

Nutrient Monitoring Council (NMC)

Meeting Minutes

April 5, 2016

Illinois EPA, Mississippi River Conference Room, Springfield 10 am – 2:30 pm

Conclusions and Next Steps

10:00 am *Welcome/Opening Comments/Housekeeping*

Gregg introduced new members, Kevin Culver, Aqua Illinois, and Paul Davidson, U of I – Agricultural and Biological Engineering and reiterated NMC Charges.

Paul Terrio gave a Nutrient Science Advisory Committee (NSAC) update. They are updating their data set and determining what approach they will take. Cindy Skrukud confirmed that they had the Fox R data set and asked if NSAC wanted additional data from other areas. Paul said that they would welcome it. Ann Holtrop has mussel survey data that she could provide.

10:20 am *Charge 1(a) – N and P Leaving the State*

USGS Super Gages will satisfy this charge. Paul Terrio provided the update for the 8 stations. Some challenges include: weather, channel configuration, flow variability, and phosphate reagent. Vermilion R is especially turbid and challenging. Despite this, they are collecting data at most stations. Goal for phosphate is to have total phosphorus load. Need a considerable amount of data to do the regression. Nitrate is working well.

NMC discussed a Policy Working Group question: What about Super Gages on the Fox, Kankakee, or other streams **entering** Illinois? Indiana has a Super Gage USGS 05518000 on Kankakee R as of December 2015.

Mark David offered to update nutrient losses from the 8 major Illinois Rivers for 2012-2015. NLRS Science Assessment estimates were through 2011. USGS Super Gages initiated in later half of 2015 and 2016+.

11:00 am *Agricultural Water Quality Partnership Forum and Nutrient Monitoring Council Priorities (Charges 1b, 1c, and 2)*

Logic Model:

AJ Riley spoke about the Inputs and Human Tables collection method.

Warren Goetsch showed progress the AWQPF Tech Subgroup had made on the Land Measures Table. Next meeting is June 14. Once done, they will be able to show 2011 (baseline) levels and 2015 levels. Plan is to repeat every 2 years.

Gregg Good talked about the Water Measures Table which is primarily loading information. NMC will be capturing this and additional information (such as biological measures) to show improvement.

Selected Priority Watersheds:

NMC revisited the question of where to start. Brian Miller showed the priority watershed map from NLRs. Amy Walkenbach showed maps that depict 319 locations. After discussion, the group decided the following watersheds are selected priorities:

Point sources: Upper Middle Fox, L. Decatur/Upper Sangamon, Chicago Calumet

Non-point source Nitrate: L. Decatur/Upper Sangamon, Vermilion-Illinois, L. Springfield (lower priority)

Non-point source Phosphorus: TBD, (but interest in Kaskaskia for stories)

- 1:30 pm Jong Lee (U of I - NCSA) imported 5 stations from the Fox River database into the Great Lakes to Gulf Virtual Observatory (GLTG). He presented his process and did a real time demonstration. Superstations are already imported. GLTG can subscribe to other repositories. Currently the platform has chemical data. NCSA is beginning to add biological parameters. GLTG can do chemical loadings and show trending.
- 2:00 pm Laura Keefer and Kelly Warner developed a list of considerations regarding data parameters and associated information to ensure that datasets are robust. Laura briefed the group.
- 2:15 pm **Next Steps**
- Today's Action Items
 - Evaluate biological data parameters similar to what Laura and Kelly did. (Ann Holtrop, Justin Vick, Andy Casper, and someone from NSAC to take a stab at it)
 - Jong to import USGS/IEPA Florence monitoring site to demo at next meeting.
 - Future Topics/Presentations for Next Meeting?
 - Drill deeper into how NMC will accomplish Charges 1a-1c and 2. Determine what data or metrics are needed.
 - Determine what data sources are acceptable.
 - Laura Keefer to make a presentation about Upper Sangamon.
 - Pick one of the select priority watersheds to develop monitoring plan template.
- 2:20 pm **Next meeting dates(s)** – look at late June-mid July for next meeting. Future meetings: September 13 and December 6
- 2:30 pm **Adjourn**

In attendance: Gregg Good, Illinois Environmental Protection Agency; Jong Lee, University of Illinois-NCSA; Brian Miller, Illinois Water Resources Center; Warren Goetsch, Illinois Department of Agriculture; Ann Holtrop, Illinois Department of Resources; Justin Vick, Metropolitan Water Reclamation District; Laura Gentry, UIUC-NRES; Cindy Skrukud, Sierra Club; Anjanette Riley, Illinois Water Resources Center; Kevin Culver, Aqua Illinois; Paul Davidson, University of Illinois; Laura Keefer, Illinois State Water Survey; Trevor Sample, Illinois Environmental Protection Agency; Amy Walkenbach, Illinois Environmental Protection Agency; Katie Hollenbeck, Illinois Water Resources Center; Eliana Brown, Illinois Water Resources Center; Kelly Warner, United States Geological Survey; and Paul Terrio, United States Geological Survey

Gregg Good: Let's go around and do introductions, especially for the two new people, Kevin Culver and Paul Davidson.

Introductions

Kevin Culver: I'm Kevin Culver with Aqua Illinois. I'm active in watershed programs for Aqua Illinois and a RiverWatch volunteer. I'm a member of the Northeastern Illinois Groundwater protection planning committee and also part of Policy Working Group.

Paul Davidson: I'm an assistant professor in agriculture and biological engineering. I did my grad work on pathogen transport. I have students working on cover crops. And I am also part of Policy Working Group.

Gregg Good: Welcome, this is our 4th meeting and as you can see in the agenda, we will talk about charges and get an update from Paul Terrio about NSAC. Paul will also talk about super gages, an offer we couldn't refuse. Then we will have lunch. After, we will talk about nutrient monitoring plans, get a demo from Jong and hear from Laura and Kelly about data parameters. I would like to go over our charges, because there are a few new people. 1a: what's leaving the state of Illinois, 1b: what's leaving in terms of loads, 1c: trends over time, 2: what are local water outcomes, like are bugs and fish happier. For 1b, 1c, and 2, we will be talking about that today. We have two new members here today; if those charges don't look like what we should be doing, let us know. Paul is a distinguished member of NSAC and will give a few words as an update.

Paul Terrio: Has anyone given the group an NSAC update? Our membership, who is on the committee, is Dr. Todd Royer, Indiana University; Dr. Matt Whiles, Southern Illinois University-Carbondale; Dr. Walter Hill, University of Illinois and Oak Ridge Laboratory (retired); Dr. Candice Bauer, U.S. Environmental Protection Agency, Region 5; Dr. Doug McLaughlin, National Council for Air and Stream Improvement; and myself. We have conference calls monthly; we spend the day together once every three months, quarterly. Initially we sat down and said where are we, where do we need to go, what are the statewide standards, etc. We are looking at stressor response approach to develop criteria. Needs would be to update the dataset. Data analyses are a decade old or from a previous decade. We are focused on 2010-11 to current information. What specific analyses will we take? USEPA will fund current data analyses effort through a contractor. IEPA, IDNR surveys are the biggest ones. We may pull some data from neighboring states and look at other datasets, like the Fox River datasets. We are trying to look at

everything; we don't have forever or unlimited resources. We have identified parameters/metrics on what we would like to look at closer. That's where we are at this point.

Gregg Good: Any questions for Paul representing NSAC?

Warren Goetsch: What is the timeline?

Paul Terrio: 18 months, initially and we haven't changed that.

Cindy Skrukrud: I passed the Fox River implementation plan on through Eliana. After the last PWG, there was an email exchange with all data in database. Urban watershed groups have collected data. Do you want to hear about more data?

Paul Terrio: We don't want to exclude anything. At this point we want to hear about it. We are still formulating a work plan.

Cindy Skrukrud: There are new groups collecting data. I'll put you in touch with Stephen McCracken.

Ann Holtrop: How are you looking at data? What are you compiling?

Paul Terrio: Physical, biophysical, and physiochemical data.

Ann Holtrop: How much mussel data do you have?

Paul Terrio: We don't have much.

Ann Holtrop: We have 1,200 community samples done. It was left off the maps, but the communities don't change that often. Some were done on the same stream and different years. The five year statewide rotation basin survey is done in three years; it doesn't always align with fish and bugs.

Cindy Skrukrud: Bob Moser did mussel samples on streams.

Gregg Good: Diane Shasteen did a lot of five year basin rotation mussel surveys. A 106 monitoring grant is where Diane is looking at mussel populations at wastewater treatment plants. What is your mussel index? What does it tell you?

Ann Holtrop: It is a multi-metric index similar to fish and bugs, but not tied to disturbance. There is relative difference in samples, but not a lot of faith in numbers tied to disturbance. It is useful info, with limitations, but gives a picture of mussel communities across sites. In some places no mussels were found, can you tie to nutrient loads, etc.?

Gregg Good: Next Paul will talk on super gages.

Paul Terrio: I have a few slides and it will be brief. I would like to update everyone on the super gages. There are no other pictures as far as installations. We like to install on bridges and like to get vertical installation. It serves us best. It takes nitrate, multi-meter, turbidity sensor, etc. The current status as of today, here's a map of the locations. Rock River and Green River, Illinois at Florence, Kaskaskia at new

Athens, Big Muddy, Little Wabash, Embarrass, and Vermilion River. All are in. We take nitrate, turbidity, and physiochemical data sensors at all sites. Currently challenges, is infrastructure – damage on Rock River with ice conditions. Vermilion is problematic for phosphate and other sensors. There is high turbidity and it is located on a bend so stuff gets pushed over to bank. Part of the problem is color, frequent cleaning. It's a site that's not vertical or off bridge deck. It is kind of a problematic site. We are looking into a pumping system. I'll show you sedimentation issues that we have here. Phosphate measures are not instantaneous; it takes an hour to get reading, and is set for every four hours. Color staining can occur over time. They brought the frequent analysis to every two hours. There is more reagent use which is costly but more reliable better data hopefully. We have come out with a retrofit on analyzers. We have a package reagent deal so we have to wait for phosphate sensors. The phosphate analyzer, we want it vertical, or all of the mud accumulates on top. The stream has filled with sand; ice pushed our tube down and separated it. The conduit bent and nitrate sensor is stuck in there. Also high and low flow. It is completely out of the water. These are some realities that you are aware of and some visuals. We do have successes too, like the Illinois River data at Florence. The red is gage height, green is nitrate concentration. Blue is nitrate load in lbs/day. There was a flooding event over New Years. Nitrate load was up to 30,000 lbs/day being transported. There is lots of data processing. Some data here has not been cleaned up yet. There may be spikes or flukes. Red is discharge, green is nitrate plus nitrite, blue is phosphate. The goal is to come up with total phosphorus load. Used total phosphorus and turbidity. Not that much phosphate data to develop total phosphorus data. Temperature is in green. As temperature increased, phosphate increased at 5 degrees. We haven't looked into it. Things pop up in the data. That's all I have. Any questions? Kelly, would you like to add anything?

Kelly Warner: Nitrate is working well at sites. Phosphate is more difficult. Overall all sites are getting data. The Danville site is the problem site.

Gregg Good: Comments?

Laura Keefer: What's the turbidity like?

Paul Terrio: 50 NTU or less but goes up to 1500 NTU or higher. During storm events, it is higher. Generally instruments measure well. You have to accept erratic spikes and measures high flow events.

Kevin Culver: Does it measure the sand bed low? What would that entail?

Paul Terrio: I don't think you can do that. You'd have to do that manually.

Laura Keefer: You'd have to do it manually. Bed load measuring is labor intensive.

Cindy Skrukruud: Can you talk about the superstation at the Illinois-Indiana border?

Kevin Culver: Kelly, when is Kankakee station going in?

Kelly Warner: Very soon.

Gregg Good: Eight sites in the red are under contract with USGS. Show annual loads of nitrogen and phosphorus. At some point, are we capturing what's coming in from other states? Mark David took it into account when they did the science assessment. There are points of entry in Illinois that we are aware of. Monitoring nine times a year or under contract with USGS and ISWS. Amy said USGS in Indiana has a new Supergage on Kankakee. Kevin, do you know more about that? They stole the idea from Illinois?

Kevin Culver: Are you doing an open house next week, next month Kelly?

Kelly Warner: I will forward an email to Gregg, I'm not sure when.

Gregg Good: From the NMC perspective, are there any other superstations we would like to recommend now or in future? Are we comfortable from this network? What's leaving the state? What's going downstream from Chicago? What about a Supergage on the Illinois to capture MWRD and what they are doing to reduce loads?

Gregg Good: Justin would you like to speak, are you involved?

Justin Vick: Not really.

Cindy Skrukud: Above the Kankakee.

Gregg Good: Now talk of Indiana data. Thoughts for needs of Supergages anywhere else in the state? Not continuous but long term data on nitrogen and phosphorus?

Cindy Skrukud: One question on strategy goal on in state impacts? Do you monitor algae levels coming in?

Gregg Good: We collect chlorophyll data. We don't collect it at all ambient sites.

Paul Terrio: Kankakee at Wilmington is only one that has sestonic chlorophyll.

Kelly Warner: The site in Indiana is up and running as of December. Phosphorus isn't on there yet probably because of QA/QC. But nitrate and turbidity is up. Loads for the state, how nutrient reduction has an effect, a station outside of Chicago for phosphorus is important and near Indiana for nitrate.

Gregg Good: Well the state budget is not good. Anyway, that's something to consider. Show where it is. Kankakee on Indiana side.

Kevin Culver: At the Yellow River maybe put one in. The tributary in Kankakee farther up.

Gregg Good: Mark David said he was bowing out of the NMC. He is retiring. We now have Paul Davidson. Mark was going to still work with data. We sent him nitrate and phosphorus data from 2012-2015 for him to analyze as a one-time free gift to the NMC. We made data available to him from AWQMN sites. Any comments or questions? We have that interim period that hasn't been looked at since the science assessment. Moving on to the agenda, where do we go with monitoring efforts? Are the statewide efforts taken care of? What is the monitoring plan? Our goal is to show nutrient

reduction. Where do we monitor nutrient loss reduction strategies? Where is monitoring ongoing in the state? Where do those two intersect? The goal is to show improvements through efforts. Warren is here to talk about what's going on with AWQPF. And Anjanette is talking later. And I'll fill in where the NMC is monitoring. Where is work being done in the state? We are seeking guidance from Policy Working Group. We want to make sure that we can answer charge questions.

Eliana Brown: Iowa has been through this process. John Lawrence from Iowa presented this logic model to show how capturing data to reduce nutrients. We have adopted it for Illinois. Anjanette will talk about the human and inputs column.

Anjanette Riley: Hopefully you have already seen this. Don't memorize it, I will also send an email. As part of the logic model, I am coming to each organization to ask about inputs and humans. I was going to do it quarterly, but that is too much, so now we will do it twice a year. It will be done by organization not by sector or group. Only by group. These two are efforts being put in, not results of efforts. We are collecting in July and January. July 15 is the first collection. I will compile and send it out with a top sheet. You will get an excel spreadsheet from me with inputs. I am looking for information at the programmatic level. The CREP program, roadshows, grant programs, etc. Not a result of those, just the existence of them. Things like demonstration field days, meetings attended workshops attended, and number of flyers given out will be collected for human dimensions. The most important bit is not only to update groups, also for time for reporting, we will already have that information not have to ask for every two years.

Gregg Good: Anyone who has stakes? All groups?

Anjanette Riley: Yes, each group will hopefully have a point person.

Ann Holtrop: In the email, is there any way to know which people from organizations are on the other committees?

Anjanette Riley: We can facilitate so you know who is also in your group. The way I have it set up, the point person subscribed, and then was sent an email. The goal is so everyone doesn't have to hear from me for reporting.

Eliana Brown: To make sure your info is included, please send it. If you don't send data, it will not be included.

Cindy Skrukrud: Watershed groups throughout the state, how do we capture that?

Anjanette Riley: We are happy to also work with them. We can talk to have a representative list.

Warren Goetsch: For various parts, there are different types of inputs to show that you are making process. The first thing they talked about is to capture activities. They are putting in resources, all resources, towards this effort. Fast forward to land, after input resources, we should see some changes on the landscape. The idea is to capture some changes on the landscape like cover crops, conversion, practice adoption, etc. There are point source implementation possibilities. As part of AWQPF, we

formed a technical workgroup to answer “what do we already have in place and how to access those?” Other stakeholders are all there. Members of the workgroup, IEPA, IDA, NASS, Ag partners, etc., are primarily trying to look at where there might be data for various management practices. We are trying to fill in this chart and determine consistent units from all various management practices. One thing that we determined was that the producer survey would fill in many of the gaps. The plan is to send out 1,000 surveys to randomly selected farmers/ growers across the state. Depending on the response, there will be a second mailing in August, depending on response, phone calls, etc. The goal is a 70% return rate. We work closely with DNR, FSA, NRCS to look at their data and come up with decisions on which data is available what definitions are and how definitions can be grouped together. Our next meeting is June 14 and we are supposed to have accumulated data down to HUC 8 levels for majority on parameters up there. Then we will be in a good place to talk about both what has been done in 2011 and 2015. Then we will repeat the survey and data every 2 years thereafter. Every 2 years is required.

Gregg Good: Are there more metrics? Or is that all?

Warren Goetsch: Those are all metrics. All BMPs are recommended from Ag, the nonpoint source side. We are doing the same thing with urban point and nonpoint source. Challenge of collecting inputs and activities. You are where the rubber meets road.

Laura Keefer: Will the NASS survey be sent to soil water conservation districts? They know how many cover crops, etc. They know everyone. It would increase response rates.

Warren Goetsch: I agree. They have a tremendous potential for impact. Because of the budget and lack of funding, they may not be that happy with us. We talked about the idea as a training tool. It may be a desk survey. The producer/grower comes in and wants to talk, and they can be filling it out. We are looking for a scientifically reliable adoption rate. As far as outreach education, it can be pursued once money is available.

Gregg Good: Is the survey probability-based?

Warren Goetsch: It is statistically scientific. That is why we are using NASS. 70% is a certain confidence level. We are looking at 40,000 if you want to be statistically significant. Yes, will be statistically significant at the statewide level. What Iowa is doing? They would do 2-3 of those each year but keep one of them the same. Iowa seems to have a lot more money.

Gregg Good: So we could ultimately relate survey results to statewide network of what leaving the state. We could separate the effort to have survey targeted towards specific watersheds.

Warren Goetsch: NASS survey will do some management practices. They will have some information down to the HUC 8. There are some that will get down to HUC level. It is a survey that we can't get through other services.

Cindy Skrukud: Why are buffers or water table management not on the survey?

Warren Goetsch: Through FSA we will get excellent information. Water table management wasn't originally identified in science assessment as a practice.

Brian Miller: Cost share can capture in agency records. Practices at the top are not cost shared and can't get it through other means. The top few are being captured by survey.

Gregg Good: Iowa has \$1 million to capture this. John Lawrence was behind it. When doing their nutrient strategy, they got \$1 million.

Warren Goetsch: In the multimillions. They have significant influx of cash for nutrient management. Also they have lawsuits there.

Gregg Good: Is Illinois #1 or #2 for nutrients?

Amy Walkenbach: #2 on both.

Gregg Good: For the logic model, how to identify logic models, and trying to capture load reductions. It doesn't capture charge 2. The water quality improvements outside of loads are difficult to show.

Warren Goetsch: We don't want you to limit yourself. As we go forward, report or document progress, consider those. I like to think of logic model as a starting point to wrap your mind around this issue. It's a big issue, lots of stakeholders, and lots to do. Don't let it limit you.

Brian Miller: This slide came from Iowa. We started with Iowa. What did the strategy in Illinois say? Then we worked across from there. The challenge to this group is what you all on what to measure. What you can and should measure.

Ann Holtrop: What about bugs and fish? Get bug and fish baselines now to have consistent things over time.

Gregg Good: Okay, but priority watersheds. That problem doesn't go away. These watersheds are in the strategy. KIC is outlined in red. The ones with hash marks are prioritized as point source. Where are there watersheds where we had significant data? Shaded in yellow are the six NMC selected maps. We wanted to make sure there was overlap. The Ag community, where are they focusing their monitoring. Outlined in bold black, is where you felt we should ask. Three phosphorus watersheds, none of those identified as having a lot of monitoring. Is there more emphasis on one of those? No clear signal on those. Amy will show where 319 actions are concentrated. The plan is to do monitoring and show improvement. There are two KIC watersheds that you have not identified. More for your discussion. I will show you where overlap is. We are looking to increase monitoring,

Gregg Good: The NMC selected the top six to demonstrate where there is a lot of work going on. Where is the overlap? We want to hit a point source, non-point source, etc. There may not be a lot of work going on. We have Supergages, Lake Springfield is footing bill for two Supergages for five years. Amy were you going to take this?

Amy Walkenbach: We are looking at all the priority watersheds. Blue is where we have watershed plans. The dots are any BMP, SSRP, CCRP, or 319, etc.

Ann Holtrop: It would be nice to locate southern watersheds. Could we reconsider the Kaskaskia?

Gregg Good: Is there a feel that we need to stick with priority watershed? Will there be complaints?

Ann Holtrop: When we talk about concentrated effort, is that something we will do?

Amy Walkenbach: There are two paths: the story we could tell with Kaskaskia. And we want to tell the story with priority watersheds. The 1st thing will need to identify watershed monitoring protocols. They could be parallel. In absence of having effort in a phosphorus watershed, we could use Kaskaskia until developed.

Gregg Good: What about point source?

Amy Walkenbach: Hopefully that story will be easier to tell. We can tell from in-house collection of data.

Trevor Sample: It depends on story we want to tell. What metrics. Are you trying to show local habitat improvements or just chemical improvement?

Ann Holtrop: We are doing all this work, but we are not telling the story. It might take longer.

Laura Keefer: We have just started collocating monitoring and work location.

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Brian Miller: When you look at the slide, you see point source watersheds. Then there are nutrient watersheds. Then there are three phosphorus watersheds. Because of the monitoring and Supergages, where are you measuring the other stuff? What about detailed sampling of broader impacts. How many watersheds on the point source would you really need to measure at? The same question goes for phosphorus and point sources. One or two? If these are the ones you want to start to talk about, where can we make the greatest gain? For point source watersheds, what do we need to monitor? Would you have to have a couple examples?

Laura Keefer: The point source in Sangamon is different than the Fox. The densities are different.

Kevin Culver: In the Fox, there are chloride issues too. Not nutrient loss, but it's a dense area, chloride study.

Ann Holtrop: There are three selected ones already selected with hash marks. Why wouldn't we move forward with those?

Cindy Skrukud: What's the schedule for point source reductions?

Brian Miller: The University has boundaries.

Laura Keefer: Three stations collect for critical zone observatory.

Brian Miller: It goes on for 5 years

Laura Keefer: We are in our 3rd year.

Cindy Skrukrud: Lower Rock, Chicago would be better. In the strategy, Chicago Calumet should be a priority but it didn't make it on because it didn't have a plan.

Laura Keefer: We have constructed a pseudo superstation at a USGS gage.

Brian Miller: Fox, Decatur, Calumet. Should we go with these three?

Cindy Skrukrud: The Fox watershed goal is to coordinate with IDNR, etc.

Gregg Good: Are all okay with Fox, Decatur, and Calumet?

Brian Miller: For KIC and nonpoint sources. Trevor talked about Vermilion quite a bit.

Trevor Sample: KIC is just upper part to Decatur. You want to catch the downstream.

Gregg Good: What about Lake Springfield? There is tons of work going on there.

Laura Gentry: Don't do phosphorus, just do nitrate. For reductions from Ag, Vermilion is the one to do it on. Springfield work is going to wind down in October.

Amy Walkenbach: You gave a good argument for Vermilion.

Brian Miller: Three Ag nitrate, Vermilion, Decatur-the whole thing, and maybe Springfield, if you wanted to have one representative for nonpoint source for phosphorus.

Ann Holtrop: Kaskaskia shows that nitrates are not issues, its phosphorus.

Amy Walkenbach: We have three watersheds identified; let's look at phosphorus watersheds at that point.

Gregg Good: Leave it "to be determined."

Brian Miller: Make note of Kaskaskia for phosphorus.

Cindy Skrukrud: Yield is higher near the Big Muddy.

Brian Miller: I think we are there.

Gregg Good: Point source (3), non-point source nitrate (3), and phosphorus TBD.

Amy Walkenbach: Looking at yields from watersheds, water quality within basins, and gave points. Just because they aren't a priority doesn't mean they aren't important to load reductions.

Gregg Good: Next question is for Jong.

Laura Gentry: In the Embarrass they have 22 years of upper Embarrass data. Also there's a 36 tile study in Douglas County. Dr. Hayes started it and the Dr. David took over. There's a wetland study ongoing for 20 years. And there's a bioreactor.

Brian Miller: Trevor marked all bioreactors.

Trevor Sample: Three are already in, three are old. Mark David sent me everything he's been working on so I got it.

Gregg Good: We are planning on doing watershed monitoring plans. What things do these do? What do these things look like? We got USGS gaging stations. Every five years, bugs and fish are being done. Here's what's out there already. We are just putting it down on paper. I'm glad we identified these watersheds. Jong will talk about the Fox and I'm not sure what you're going to show us.

Jong Lee: I presented Great Lakes to Gulf at the last meeting and bring information into the existing Geodashboard. I explored the Fox River set and looked at the data based structure, and picked some sample stations. The object of the study is to evaluate Fox River. All data is available online. The Fox database is Microsoft Access database. It is a structured relational database. The purpose of what I did is how feasible is it to put data into dashboards. I loaded the sample data to Geodashboard. In the database, there are 5,030 stations; 570 stations contain nitrate and phosphorus. There is a good example of how to create a query using Microsoft Access. I picked five stations that have most data points. There are many different units and queried information and assigned it a number. Have the .csv parser to bring .csv into Geodashboard. If you click, you can see the data field and parameters. Then you are able to visualize the data. I will try to real-time data. You can aggregate by season or by month in even more detail. You are able to get into daily too. The good thing is that you can download the data set. The fun thing is about to compare the parameter you pick between your stations. You can compare the different parameters. It took about one day to input all this data.

Laura Keefer: CZO Lake Decatur is getting uploaded to different database.

Jong Lee: You can bring that in.

Trevor Sample: What is the Y axis?

Jong Lee: The average value. It is averaged by year, I believe. We already have the USGS superstations and uploaded every hour. One thing I didn't show is that now you can also download the data. The all-time range can be downloaded. It is more tailored to end users.

Cindy Skrukud: I have to reeducate myself how to get out of the database.

Jong Lee: Fox River has a lot of information.

Ann Holtrop: Biological or just chemical data?

Jong Lee: We can do biological.

Brian Miller: The biological data is coming off the Lake Guardian.

Jong Lee: We need to know what observation and what measurement it is.

Ann Holtrop: There are different structures to biological data.

Gregg Good: Can you take that and spit out loads?

Jong Lee: Yes. Equations we can do.

Trevor Sample: You can get that data from USGS.

Jong Lee: You are the experts and provide us data. Sometimes the computer program tries to find shortcuts.

Cindy Skrukud: Is it live?

Jong Lee: Yes, right now it is.

Cindy Skrukud: We have eight stations we have been monitoring for last 14 years,

Gregg Good: Chemistry?

Cindy Skrukud: Yes, only chemistry, but I can go back and put in biological data.

Paul Davidson: Can the user change what is visualized?

Jong Lee: Great Lakes to Gulf, great lake monitoring, etc.

Trevor Sample: USGS.

Brian Miller: The purpose was to show what's in there and what you can do with it. What does group want to do? Develop monitoring plan. There are time demands.

Jong Lee: It depends on the size of the data.

Brian Miller: Once 5 stations are worked out, we can add more.

Jong Lee: Yes.

Laura Keefer: The loads? Annual loads, monthly loads? The time step that shows a trend.

Gregg Good: For charge 1a, we are looking at a 5 year running average. Are we looking for more immediate?

Brian Miller: Here's an example of what you're talking about. There's 30 years of data with set sampling points. This is Great Lakes water quality. This is a 10 year running average. Phosphorus level is above the standard. It brings in new data.

Brian Miller: We had an example of bringing in data from STORET. You have got to have some intelligence of what you want.

Gregg Good: How do you identify a trend?

Jong Lee: A 10 year average. With units of mg/L.

Ann Holtrop: What we are really going to do is to calculate the load leaving the state. I don't see writing a plan until what we are trying to do. Then the plan becomes collecting data in a more structured way.

Cindy Skrukud: Within your dashboard, can you generate loads? Then you look at it and collapse it down. Those are all things you can manipulate on the dashboard.

Gregg Good: What should we talk about in the next meeting? Along with which watershed to do first?

Ann Holtrop: We might find all the parameters for a handful of them. Do we profess to know all of what is going on in terms of activities?

Gregg Good: The critical zone?

Brian Miller: Laura, do you know more?

Laura Keefer: The intensively managed landscape for the critically managed zone. CZO.

Gregg Good: We wanted to touch base with Laura. This may be jelled a little. What kind of data, what are our top data needs, what is good or bad? We did a brain dump and made a list for people to consider. We have to have confidence in data. What type of data? Nitrite, nitrate, etc. Are we settling on USEPA or USGS codes or measurement methods went into collecting the data? What about laboratory methods? Some are going to be a leap of faith. What was the collection method? Is it a surface grab? And then the data type. You can't compute loads without stream flow. We tossed out what parameters we are looking at, like TKN and total P. Those are non-dissolved total P. Does all of this need to be collected in every watershed? What about sediment concentration? Then the other thing that is optional like multiparameters, specific conductivity, pH. Money is involved and do people have that information. We came up with four criteria. Maybe we want to question it. We threw this out as a placeholder to assign some reliability. This leads into how to document it and the data collection in the plans would be just as reliable or more. We can just jump for there. And this is just for chemistry.

Ann Holtrop: You raised a good point. If goal is to collect all data known, it's different than what we are going to collect, who will collect it, etc.

Laura Keefer: There will be a lot of organizations doing it at a same time.

Ann Holtrop: Especially if it's feeding into a database.

Brian Miller: There is lots of data, agency data through QA/QC, and criteria for what else is added. They figured out what they would decide.

Laura Keefer: As a group, we have to agree if that enough and how to collect the data, for what purpose and how was it collected.

Cindy Skrukrud: Under the new MS4 permit. Urban watersheds are collecting for monitoring. IEPA has our QAPP.

Amy Walkenbach: We are not at the point of offering a lot of guidance yet.

Gregg Good: We are just summarizing stuff.

Eliana Brown: We have made decisions but not a lot of action items. Laura Keefer is to make a presentation about CZO in the upper Sangamon. How to solve 1a-1c and 2 charges?

Gregg Good: What data do we need to look at? There is lots of volunteer work be used.

Kevin Culver: We can run QA/QC, but lots of people do poorly.

Gregg Good: IEPA is reliable, RiverWatch is moderately reliable.

Laura Keefer: It is long term for RiverWatch and not a small scale.

Ann Holtrop: What level of data do we need? What are the sources?

Laura Keefer: The group needs to know how symbiotic the data is.

Ann Holtrop: What it is that we want to know?

Brian Miller: Would you and Justin and Andy do something similar to what Laura and Kelly did.

Ann Holtrop: We might not get that far.

Laura Keefer: NSAC is to use biological variable as a response.

Paul Terrio: We can provide list as it stands.

Gregg Good: I would like to concentrate on loads for the nutrient loss strategy. I would like to look at 1a, 1b, and 1c charges first and foremost to know how to adequately say what is going on with loads.

Brian Miller: Gregg, you brought up picking out and monitoring plan on one watershed. Should we drill down what data is available?

Gregg Good: I would like to have a map of the new 7 maps. Let's look at mid-July for the next meeting.