years, and looked at as part of America. This is large factories with tens of thousands of animals, with manure that's poisoning the water supply of a million people just on the Ohio side in western Lake Erie.

So, regulatory standards that are enforceable are a necessary part of any solution. And to say that we're somehow going to do this with federal money, or state money, or taxing the public, and that alone through incentives is going to solve the problem, is not dealing—at least in this particular area, western Lake Erie, it may be different in Hamilton Bay, may be different in Lake Superior—but in this particular area, it's going to require enforceable regulatory standards to reduce manure that is growing enormously, and poisoning the water supply in western Lake Erie. That's the reality of it. And we will see what the U.S. District Court does in its next couple of decisions because that issue, in many ways, is really in front of the courts, and it goes to what's required under the Clean Water Act.

And for the questions about what happens in Wisconsin or Minnesota and so forth, in candor, keep an eye on what the U.S. District Court does in the northern district of Ohio, all of which, those states are in U.S. EPA Region 5. Certainly, Wisconsin or Minnesota are not bound by what happens from a Federal District Court judge in the northern district of Ohio, but it certainly will become persuasive authority, and perhaps precedent for a number of the other states. With regard to Ontario, obviously the U.S. court decisions are not controlling, but I expect that, if that the U.S. District Court rules that actions are required, creative people in Ontario are going to find ways to, by analogy, see if they might use some of that.

MR. PETRAS: Okay, great. Thank you very much, Howard.