

**FTS-NRCS-NHQ-DC**

**Moderator: Debbie Curtis**  
**March 23, 2011**  
**1:00 pm CT**

Man: We should be getting pretty close folks.

Coordinator: Excuse me, this is the operator. I would like to remind all parties today's conference is being recorded. If anyone has any objections you may disconnect at this time.

I would now like to turn the meeting over to Michael Kotz. Sir you may begin.

Tom Christensen: Good afternoon and actually this is Tom Christensen. And we appreciate the folks on the phone joining us today. I'm going to turn it over to Chief Dave White in just a minute.

But we appreciate you being here to talk about the subject of improved management of agricultural drainage water. There are a couple of logistical things I just wanted to go through.

Those on the line, if you would mute your phones, we would appreciate that. The other items is that this will be a Webinar. So this will be available to you a short time after the close of this conference.

And we'll also develop some conference notes that we'll make available too from today's dialogue. So we appreciate that.

And if you would, hold your questions. After we get through the presentations then we'll open it up for a full dialogue. So with that I'm going to turn it over to Chief White.

Dave White: Thank you Thomas and welcome everyone here. I think probably we ought to start with introductions so we know who's here. I know a lot of people. There's some I don't know. And then we don't know who is on the phone. So I'm Dave White, Chief of NRCS, Thomas.

Tom Christensen: Tom Christensen, Regional Conservation of Central Region.

Don Parrish: Don Parrish, American Farm Bureau.

Doug Toews: Doug Toews, NRCS National Water Management Engineer.

Alex Echols: Alex Echols, Sand County Foundation.

Bill Wendel: Bill Wendel, Mississippi River Network.

(Mark Gorman): (Mark Gorman) Northeast and West (unintelligible).

Martha Noble: Martha Noble, National Sustainable Agriculture Coalition.

(Whitney Connie): (Whitney Connie), (unintelligible).

Sarah Harper: Sara Harper, Environmental Defense Fund.

(Ilene): (Ilene), Environmental (unintelligible).

Woman: National Wildlife Federation.

(Jane Mark Schafer): (Jane Mark Schafer), Associate of Fish and Wildlife Agencies.

(Andrew Base): (Andrew Base) with National Turkey Federation.

(Annie Tran): (Annie Tran) NACD.

(Scott Lasher): (Scott Lasher), Theodore Roosevelt Conservation Partnership.

(Mitch Hunter): (Mitch Hunter), American Farmland Trust and (Johnson Gene) is going to be joining us.

Chuck Kowaleski: Chuck Kowaleski, Texas Parks and Wildlife.

Dave White: Oh, that Chuck. Okay, people on the phone, okay, Chuck say your name again.

Chuck Kowaleski: Chuck Kowaleski, Texas Parks and Wildlife.

Dave White: Okay.

(Alicia Reed): (Alicia Reed), NRCS.

Dave White: Okay.

Mike Brown: Mike Brown, NASCA.

Woman: NRCS.

Anita Zurbrugg: Anita Zurbrugg, American Farmland Trust, Midwest Office.

Ryan Stockwell: Ryan Stockwell, National Wildlife Federation.

(Greg Fogal): (Greg Fogal) of the National Sustainable Agriculture Coalition.

(Diane): (Diane) at NASDA.

Dave Walker: Dave Walker, Fish and Wildlife Service.

Drue DeBerry: Drue DeBerry, Fish and Wildlife Service.

John Sampson: John Sampson of Agricultural Retailers Association.

((Crosstalk))

(Sergio Perlouisi): (Sergio Perlouisi), Fish and Wildlife Service.

(Bill Detag): (Bill Detag), Drainage and Management Coalition.

Paul Sweeney: Paul Sweeney, NRCS.

Kurt Forman: Kurt Forman, US Fish and Wildlife Service in South Dakota.

(Keith Triegel): (Keith Triegel), North Dakota Natural Resources Trust, Bismarck, North Dakota.

(Dave Nomson): (Dave Nomson), Pheasants Forever.

(Johnny Brusard): (Johnny Brusard), USA Rice Federation.

(Kevin Kaden) (Kevin Kaden) and (Greg Link) from North Dakota Game and Fish Department.

Bill Gradle: Bill Gradle with NRCS.

(Mark Burns): (Mark Burns) Oscoda Game Fishing Parks.

(Geno Tori): (Geno Tori), Ducks Unlimited.

(Todd Bovenchots): (Todd Bovenchots), Iowa DNR.

Dave White: Is that all? Anyone else on the phone? Okay we're - we've got some folks here in this room yet. I don't know if you'll be able to hear them because they're off to the side, but let's go around, Doctor.

(Unintelligible).

(Michael Golden): (Michael Golden), NRCS.

(Annette Rushing): (Annette Rushing), NRCS.

(Aster Bruser): (Aster Bruser), NRCS.

(Robert Upulate): (Robert Upulate), NRCS.

(Tony Cramer): (Tony Cramer), NRCS.

Dave White: Okay well. Thank you all very much. A lot of diversity and interests and groups. Maybe we found something that can bring us all together.

Let me give you the context of why we're here. Many of you know, after the 2002 Farm Bill with Congressional direction, NRCS embarked on the conservation effects analysis project. We'll call it CEP.

And last I think it was June, we released the first CEP report. And it was for the upper Mississippi River basin. And basically that CEP report showed us a lot of things we expected.

And it also had some few surprises for us. One, we - what we're finding out across the board is that voluntary conservation, incentive-based conservation does work.

There were significant losses that were being reduced by conservations, (sat a moves) down like 69%, phosphorous by 49% in that region. Overall one of the concern items was that nitrogen, overall, it was being reduced by 18% by the conservation that was on the land.

Surface wise there was a 46% reduction, sub-surface, only 5%. And the report also told us that conservation practices work best in tandem. So if you put a terrace to stop soil erosion, you can be exacerbating the sub-surface loss of nitrogen.

So you need terraces and good nutrient management. So that's really what we're here for is how can we do a better job of controlling this stuff.

Man: We most definitely have that. It's very closely facilitated...

Dave White: I don't know who's talking. But if you're on the line, can you hit star 6 and mute your phone please.

So basically what we found without the good nutrient management practices, erosion control can, you know, can increase sub-surface flows.

So in September that year we created a little team to provide recommendations for what actions we might take, in concert with partners, to increase the adoption of practices we know will help in this area, especially in the upper Mississippi and the whole Mississippi River.

Bill Gradle was the State Conservationist we had who was in charge of this effort. He's on the phone today. We asked him to identify the barriers, lessons learned, what kind of strategic recommendations should we go forward with?

You know, historically if you look at the tile drainage, they were designed to efficiently drain the ag fields. And there were really no mechanisms to control outflow.

And we have about 50 million acres that has been drained in the Midwest alone. So what we're seeing is the concentration of nitrogen in those tile drains are typically, you know, larger concentrations than in overland flow and in the surface field runoff.

We have some research from North Carolina that shows with properly managed drainage, it can reduce the nitrogen transfers from soils to surface water by as much as 45%.

So we have a large opportunity here for water quality purposes. What this is not about is an effort to drain all the lands. It's an effort to manage how we do the lands we do have drained at present.

In fact, the whole title is, I know sets off alarm bells. I know that many of the fish and wildlife groups are very concerned about this. So I think what I'd like to do is if anyone can come up with a better name, I will buy you lunch at the USDA south building cafeteria on a date that's mutually convenient.

So by the next meeting, if someone has a cooler, better name, you can count on a free lunch from me. And I'll spend as much or as little time talking about this with you as you wish.

So that's kind of my opening remarks. We want to do a better job of management. And is there ways where we can get a win for the environment, get a win for production agriculture. At the same time we look at this issue.

So Thomas, I think I'll flip it over to you.

Tom Christensen: Thank you Dave for that introduction. We appreciate that. On the line we have Bill Gradle, State Conservationist in Illinois. And as Dave mentioned, he led a within agency team over the space of about three months that has developed some recommendations related to this issue.

Also looked at some of the barriers to better management and so forth. So Bill is going to give us a PowerPoint synopsis of that report. You'll note that we're not handing out copies of that report.

It's still a draft product. There's still recommendations in there we want to discuss with you. And so nothing is final in that report. So with that I'm going to turn it over to Bill. And he's going to walk through a summary of the report.

Bill Gradle: Tom can you hear me okay?

Tom Christensen: We can.

Bill Gradle: Great. The Chief did such a good job. I don't want to scare anybody. But that's yours truly. I want to thank Mr. Christensen for tasking me with this team.

As the Chief mentioned, we started back in September. And my team consisted of the following folks. It was a great bunch. We also consulted with the state conservationists in the upper Mississippi River basin area and along with the Ag Drainage Management Coalition in putting together some recommendations.

We wanted to assess the current practice use. Identify the barriers, as was mentioned earlier by the Chief. Determine and consider what the lessons learned have been thus far.

And then to develop our strategic action recommendations to increase the adoption of the practice that was in the watershed, especially in the upper Mississippi.

The situation, as the Chief indicated, our systems are designed to efficiently and very quickly drain our fields and allow for access just about this time of the year.

Tile drainage has been around for quite a while. And does allow for and reduces damage to the growing of crops from prolonged soil saturation.

There are about 50 million acres of tile drained ag land in the Midwest. As was mentioned earlier also, concentrations of nitrogen, primarily nitrate nitrogen and water flow from the tile drains are typically (double) times larger in concentration than overland and surface field run off.

That highly soluble nitrite nitrogen gets incorporated into that infiltration. It's transported to the tile system and out to our waters of the US. The hydrologic cycle in the drainage process.

NRCS has been working early on in the 1990s with landowners to install water control structures that allow operators to then manage and/or control the flow of those waters that are leaving the tile system.

And I do want to commend the state conservationists that provided us with some real good data as we're going to talk about here from Ohio, Indiana, Iowa, Minnesota, Michigan, Wisconsin and Illinois. That really my first experience and my first knowledge of drainage water management was actually for some of the work that folks were doing early on in the '90s in Ohio.

Here's your typical drainage outlet with a, just so everybody knows what we're talking about, drainage water management. Number 1, you got to have a tile

system. And we're talking about as was indicated earlier, these are existing tile systems that have been out there.

But the key is that you have a water control structure or a structure for water control that can control that water in the water table. And what we would like to do is have, after harvest in the fall, have those structures set up to where they're going to be holding back the water table throughout the winter.

Our practice standard that we have on the books now, our drainage water management practice Standard 554. And conservation practice for that structure for water control is Standard 587. And you really need both of those to do your drainage water management for sure.

We have had some new concepts, saturated buffers. We've also had some work with bio reactors in a number of states. As we'll talk about here, when we looked at some of the items that you really need to have to let drainage water management work and work effectively.

And work to where we have some economic impacts is a topography that we have out here. We do have ongoing research on these practices here.

The barriers that we find, as we mentioned earlier here, you need to have about a half a percent less. The flatter the better, physical size of your field.

We do have some current policy restraints. And a real barrier is that the systems that we've had out there, and if you've had some systems out in fields for 50, 60, 70 years, sometimes there's very little knowledge of just what is existing.

And so to retrofit, to put in one of those water control structures take a little bit of time and effort to locate all those existing tiles. And size that.

The other system elements such as the bio reactors and the saturated buffers, there really isn't a lot. There is some limited research data. But we feel that there could probably some more studies undertaken.

And then just the whole concept of managing drainage water and sub-surface water. Folks out on the land have been, you know, we want to get - the mindset's been to get rid of that water as fast as you can.

And we're introducing a little different concept to hold that water back. And, you know, for a number of positive purposes to keep the nitrate nitrogen out. But it's a little difficult to sell sometimes.

We've also found, and again we would say probably that there definitely needs to be some more research. But not a significant or very little increase in yield. And the economic benefits are somewhat tough to come by.

And we do feel that some of our financial assistance incentives are a little bit insufficient, especially when you have that kind of a very little if any economic benefit.

The lessons learned, of course we talked about the level ground as really essential in getting a real good system and to manage it in a cost effective and economic method.

You need to, I know here in Illinois, we have some of our systems where those main lines go from...

Dave White: Hey Bill, you're fading in and out. Can you speak closer to the microphone?

Bill Gradle: I'll try sir. How's that? I don't know if I can increase the volume on this phone. I'll try.

Dave White: No you're fine now.

Bill Gradle: Okay.

Dave White: It sounded like you were mumbling there.

Bill Gradle: Excuse me. The more extensive a drainage system shows, the higher benefit for the pay out. And what we're talking about, as we mentioned earlier, we're looking at existing systems. Which means were retrofitting these systems.

Those systems that may be re-worked at due to some maintenance issue. That would be an opportunity also to include that.

The more lessons learned, the de-nitrify and bio reactor, which we do have an interim standard in two states, both Iowa and Indiana, really do show a good potential. Somewhere about depending on the research that you're looking at, sometimes a reduction of 90% of nitrate nitrogen.

But we definitely feel that we need some more research. And over a variety of states too. We've kind of modified our NRCS (biperion) force buffer. But there is also a saturated buffer that we think needs some more research were we don't really know the benefits.

We think it's positive benefits. But we just don't have the research to back it. And then we also believe that the drainage water management should be

paired with a good nutrient management plan in order to achieve some real positive economic benefits. The system's approach for sure here.

We do have a number of comments from industry. And these are mainly from the Ag Drainage Management Coalition. But we'll go through these. They believe that online training tools for certified crop advisors, staff, partners and drain contractors is needed.

The Coalition would like to certify contractors as TSP in the hopes of speeding up the process. They'd like to have the professional engineering requirement removed for the drainage water management plan for the TSPs.

And they recommend that we tap into National Association of Conservation Districts, conservation technology information centers, certified crop advisors for outreach and possibly our comprehensive DCPI program, which is a subset of equip, the Cooperative Conservation Partnership (unintelligible).

More comments from industry. They'd like us to retrofit the stream bag buffers with the co-efficient of one for saturated buffers. They'd like us to caution our mains where we're retrofitting those systems.

They'd like us to incorporate drainage water management into our 590 nutrient management standard. They'd like the Agricultural Research Service to complete management recommendations for Agronomics.

They fell like we probably need to engage our drainage districts more than we're doing. They'd like us to make a drain mod, which is a model. And our NRCS nutrient trading rule to make it a little more user friendly.

They think we need to use a market-based approach and offer incentives. Promote data and drainage water management and flooding reductions and other public benefits.

To use and promote forgone income for our retrofits, which we have as part of equip now. And allow our conservation stewardship program enhancements for drainage water management. And also set a higher priority for drainage water management in our equip rankings.

Now the NRCS recommendation, we've divided them into three (thematic) areas, general communication tactics and technical and training opportunities and then policy and programs.

Under general communication, to develop and distribute fact sheets on the practice of drainage water management. We also think there's a need to create a survey to collect producer partner, and even internal feedback on the practice.

And then sponsor a national drainage water management summit. And to establish a drainage water management action team to, once the sponsors and the Chief go through and look at the action items that they want to come out of this plan. To go ahead and have a team that's going to actually get them implemented across the landscape.

And we need to do all these both internally and externally. Under technical training we'd like to use our (Cargo) center down in Fort Worth to identify and map the flat lands with soils that are ideal for draining water management.

And then to engage some (lidar) data collection folks to create some (topo) maps for us. And help us get some economic and technical feasibility technical data to help streamline that design process.

We'd also like to use the coalition to train NRCS engineers, technical specialists and DCs located in some of our targeted areas and to provide some hands on training the staff to make them comfortable to sell the practice.

And then get some additional training and technical staff to write some of our plans and design systems at some of our regionally targeted locations as part of our SWAT team initiative. Specifically in our, which is that subset of equip where we have those initiatives out across the countryside.

We need to identify our conservation partners and talk about avenues for increased incentives. And of course, develop some contribution agreements with the coalition to train the new TSPs to write drainage water management plans. Which in some states that's a real need.

Policy wise, I would say that the opportunity to modify existing drainage systems occurs during those maintenance periods where an existing system is faltering and needs to be updated.

Recommend that we promote our conservation innovation grants for further drainage water management in the areas of the saturated buffers, the bio reactors.

We need to have the states look at some of their rankings at the state level. And then also at the national level to promote drainage water management.

To increase the financial incentives per acre for drainage water management. And to try to get all 13 of those states to offer it and offer it in a somewhat consistent manner. We're a little bit all over the board right now.

And then the possibility of initiating a pilot program for alternative methods of creating structural measures for drainage water management options to aid (unintelligible).

And that pretty much is it in a nutshell. And Mr. Christensen, one thing I think I forgot to mention Tom, the sponsors for our team were yourself, (Tony Cramer), (Wayne Honeycut) and Doug Lawrence.

Tom Christensen: Thank you Bill. We appreciate that. And we'll come back to you I'm sure with questions. We'll go through two more agenda items and then open it up for questions and discussion.

Bill Gradle: Okay.

Tom Christensen: Thank you. So I do want to emphasize what you saw up there were a set of recommendations. None of which have been adopted yet by the agency. And this is really Step 1 in our process of a broader engagement of partners.

So I think the item I have here is to talk about recommended next steps. And so first among those is the opportunity for further partner input. And the model we've been thinking about is the model we use similar to MRBI where we had a series of meetings with the partners, many of them in this room.

As we continue to develop the concept, looked at recommendations. We've edited those, got input. And then ultimately decisions were made by the Chief.

So as far as next steps, that's one that we're proposing as this continuous process of partner engagement by those partners that are interested in this issue. And that could take place not only through face to face meetings, Webinars, etcetera.

Another very important item is recognizing the importance of this issue and the opportunity it presents if done correctly. The Chief has designated one of our current state conservationist to move over into position to be dedicated to this activity.

And that's Paul Sweeney who is currently the State Conservationist in North Dakota. And Paul will start as of Monday officially providing leadership for this effort and the process that will take place from here. And Paul is online now. So Paul would you just like to recognize yourself there?

Oh, maybe he can't. Maybe you're muted. Sorry.

Paul Sweeney: Yes and I'm looking forward to working with everybody on this. It's a great opportunity for me. And I'm looking forward to the challenge.

Tom Christensen: Thank you Paul. And Paul has a very strong technical and programmatic background. And he's been in the agency for many years. So I think he's going to provide us some very strong leadership.

Paul will have a team within the agency supporting him. And right now that teams looks to be about 16 members. And the reason it's so large is we want to make sure we've got all the disciplines and different interest represented.

I won't give you the names. But I'll give you an idea of the types of positions we're talking about. Our National Wetlands Compliance Specialist for

example, a biologist, a variety of engineers, Doug being one of those, but we have water management and irrigation engineers.

Nutrient management specialists, and equip program specialist, a soil scientist, a specialist in both (lidar) and GIS, our modeler that deal with Apex and (Seat), and our Initiative Coordinator, Troy Daniel, who is sitting over there.

But it's also important to have state level representation. So we envision having a state conservation engineer, a state resource conservationist, a state soil scientist and an assistant for programs.

So it's quite a large team. But we think it's necessary to get the full set of skills to look at this issue. The executive sponsorship will remain the same as it was for the first phase.

And that being (Wayne Honeycut) who is our Deputy Chief for Science and Technology, Doug Lawrence who is sitting over there. Many of you know Doug as the Deputy Chief for Soil Survey and Resource Assessment, (Tony Cramer) who is the Deputy Chief for Financial Assistance and Community Development and myself.

So this team will be put in place pretty quickly. And it will do the guts of the heavy lifting that has to be done as we go through this partnership process with you.

In addition, Dave already mentioned the importance of the name of this effort. We recognize we want to probably move from the current name. And we're looking for something that you'd all be interested in. So Dave is giving you his invitation there.

Also, CEP is a very important tool. And Doug and his group have done an excellent job with the upper Mississippi CEP report. But they've also agreed to take an additional look at the role of the management of drainage water and the impacts on the environment.

So I think the target timeframe is about September. They expect to have us some additional modeling efforts related to not just the management of drainage water, but additional conservation practices and scenarios related to the Mississippi. And we're excited about seeing some of that.

And then very importantly, although this will result in an action plan for the agency. So our target is to produce a plan that results in actions that are probably recognized as good environmental actions and that have broad support.

So that is our target from all of this effort. So that's at least a synopsis of what we envisioned as next steps. And with that, I'm going to turn it over to Doug. Doug recognized he's not (Wayne Honeycut).

(Wayne) unfortunately had another emergency and could not be here. But Doug is very knowledgeable on this issue and has worked in this area for years. And we're fortunate to have his skills.

So he's going to talk about an issue about a potential summit. And also I think he's going to tell us a little bit about one of the CIG grants that had recently focused on this issue, Doug.

Doug Lawrence: Thanks Tom. As a follow up action on the CIG Grant Tom just mentioned, we demonstrated the drainage water management practice to a Conservation Innovation Grant in 2006.

It was an early CIG Grant and one of the biggest one at the time. It involved five states in the upper Mississippi, Minnesota, Illinois, Iowa, Indiana and Ohio.

There were four sites in each state with a total of 20. Side by side plots of conventional drainage and managed drainage. And it was sponsored by the Ag Drainage Management Coalition.

And the actual demonstrations were done by the Land Grant Universities in those five states. I will mention that the outcome was good. It covered three years of demonstration from 2007 through 2009 crop years.

And the purpose of the grant was to, you know, demonstrate the project relating to water quality, soil quality and crop yield. As far as water quality there were absolute reductions in nitrogen loads in every case. The range was 20 to 60% reduction in load.

The crop yield, we didn't get a statistical significant change plus or minus. But I guess the good news was there was no decrease in yields.

And we feel that demonstrated the practice well and as a follow on that to improve adoption. Like Tom mentioned, we're proposing to have a national summit, preferably some time later this calendar year to look at the current situation.

You know, showcase the technologies, look at past history. But more significantly drawing a wider audience to look at future opportunities to increase this practice. Not only technology, but policy. So that would be the target audience.

We haven't picked a location yet. Like I said, it will be later this calendar year. And to help us coordinate and arrange the details, we've asked the Sand County Foundation to assist us.

So Alex Echols is here today from the Sand County Foundation. And maybe he'd like to say a few words about what we had in mind with the summit.

Alex Echols: Thanks. There hasn't actually been a formal ask yet. So that decision hasn't been made. But we've had a series of discussions. As the guy who was one of the principle authors of Swamp Buster and later the WRP, the first thing out of my mouth whenever we talk about all this is always Sand County Foundation supports management of these water resources.

We don't export - support the expansion of drainage necessarily. And we're very excited about taking on this management of this hydrology we think that is low hanging fruit and tremendously important.

What Sand County Foundation typically does is we bring these bread parties together. We hold lots of sessions to try to work out the specifics of how things are put into place.

And what the department's asked us to help think through is how do we make this effective at improving environmental performance. And so I'm sure there's far more work to be resolved in initial discussions that have occurred so far.

Doug Lawrence: With that, that's all we had Tom.

Tom Christensen: Thank you Doug and Alex. I think that this point we want to open this up.  
And maybe what we'll do is take a few questions from people on the phone first. And then we'll come to the room.

So if we could open this up on the phone. And if there are questions, if you could identify yourself and then certainly your question or statement or issue.

(Keith Triegel): Hey Tom, this is (Keith Triegel) with Natural Resources Trust in Bismarck. Just a question back to the - there have been several comments on the economic viability of tile drainage based on yields.

And I'm, I'd like somebody to talk a little more about that. What I heard was that it basically was not all that economically viable, which is just the opposite of everything that we seem to hear anytime this kind of water management is discussed. So could somebody talk a little more about that?

Tom Christensen: Doug is going to respond to that question.

Doug Lawrence: Yes, from the results of the conservation innovation grant I just mentioned for the five states, one of the purposes was to look at the economics strictly related to yield.

And hopefully use that as a selling point for producers. Again, like I mentioned, we showed some increases in yield in the 20 sites, some slight decreases.

Our final analysis the changes weren't statistically significant. We had three years and some dry periods in there. Obviously in a wet period, you'd probably - or a draught you'd do better.

Dave White: Okay, can I chime in here?

Doug Lawrence: Sure.

Dave White: I think we're talking across each other here. I didn't catch the name of the caller, who?

(Keith Triegel): This is (Keith Triegel) with the North Dakota Natural Resources Trust.

Dave White: Okay Keith. We're not talking about new drainage here. We're talking about existent drainage that's already in the field. There's already 50 million acres of this.

Where for a producer to go in and put these practices in their existent system, it's just really, they don't see a yield increase that would make it economic for them.

We're talking about the 50 million acres that are there. If my memory serves me correct, because of what Bill said about, you know, needing to be flat or a very low slope, you're probably only talking about 10% of those acres where this is even feasible. Is that correct Bill Gradle?

Bill Gradle: That's correct Chief.

Dave White: Okay. So does that help you (Keith)?

(Keith Triegel): Yes that clarifies substantially. Now is there corresponding data that deals with new drainage? Or was that not addressed?

Dave White: We're not addressing that, anyone else on the line?

Mike Brown: Hi, this is Mike Brown with NASCA. I'm just curious if you have looked at what effect this might have on phosphorous by re-saturating the soils? And I could think it could be positive or negative. I'm just curious if anyone's look at that?

Dave White: Your question is the effect on phosphorous Mike?

Mike Brown: I am Chief. I'm just curious if by saturating the soil, if we're making more, a higher percentage of soluble phosphorous, which either in A, could move offsite, or B, could be taken up by plant roots.

And so also, you know, we could increase recovery phosphorous. So I'm just curious if anyone in the research community has looked at that/

Dave White: So I believe Mike's question is the impact of phosphorous on this. Does anyone know? I don't?

(Wayne Skaggs): This is (Wayne Skaggs). May I comment on that?

Dave White: Yes.

(Wayne Skaggs): I joined a little bit late so, but I heard that question. I think the impact on, based on our experience over a long time, the impact on phosphorous, it depends very much on the system and on the management.

We found in experiments, field experiments over 30 years that we reduced phosphorous losses by the use of drainage water management. But our outlets are open ditch outlets. So we got, we think we got the removal of the

phosphorous that came from the field by settling out - by it settling out in the open ditch drains that were controlled.

There has been some concern that drainage water management would increase surface run off which might increase phosphorous losses. But we have other practices, which you folks are the experts on, to control those losses, those sediment losses and the (attached) phosphorous by surface run off.

So overall I think there's, we think there is not a great hazard, or a great deal of concern about increasing phosphorous losses. But it will depend on the individual set up, and very much on how it's managed according to our experience and experiments.

Dave White: Thank you Mr. (Skaggs). Is that okay Michael?

Mike Brown: Yes, you bet. I'm not at all throwing stones. I was just curious as to if anybody had looked at the impact.

Dave White: Okay.

(Wayne Skaggs): This is (Skaggs) again. I think it's a very legitimate question that needs serious attention, particularly in determining and designing and promoting the management procedures.

Dave White: Okay. Any other questions from those on the line?

(Keith Triegel): This is (Keith Triegel) again. Just quickly, there was a comment about the nitrogen decreases that were noted. Could you send that again, just to make sure we got that correct?

Dave White: Are you talking from Bill Gradle's report or from some of my comments earlier? This is Dave White.

(Keith Triegel): I'm not sure, I think it was from your comments, or from Bill's comments, excuse me. I just wrote down 20 to 60% load reduction in nitrogen. And I just wanted to make sure, I wanted to get the context of that, make sure I, we were...

Doug Lawrence: Yes this is Doug. That was the results of the Conservation Innovation Grant with 20 sites by state. And that's correct. Nitrogen load reduction of 20 to 60% that was the range.

(Wayne Skaggs): This is (Skaggs) again. May I just aim on that? Based on published research over a long period of time, both in the Midwest, here in North Carolina and Canada, those numbers are - that's basically the range that's been found, in Europe as well at a couple of locations.

Dave White: Okay, is that okay (Keith)?

(Keith Triegel): That's great. Thanks.

Dave White: Okay, anyone else on the line before we go to the folks in the room here?

(Wayne Skaggs): This is (Skaggs) again. I've already said too much, but let me just throw in one point with regard to the - one comment with respect to the conversation about the impacts on yield.

We've noticed in recent years that what has already been said I agree with totally. It's usually a slight increase in yields. But you can't count on that and particularly in dry years. There's not water to control in dry years.

So you don't see that in the dryer years (unintelligible) for obvious reasons. But we've had increases in yields on our research plots here. And also we had a CIG here which are in the order of 10% in some years in some cases.

Again, depending very much on weather, which varies from year to year, as we all know. And on intensity of drainage, those systems that have real intensive sub-surface drainage respond better to control drainage. You get more effect and potentially more increase and on management. I'll now be quiet.

Dave White: Okay. With that, we'll open it up to questions from anyone in the room here, the Williamsburg Room at USDA. Ms. (Jane Mark Schafer), Association of Fish and Wildlife Agencies.

(Jane Mark Schafer): Thank you Chief White. Just a question, I was hoping you could help clarify a couple of things. In the slide presentation that was made, there's a slide that depicts the drainage water management, it was Practice Standard 554 and Practice Standard 587 with the water control structure and the drainage system.

And I was wondering if you could explain that process, how it works? As well as when that water control structure goes up and down or how that functions and what time of the year or seasons? That would help me tremendously. Thank you.

Dave White: Doug.

Doug Lawrence: Yes, starting with the two practices. Slide 54 is just the management practice. But it requires the infrastructure to have something to manage. So installing the structure in this case on a tile line is Water Control Structure 587.

Basically though it works through a cropping season after harvest. You put the boards in, raise the water table. Sometimes the water all the way to the surface, depending on the desire maybe to provide wildlife habitat.

And then shortly before straight planning you take the boards out and you lower to dry the field out. So you can plant. Then after planting you can raise the level up again, but not to intrude on the root zone.

And then through summer, leave it as high as allowable. And then prior to harvest, lower the boards again and dry it out so you have traffic ability for harvest. And then repeat. That's the typical scenario.

Dave White: Okay, yes ma'am.

(Ilene McClellum): (Ilene McClellum) with Environmental Defense Fund. You've referred to the reduction in loads as being 20 to 60%. To what extent is that reduction in loads a reduction in volume of drainage water? And to what extent is it a reduction in concentration of nitrogen in that drainage water? Thanks.

Doug Lawrence: The reduction load corresponds primarily to the reduction in water volume. As I don't have the report with me. But the concentrations were not reduced as drastically. It's primarily reduction in volume of flow.

Dave White: Mr. (Skaggs) do you have anything to add to that?

(Wayne Skaggs): No, I agree with that.

Dave White: Okay. Yes, ma'am. Oh, got to turn it on.

(Julie Sabing): Is it on?

Dave White: Yes.

(Julie Sabing): Okay sorry. Are any of these fields cover crops?

Dave White: Please identify yourself.

(Julie Sabing): I'm sorry, (Julie Sabing), National Wildlife Federation. Are any of these fields cover cropped? And how would that affect all this in additional uptake of nutrients and such?

Doug Lawrence: For the CIG Grant, which is my point of reference, I don't recall if any of them were cover cropped. But I think that would, if you had a cover crop it would increase the uptake of nitrogen definitely.

Dave White: We can go back and look at the CIG Grant and see if any of the trials were done with cover crops. Can we make a note of that? Mr. Knight you'll have to move to a microphone so the people on the phone can hear you.

Bruce Knight: Okay, Bruce Knight, a couple of rapid questions for you in reference to the CIG Grant. First, are you planning on making this a publicly available document because we always have a challenge getting access to CIG results?

So will that be published? Will it be peer reviewed? Will we be able to access those results? Did you look to see in CIG, have other drainage water work been done? And has that been compiled as well?

Last thing is thank you for doing this because this is a missing component of the technology (unintelligible).

Dave White: Well I suspect you were the one who approved it so. Yes, it will be...

Bruce Knight: A lot of work on that.

Dave White: Yes it will be publicly available. And I don't think we peer review any of these CIG Grants. We just get a report from the people who do them for what it's worth.

Bruce Knight: This work is of a caliber that it would make sense to go ahead and seek publication in the professional journals, (Agronomy), Soil and Water Concentration Society, in order to get these things out.

In order to be able to do that, we've got to go through peer review. And it would be one way in which we can get not just this, but a lot of the CIG information out into the public domain.

Dave White: Okay, let's convey that to (Wayne Honeycut). He's in charge of this now, okay. And I think - go ahead caller.

(Herald Reitz): Dave this is (Herald Reitz). And we have the executive summary on the ADMC Website. And there's a link I think to the full public (unintelligible).

Dave White: Okay. What we could do is send out that link to this particular report from (Herald) or from our Website because I assume everybody in this room and on the line got some sort of email on this.

Okay, and then Martha then Alex, be sure to identify yourself.

Martha Noble: Yes this is Martha Noble at the National Sustainable Agriculture Coalition. And I wonder in your CIG or the other, any of the other studies if you were looking at the timing of applying the nutrients. How that affects the system and the type of nutrients that are being applied?

Dave White: I don't know if they did in this particular study. But of course we know timing is one of the four Rs. You know, the right time, the right place, the right method, the right source.

So yes, course timing is a part of it. But I don't know if it was addressed in this particular CIG Grant as an item, Alex.

Alex Echols: I just wanted to follow up on, this is Alex Echols with Sand County Foundation. I wanted to follow up on (Julie)'s question about cover crops.

At Sand County Foundation we for about eight years now have looked at how to reduce nitrogen loss from ag systems. And so we have put a variety of practices over a variety of locations.

And one of the things we specifically did was we put cover crops over managed tile lines, versus non-managed tile lines. And we did find additional uptake of the nitrogen into the crop and a reduction in the loss of nitrogen into the water on that.

I don't think that's data that's of publishable quality yet. But we're trying to advance that.

Dave White: Are the ca - are the people on the who called in, do they have, are they seeing this too? Is this like a...

Man: It's there if they chose to go into the Web.

Dave White: Okay, so they can see these photos then. Because this photo that's on the screen right now strikes me as one of the real reasons why we need to move on this.

You've got this beautiful buffer. But we're completely bypassing it. And is there a way, I know that there has been cer, you know, some people who have done a lot of work on developing methods to, you stop it here. You make it come to the surface.

And then you run it through the buffer. Because as great as that buffer is, it's probably not functioning as it was intended. So a lot of what we're about, or what we'd like to accomplish is embodied in this particular photograph, Mr. Knight.

Bruce Knight: A couple of follow up questions. This may be for Bill and his team. And it may be something you need to supply for the record.

If I was making my mental notes correctly, you said 22 states are currently have this as a practice. Is that correct?

Dave White: Mr. Gradle do you remember that?

Bill Gradle: Well it's a national standard Mr. Knight. But it's probably applied maybe in 22 states. Now we do have two interim standards for the bio reactor that are only in Iowa and Indiana.

Bruce Knight: And can you quantify for us the number of states where this practice is actually approved? Because it's one thing to have a national standard, the other thing to actually get the State Land Grant to cast the holy water on this so that then the state conservationist approves it, because until it is actually approved in each state, these things can't be implemented.

Then the second thing is to what quantity is equip already funding this? How many of these practices are in place today? How much has this been used? That's the kind of assessment that I was really looking for - looking for from your report Bill.

Bill Gradle: Well Bruce, it's not, which is one of the reasons why we did the report. It's not being implemented in the numbers that we think it could be implemented.

There's probably seven states in the upper Mississippi basin where it's being utilized. I ran those off, Wisconsin, Michigan, Illinois, Minnesota, Iowa, Indiana and Ohio.

And it is somewhat limited, like we mentioned earlier, really about 10% of the 50 million acres. But that's still, you know, 5 million acres, but...

Man: I can get you that information. I don't have it right here as to how much of implementation the practice is being utilized on.

Dave White: So we can do a query of (Pro Tracks) and see how these - they extended this. I got, I know a lot of states don't use it. I don't ever recall discussing this in Montana when I was there. You know, it was more like how do we get water, not how do you manage it.

Man: Right.

Dave White: So for some states it's like so what. But in these particular states it's a big deal, Alex.

Alex Echols: This is Alex Echols again. I have two questions. First is we talked a lot about tile lines and my understanding is the intent is to look at managing ditches as well, and making some of these practice available there.

And second, that 10% of the existing tile line fields, that would deal with conventional ways to hold the water up. But if we can think of innovative ways to hold the water, or innovative treatment techniques like bio reactors and wet buffers. It's probably a much larger number.

And it could have a much larger benefit. And so I don't know how broad the initiative is to take in that diversity of tools.

Dave White: I think we're, basically where we're at is we've done this little internal look at this. Talked to a few folks. And this is really to broaden the discussion if you will to a whole diversity of people.

So I think that we'd certainly be open to that kind of stuff. And as we move forward maybe that's part of the summit, or whatever we do in that respect.

But we want to make sure all voices are heard and that it's an inclusive process. And one of the things, you know, it needs to work for agriculture.

((Crosstalk))

(Wayne Skaggs): (Wayne Skaggs). There is another issue that's closely related to this, or another opportunity that's closely related here that should be mentioned. And that is that many of those drainage systems installed in the upper Midwest are aging out, or will be aging out.

They were installed, and many of them in the '50s and '60s. And as they are maintained or replaced, there's an opportunity to put them in on contour rather than up and down the hills, which, or up and down the, they're not hills, they're slight slopes.

Such that this practice then would be applicable. It would be then possible to significantly reduce nitrogen losses from those re-done fields by drainage water management.

Dave White: That's - I know that that's a good point. Tell me, you know, in most of the systems I am familiar with do run straight up and down the hill. The job was to get it all fast and as much as you could.

What - tell me more about the putting them on the contour. What does that do?

(Wayne Skaggs): This has been discussed in our Ag Drainage Water Management Task Force at some length. And in Illinois there was, I believe there was some proposals on doing that that the engineer there was working on.

But it's simply in the - it simply involves a different strategy for the design, which would rather than getting the water, putting the drains in in the easiest fashion, up and down the hill. You'd put them in on the contour so that one structure could control the drainage for a significant area.

And then zoned such that it makes the practice very usable. Whereas, with the other design, the existing design, it would be - wouldn't be economic. Still not going to work on real steep slopes probably.

But for, it would multiply the acres where this would be applicable. I don't know what that multiplier is. But it's significant I think.

Dave White: So do we go from 10% to 20% or what would be a, just a...

(Wayne Skaggs): Well you'd go from probably a half percent to 3 or 4%, or 2 to 5%. I don't know what those numbers are. But it depends on, it depends somewhat on the imagination and skill of the people that are designing and installing the systems.

Dave White: When I meant 10%, I meant 5 million acres out of 50 million, not a 10% slope, good God. I'm sorry. I need to be more clearer.

(Wayne Skaggs): And I need to be a little more perceptive. I apologize.

Dave White: Now these, and that brings up an interesting issue. And maybe it's one we ought to kick around right now is the as existed systems are maintained.

You know, you go back to the 85 wetland compliance, systems can be maintained or replaced to the extent and scope of the original. So as systems get replaced, this is going to happen around the country.

(Wayne Skaggs): Right.

Dave White: So it would be better if we could do it in a, if there's improved techniques for the replacement. That's something we ought to be aware of and find out more about.

(Wayne Skaggs): That was my point. That it's an opportunity I think. Those fields are going to be - continue to be farmed. And it's an opportunity. When this happens, when those systems age up and have to be replaced by part or in whole.

There's an opportunity to make them better in terms of giving us a possibility for management, drainage water management.

Dave White: Go ahead. Identify yourself.

Man: Different kind of question. In the presentation that Bill made, he referred to some impacts on adjacent property. A, I'd like to find out a little bit what were the nature of those impacts?

What was the proximity of adjacent properties? And were there efforts to deal with mitigation of those impacts?

Bill Gradle: Well what I was referring to is in Illinois, and there may be other parts, but in Illinois for sure, a lot of the drainage systems from field to field are hooked together.

And if you're trying to, unless you have, you may have an instance where your neighbor doesn't want the water table built up on his or her property. And so there's things like that that we need to work out.

When I'm talking about impacts, it just something that we want to make the participant, the landowner aware of that are in those situations. Sometimes the

adjacent landowner wants to actually also utilize the practice of managing their sub-surface waters. But sometimes they're not interested.

Man: Can it be considered at all in the practice standard, these related impacts, ways of dealing with it?

Bill Gradle: I'm not sure that they're actually something that we have in the practice standard. Doug, you might be able to quantify that. But it's something that we do when our planter's out in the field to be definitely be aware of.

Dave White: Mr. Parrish, Chief, you've, oh identify yourself.

Don Parrish: Oh, I'm sorry, Don Parrish, Farm Bureau. A lot of this sub-surface management appears to be done with structures. I do know that there's been quite a bit of work done in trying to do this above ground in constructed wetlands.

Now I would be interested to hear what people's thoughts are on that approach. And whether or not that actually may add more benefit to this approach than just doing it sub-surfacely?

And what are the opportunities? I mean can you, how many, you know, what are the barriers? And then what can you harness to get something like that done so that you actually, you know, take these drainage areas and you go to the right place to put in a constructed wetland to get a benefit there.

It maybe be more than just nitrogen reduction. What would people think about that? Because I think that's something that farmers are kind of interested in.

Dave White: So we were also talking maybe wildlife benefits or recreational or okay.

Don Parrish: I will say from a farmer's perspective, you know, in talking with them, they're a little bit concerned about, you know, having to own that and maintain that type of thing.

But what we've seen is an opportunity to kind of maybe help people go together and put one of these things in. And, you know, detail it to the county or something like that as a part of the infrastructure of the county. I'd be interested in what other people thought about that.

Man: (Unintelligible)

(Ilene McClellum): Yes this is (Ilene McClellum) from Environmental Defense Fund. And I'll respond to that because we've had some experience working with landowners in Iowa on the installation of these constructed wetlands.

And they do indeed provide very good nitrogen treatment benefits, somewhere again in the range of 40 to 60%. And they offer the potential, as has been noted, for the wildlife benefit.

I would suggest that it's probably not a case of either or in terms of these practices. If the design of the wetlands is arranged so as to accommodate fairly large flows.

But the efficiency with which the wetlands treat the nitrogen decreases as the volume of water going into the wetland increases. So I would suggest that using some form of drainage water management further up in the system can actually help to make further downstream wetlands work more effectively.

That a combination is going to be much more effective than one or the other by itself.

Don Parrish: Just as a follow up again, Don Parrish again. Do you see this as a real opportunity for existing systems or as these systems age out? Or how do you see this, you know, how do you see, you know, providing farmers an opportunity or an incentive to get this done (Ilene)? What do you think?

(Ilene McClellum): Well I think it's something that probably needs some exploration in the policy realm. These are rela - the wetlands themselves are relatively expensive to put in.

And currently the level of cost (share) that's available does not cover fully those costs. I'm not so familiar with the extent to which it covers the drainage water management.

But I do think that it's a good time for us to staff and look and see how we can increase funding availability.

Dave White: May I interject here (Ilene) and Don. Have we, do we have any of these in the ground, on the ground ready to go?

(Ilene McClellum): Yes, Iowa, through the Iowa Crop Program has now got something like 50 of these constructed wetlands in the ground, and is looking to put in more. I can't speak to the use of the controlled drainage structures.

Don Parrish: Chief, I would be interested to know how many people around the table here as heard of this effort and have any idea what's kind of been put into place. Okay, several.

Dave White: A handful. Can you...

Dan Parrish: And if they're not Chief I would, you know, please see me afterwards. Hand me your card or something. I'll do what I can to get your...

Dave White: But actually there's some folks on the line. Why? Can you take three, four minutes and kind of outline it? Or am I putting you on the spot? Would you prefer not too?

Dan Parrish: No, not on the spot at all. This is clearly kind of a pet project of mine and one that I see whose time has come. You know, we talk about doing nutrient management in conjunction with drainage water management or, you know, these constructed wetlands and treatment wetlands, whatever you want to call them.

One of the things that I'm very, I guess feel very good about is that the Iowa Department of Agriculture. Looking at the issue of (epoxy) in the Gulf of Mexico has kind of taken a look at kind of the width and breadth of the challenges they have in meeting load reductions in Iowa.

And they've kind of come up with a way to try to harness. You know, in Iowa they have this special government institution called drainage districts. It was enacted by, I guess it's in their const - Iowa's Constitution.

But it's a way to harness those drainage districts to get farmers to work together, landowners and the Department of Agriculture to try to get these constructed.

And they're particularly looking at systems that are aging out. And they are trying to figure out ways to not only do it with cost share funds, but to get farmers to put up the dollars themselves to get it done.

And again, it does require some mitigation, particularly if there are farmed wetlands. And everybody I assume knows what those are. And (Bob Dennit), but in effect, it really is important to get the right spot and the right effort in place. Just the same as it is for a structure like these management structures.

But, you know, they have at least got several, as you say 50 under their belt. And those 50 probably deal with drainage water on a 5,000-acre scale probably on the average. So you can kind of do the math pretty quick to see what kind of impact they're having.

And then ultimately, you know, they're looking at this. They were working with Iowa State to try to get a good handle on what those nutrient reductions are.

So, you know, the big issues are, you know, finding the right place. Having the money to put it into place. And then, you know, making sure that, you know, you can do that economically.

Dave White: (Ilene).

(Ilene McClellum): And if I can just sort of urge a cautionary comment on that. Our support of course is for those wetlands, which are created in association with drainage districts, and drainage management structures that do not expand the amount of existing drainage.

There has been some discussion about using new drainage technologies to expand the amount of drainage in farmland. And associating constructed wetlands with that. And we think that' something that should be viewed with great caution.

Dave White: (Ilene) are you from Brooklyn?

(Ilene McClellum): A little further north than that.

Dave White: Yes, maybe east of there as well.

(Ilene McClellum): And east of there, yes.

Don Parrish: I would be interested (Ilene) in having you un-wrap that just a little bit. What do you mean into areas that have never been drained before? Is that what you're referring to? Or, kind of un-wrap that issue for us.

(Ilene McClellum): Yes. Well, obviously it could apply to areas which have not been drained before. But speaking from a little bit of experience touring around Iowa, there are still a considerable acreage of farmed wetlands which are still providing nitrogen treatment benefits.

And we would have a concern that expanding current drainage systems, while it might be a very effective way of delivering water to constructed treatment wetlands, would come at the expense of the nitrogen treatment benefits that those farmed wetlands were already providing.

(Todd Bovenchots): Dave this is (Todd Bovenchots) from Iowa. And yes, that's probably one of the concerns of our agency would be, you know, we've heard that current systems remove maybe a quarter inch of rainfall an hour.

And they want to increase that to half an inch. So that strikes us as improving the drainage.

Dave White: Okay and (Todd), who are you with?

(Todd Bovenchots): The Iowa DNR.

Dave White: Okay thank you.

(Julie Sabing): (Julie Sabing), National Wildlife Federation, I guess I would agree with (Ilene) in that, you know, we don't want to see increased drainage. There is some really good things that could happen through this surface drainage treatment, including perhaps treatment of the atrazine.

There's been some good signs that wetlands can treat some of that atrazine as well. But on the other hand, if you're going to concentrate things like nutrients and atrazine, I don't know what the impacts on wildlife are.

I don't know if anybody does know what the impacts of wildlife are. So if there's going to be any further study of this, I would definitely want to add that to the list of things to be studied.

The other thing is are we building these in existing wetlands? So I guess you had indicated that if they are, they're forced to mitigate them elsewhere.

But that would be another concern. We don't want to just dig out an existing wetland unless we're fully mitigating somewhere else.

Dave White: Did you have something?

(Jane Mark Schafer): I did, thank you. (Jane Mark Schafer) from the Association of Fish and Wildlife Agency. And I was wondering, there's some notes in the CEP report that was actually mentioned in the briefing, but not touched on in depth.

A couple things, it touched on, (Julie) just hit on one. And I noticed it seems there to be an increase in nitrogen reduction by use of, you know, surface or treating surface run off.

And sort of a decline in effectiveness when you're dealing with sub-surface flow with regard to nitrogen. So that begs a question, are we looking at the right solution for the problem?

And so maybe we need to re-evaluate some of those results and the different ways of addressing this problem. And do we need to look at more increased surface flow buffers? Or what are the options there to get more nitrogen uptake or a reduction in contaminants going downstream?

A couple of other comments, I'm wondering has there been an evaluation or a steadier look at the effect of the surrounding landscape, not just adjacent lands, but on surrounding landscapes of some of these issues?

And I'm thinking of some of the other isolated wetlands and how they may be effective that are currently providing wildlife habitat. As well as the change or increase in downstream flows and how they may effect downstream communities by some of these activities?

Dave White: I don't know the answer to that (Jane). There may well be a body of evidence out there. It may be non-existent. I don't know. We need to find out though, Ms. Gretchen.

Gretchen Benjamin: Gretchen Benjamin and I'm with the Great Rivers Partnership of the Nature Conservancy. We've been actively working with the MRBI since it's been implemented.

And getting back to some of the comments about wetlands being installed in fields as a measure. There is one particular area on the Mackinaw River in Illinois where we have worked for many years, first by putting buffers in along the farm fields that we were working in.

Finding out that we really, after we put them in and monitored for a number of years found out that we really weren't changing the nitrogen being released to the adjacent watershed.

Kind of pulled back and then put in different wetlands. These are constructed wetlands. They aren't - they weren't altering wetlands that were already out there.

And essentially the experiment was trying different sizes of wetlands for the exact same size of drainage to see how big of a wetland we needed to create in order to manage the nutrients and sediment coming off of that field.

That information in sort of its progressive fashion should be available relatively soon for people to look at as a case study of, you know, looking at different tools and options. And what might work and what might not work in terms of wetland solutions.

And so that's one bit of information that might help inform some of this other work that's being done. So I think it's a good body of work. And we're working throughout on Iowa and the Boone and the river in Minnesota and

also the Pecatonica in Wisconsin. We have many different practices from two stage ditches, surge funds, things of that nature out in many different places.

Man: And based on your preliminary, I'm sorry Chief. I have two points I want to respond to (Jane) in just a second. But any, based on what you - the practices that you're installing, do you have a gut feel for which one is showing the most promise?

Gretchen Benjamin: Well, and I should have started my comments off by saying I am not our Ag Specialist within the Great Rivers Partnership. I just happen to be in DC today.

But what I will say is from what I understand, the two stage ditches really work well. It's a practice that we've seen some really good work with. The bio filters also work well. They're relatively expensive though so you have to put all of those things, you know, into consideration.

We are starting to look at the potential of having a nutrient treatment wetland associated with a city. And so that's a new area we're getting into. So we'll know more how that goes. And that will be in Illinois as well.

Dave White: Please.

Man: (Jane), I have to harken back to my college days when I had a lot of chemistry. But one of the things that...

Dave White: Classes or?

Man: We're not going to talk about that.

((Crosstalk))

Man: That's right. You made me turn red. One thing we found (Jane) with that kind of question is it's almost like there's a ying and a yang for everything. If you increase surface flows, you're going to increase phosphorus loss, both sedimentation phosphorus as well as soluble phosphorous because soluble phosphorous, as the plant pulls it up into their roots, it pulls it up near the surface.

And then it becomes available for surface water run off. The good thing about phosphorous is if I explained it like this. You have a magnet that has a positive and a negative charge to it. They attract one another. That's phosphorus and soil.

The valences in soil and the valences in phosphorous are opposite so they attract. So anytime you can stir the soil, you get less soluble phosphorous. You get less sedimentary phosphorous if you can stop the erosion.

Nitrogen on the other hand is a much tougher nut. It's, the valences are the same, which is if you've ever played with a magnet and tried to stick the two positive poles together, it won't do that.

So anything you do to increase sub-surface flows or retaining water so that more of it stays in the soil profile, you're going to increase nitrogen loss. It's almost that simple.

Dave White: Let the record clearly state he was referring to chemistry class. Very impressed, Ms. (Noble).

Martha Noble: Yes this is Martha Noble again from the National Sustainable Agriculture Coalition. And I think there obviously are real reasons to have these treatment systems to deal with the nitrogen that's leaving the fields and the phosphorous that's leaving the fields.

But I think we also need to do a lot of refocusing on how do we prevent that from happening. Basically these are nutrients being lost from a farming system.

In the next decade or two I don't think these nutrients are going to get any cheaper for farmers. I think we really need to be addressing more diversification in our farming systems.

We're looking at an area of the country that's getting simpler and simpler in its farming system. Less and less ways of solving this. Less ways for farmers to make money, we've given them one crop and said this is it guys, go for it.

But we can see what the outcome is environmentally. And I think we really have to focus on that as well, not just what's coming out of the pipe at the end of the day.

Man: Martha I tend to agree with you. Let me throw one other little piece of this puzzle out there that I found very interesting.

One of the things that the Chief referred to the four Rs, right place, right time, right amount and right product. That's huge. That's huge. It's important.

But one of the things that some of the researchers from some for (land ground) universities have found is that the more work we do to increase conservation tillage, the more the residue we put out on the land.

And the more carbon we add back to the soil, the more alive that soil becomes. Which means the microbes eat it. And the byproducts of those microbes eating it is nitrogen. That's one of the byproducts.

And that's not necessarily always available when those - during those 90 days that those crop roots are in the ground. It could be available a little bit before that or a little bit after that.

So even if you put your nitrogen uses on those fields in ballots. You're taking away as many nutrients as you are applying to them when you do nutrient balances.

We're still finding nitrogen, you know, leaving the field in shallow groundwater. So even if you, whether it's corn, soybeans or any host of other products that we could grow.

The chances are the more rich the environment is, the more chances that you're going to have nitrogen to leak. So it is really a tough nut to crack. So I agree with you. We got to do more and better in that area. But it is a really tough nut to crack.

Dave White: Okay, Ms. (Schafer).

(Jane Mark Schafer): Thank you Chief, one more question. Back to the slides, on the first slide it said lessons learned. The third bullet said more extensive drainage systems show higher benefit payoff.

So I'm just wondering, could we clarify the different benefits that are lumped into that category? That would be helpful.

Dave White: Mr. Gradle, do you know which slide she's talking about? Is it on the third page, fourth page?

Bill Gradle: Page 5.

Dave White: Page 5, okay.

(Jane Mark Schafer): So the first - the slide with the first apple.

Dave White: Lessons learned, okay. Mr. Gradle are you still with us?

Bill Gradle: Yes. Trying to find the apples here. Here we go. I think that refers to more of an economic benefit. Grant it that the economic benefits are somewhat slim. But I think the more extensive, the more possibility we saw in the nitrogen going through that anaerobic process. And then not leaving the field in the spring, the nitrate.

(Wayne Skaggs): May I elaborate on, throw my two cents worth in on that? This is (Wayne Skaggs).

Dave White: Dr. (Skaggs) you got the floor.

(Wayne Skaggs): We had done a lot of work on this and on this particular issue. It's quite clear that you get the greatest drainage loss of nitrogen, the highest nitrogen loss where you have the most intensive sub-surface drainage. As has been alluded to already in our discussion.

And I think this point, this bullet is directly connected with that. Therefore, if you use drainage water management to slow down the drainage, it will have the greatest effect where you have the most intensive drainage.

That's how I interpret that bullet. And I think it's absolutely true. Well I should say it a different way. That's consistent with all the research that's been done on it that I know about.

Dave White: Okay, any questions from - for those on the line still?

(Keith Triegel): This is (Keith Triegel) and on that (unintelligible) slide, the bullet just above that says practice impacts are pretty severely of...

Dave White: (Keith) you're breaking up something awful.

(Keith Triegel): Yes, I'll try and speak a little bit louder. Is that better?

Dave White: Yes.

(Keith Triegel): Okay, on that same slide there's a comment about the impacts on adjacent landowners. I know we talked about that a little bit earlier. But where does that fit into the analysis.

I mean here, the second bullet is the one that I'm referring to here. Is that something that's looked at in the - see you're doing (unintelligible).

Dave White: Could you run that by us one more time?

(Keith Triegel): The second bullet on the slide references impacts to adjacent property of (this). Question is how is that being looked at? What context is that being

looked at with the various research that's going on or the practices that you're looking at?

Dave White: I guess for in the implementation of the practice, we would want our planters out on the ground. Just to be aware of the possibility of looking into in a design and/or in the management of the practice to make sure that they're not going to effect and adjacent landowner.

And as for the research part, probably Dr. (Skaggs) may be able to answer it or any of the other researchers that are on the line? Does that answer your question sir?

Man: I think I'm hearing pieces of this I think. I guess what I'm hearing is that we're not really doing the research on this. This would just be a factor (Keith) that our, the field people would need to be cognizant of so you don't, you know, deal with Land Owner A and screw up Land Owner B.

You have to look across the fence line or whatever it is and make sure the landscape of the adjacent landowner is also considered. And I think that's what this refers to.

(Keith Triegel): Right.

(Wayne Skaggs): We ran into this, this is (Skaggs) again, in the Eastern North Carolina and the Coastal Plains where we were - where it was possible to put control structures in on main drainage canals, which affected drainage from more than one landowner.

So it, obviously in that case you had to be able to satisfy both landowners. And for that reason, the structures were not normally put on main canals

where that would affect more than one landowner because they didn't always have the same needs as far as drainage control was concerned.

Dave White: Okay.

(Keith Triegel): If I could just elaborate just a little bit. Just so I'm clear, the impacts on adjacent landowners or downstream landowners then is it's considered in your overall planning and analysis.

But am I clear that NRCS doesn't really have a statutory obligation to meet any sort of a standard in that consideration? What I'm really getting at here is in our part of the world at least, I don't know about other areas.

But in Northern Great Plains, our approach to dealing with movement of water is basically and very unfortunately that if you're downstream, we're going to move our water off. And the downstream impacts are really given a pretty short consideration.

And so I'm wondering and I'm hoping that the NRCS would be looking at that and perhaps working with other water management entities, water boards, that sort of thing, to take that into account.

So I'm just trying to get a kind of a feel of how you view that. And where that fits, or if there is any statutory obligations.

Dave White: (Keith) I don't believe there's anything in the statute on that. But of course I think that's just good planning practice. And being a good neighbor as well. So I would hope that we would keep that in our minds.

This as been very instructive for me, hopefully this has answered some questions or established a dialogue. Would those of you be inter - in this room be interested in another one of these in a couple of months when we can go back and bring some more data to the table?

Consider this a draft. And if we move forward, working with different partners and the Ag and the conservation community, state level folks. And we'll just come back and reconvene in a couple months?

Paul will be, have a couple months under his belt by then. We'll have a much better grasp. Maybe we can get him on a plane and come out here.

One thing, one person's already taken me up on the new name for this. I want you to vote on it. The Dynamic Regional Agricultural Nutrient Optimization, the acronym would be DRANO. I just don't think that wags...

So really, if anyone does have a cool idea let us know on what to call this.

Woman: I don't have a cool idea, but I have a question.

Dave White: Oh, okay.

Woman: Are you or have you established a Web page for this where you can put up things like maybe the (sink) information that you were talking about or some of these other studies or links to things where we can.

Maybe when we have this next meeting come in with some of that read through and under our belts before we get here rather than trying to parse through it when we arrive.

Dave White: We do. We put something up in (popular) site, Mr. Parrish.

Woman: Thank you.

Don Parrish: I would also having just, you know, and I know some of your staff just spent some time with the your state. Would the state association of environment, this is probably something they would be interested in hearing more about.

And, you know, I can visit with (Troy) about that. I think (Troy) was at the meeting where they talked about this. It might be good to have (Alex Dune) from (Aswifka) to at least listen in, just to, you know, indicate that we are giving more thought to managing nutrients in ways that, you know, kind of proactive. And, you know, I give you a lot of credit for doing that. Thank you.

Dave White: Okay because we want this to be completely transparent. I'm not trying to do anything untoward. Want to help ag help the environment? So is there any other, Mr. (Sturna).

Man: Just a closing comment that this is one example of taking results of a CIG, Conservation Innovation Grant and being able to translate it and make it a little more useful, more broadly accepted.

More of that has to be done, looking at the full range of CIG studies that are out there. What can be made to be helpful for those same purpose, the ag environment and hopefully also profitability for producers. But let's go ahead with it.

Dave White: And I would add the (sheep) to that as well for forming our program decisions. Okay last call for comments from anyone.

Greg Link: Greg Link, North Dakota Game and Fish Department.

Dave White: Hey Greg.

Greg Link: And I was just wondering if there was an opportunity up in our country again, a lot of drainage is just starting to happen in the last three years. And we'd like to take a look at, you know, how do we do this in a better way before it's done.

Most of what we talked about here today was, you know, how do you make something that's already been done better. But I mean there's a lot of missing pieces to the puzzle as far as the impact to natural wetlands and systems that are already probably doing their job.

And after the drainage happens, then we're trying to go in and go okay, how do we do a better job of managing it? We'd like to have a discussion about kind of the management of the drainage before it even starts. So is there an opportunity to do that?

Dave White: I'll tell you what, I think I'm going to be coming out to North Dakota in July Tom? I know I'm going to be visiting with some wheat growers out there. Maybe we could spend a day with you as well?

Greg Link: We'd love that.

Dave White: All right. Do I need to wear a flack jacket or anything?

Greg Link: No, not yet.

Dave White: All right. Yes, what was your name again please?

Greg Link: This is Greg Link with the North Dakota game and fish department.

Dave White: Okay. All right, anything else from anyone prior to adjournment?

(Todd Bovenchots): One question, this is (Todd) in Iowa Dave. We kind of talked about, you know, the contour drainage systems versus constructed wetlands. And a lot of the discussion focused around obviously treatment nitrogen, which is a big issue.

Has there been any discussion or thought, you know, I'm not a hydrologist. But how does each of those systems impact like ground water? Can anybody, has anybody look at that? You know, ground water recharge and, you know, what these systems might mean to those things?

Dave White: Okay. We'll put that on the discussion for next meeting on this okay?

(Todd Bovenchots): Okay.

Dave White: Anything else from anyone on any subject prior to adjournment? Ms. (Schafer).

(Jane Mark Schafer): Thank you Chief for having this meeting. We really appreciate the opportunity to explore these issues with the community.

Dave White: Great thank you, anything else? Hearing none the opinion of the chair, this meeting is adjourned. Thank you very much for calling in. And we will be back in touch. Thank you.

END