Woody Vegetation on Levees Synthesis Web Meeting 2
24 February 2012

Julie Marcy: Hello everyone, this is Julie Marcy at the Engineer Research & Development Center (ERDC).

Julie Marcy: At the moment we're going to have a very nice intimate group for our discussion, and we hope a few more folks will be joining us as we begin. We're going to do a one hour Web meeting on the results of our December workshop concerning research affiliated with woody vegetation on levees and we're also going to be discussing the overall Army Corps of Engineers' flood risk management goals as they pertain to levees. Since we just have a few folks right now, why don't we go ahead and do introductions? (Mick) why don't you tell us where you're from?

Mick Klasson: Hi, this is (Mick Klasson) and I'm an independent consultant to the Sacramento Area of Flood Control Agency in Sacramento, California.

Julie Marcy: Great, well good to have you. And let's see, (Mr. Pete Rabbon), you are on.

Pete Rabbon: Yes, (Pete Rabbon), Corps of Engineers Headquarters.

Julie Marcy: And (Steve Fink).

(Steve Fink): Yes hi, this is (Steve Fink) I'm the Levee Safety Program Manager for Northwestern Division, Corps of Engineers.

Julie Marcy: Great, good to have you and how about - or Southwestern Division, (Mike), are you a party of one, or do you have some other folks with you?

Mike Jordan: Hi Julie, this is Mike Jordan, I'm the Levee Safety Program Manager for Southwestern Division and I am a party of one.

Julie Marcy: All right, okay well again, I'm (Julie Marcy) at the ERDC Environmental Lab and I'm joined by (Maureen Corcoran).

Maureen Corcoran: Yes hi, I am the Associate Technical Director of Water Resources Infrastructure and also the Project Manager for Vegetation on Levees.

Julie Marcy: And we have (Dr. Beth Fleming).

Beth Fleming: Good afternoon everybody, this is (Beth Fleming) and I'm the ERDC Civil Works liaison and Director of the Environmental Lab.

Julie Marcy: Hopefully, some other folks will be turning in and we'll let them catch up as we move along. Let's look first at some discussion guidelines - these are pretty much our standard Web meeting guidelines. When we do get into the discussion, question and answer phase after a couple of presentations, it's always helpful if you can identify yourself when you're speaking so that we know who's talking. If you choose to respond using the chat feature later, it will show us who is asking the question.

Remember that we do record the Web meeting so that we have a nice transcript of what transpired during our discussion. As always, we'll take turns - and since we have a small group and yet a diverse group, it's still very helpful to try to define an acronym the first time it's used. I'm not hearing any issues today with background noise, which is a good thing, because we had a few technical challenges yesterday. But if you do have a noisy background, just remember to use that mute button when you're just listening in, and then unmute yourself when you want to speak to us.

We're going to begin first with a welcome from (Dr. Beth Fleming), and she will be followed by (Mr. Pete Rabbon) at Headquarters. He's going to be talking about the overall flood risk management goals for levees. He will be followed by (Maureen Corcoran) who will be talking about the results of the R&D [Research and Development] workshop that we held in December. And once we finish those presentations, we'll open it up for questions or discussion and go from there. So with that, I'm going to turn it over to (Dr. Beth Fleming) to begin our session.

Beth Fleming: Thank you Julie, good afternoon everybody, it's a pleasure to have you on the line. This is our second webinar for this phase of the meeting, and I guess we're the dedicated few on a Friday afternoon.

This is the third phase of meetings that we're having this afternoon. The first phase involved webinars that we had to familiarize everyone with the planned workshop that we had in the December timeframe and then the purpose of these (synthesis) meetings that we're having this week and then one more next week is to communicate the results of the workshop and provide some further guidance in terms of path forward that we plan to take.

The workshop that we had in December - just to tell you a little bit about it and then (Maureen) will tell you a lot more, was held in mid-December with the purpose being to promote interaction between scientists and Headquarters [USACE] involving USACE policymakers to allow us to have some dialogue about what we thought were the best paths forward in terms of R&D. And to share some key highlights of levee vegetation research, suggest some high-priority research areas as detained work together to try to identify that and then prioritize topics for potential future research.

So what we hope to do today is just fill you in a little bit more on development that came out as a result of that meeting and where we plan to go from here. So with that I'll turn things over to (Mr. Pete Rabbon), who has already been introduced to folks, (Pete).

Pete Rabbon: Okay, thank you, (Dr. Fleming). What I'd like to do is just frame the overall corporate goal for levees, so as we move forward in the discussion you can better understand how the research and development element fits into the course overall goal of the essentially reducing risk for the public. More specifically, and again I won't read items here, but you see in front of you currently the corporate goal for levees, which is to transition the levees to Corps standards, we still want to make sure though that the levee owners are eligible for federal dollars through the PL [Public Law] 84-99 program.

And we, of course, have to make sure that we're complying not only with the Endangered Species Act in other federal environmental laws, but any other local, state and federal laws that require compliance. The Corps has developed three ways on how we will transition the levees to compliance. You see in the middle ETL [Engineer Technical Letter] standards, and that is the traditional process of just meeting the standards, operate and maintain according to the standards. We have added two other processes to transition the levees, taking into account what we know are issues out in the field.

The first one is we've added the System-Wide Improvement Framework process - and as you can see this allows you to prioritize the issues with your levees and then develop a long-term plan to show how you will transition your levee to the Corps standards. The third process that we've added is the vegetation variance process, which will allow you to obtain a permanent variance to the vegetation management of your levee system. And that process

currently is in the Federal Register, it was put in there actually this month for a 60-day comment review.

Some of the key elements of the System-Wide Improvement Framework (SWIF), but I think the key item here to remember is that it gives you a method on how to transition your levee to Corps standards, but also allows consideration for many of the issues that are out there at a regional level, such as environmental issues, endangered species issues, and tribal considerations.

I talked about the vegetation variance request and the Policy Guidance Letter that is currently in the Federal Register for comment, and I think the key item here is that this allows for a permanent vegetation variance request provided certain criteria is adhered to. Next slide, okay and again back to the larger picture of research and development, how does that fit into transitioning the levees into compliance, here's our next steps. The SWIF policy is out, it's been widely distributed and it's actually being used - we have approved some, or at least one request about a month after the policy came out.

I mentioned in the Federal Register the vegetation variance policy is there for comment. And then in regards to continuing to reduce flood risk, a part of the process is the research and development that we're going to speak of today and discuss. And then also knowing that there are regional issues out there, we are strongly supporting the regional efforts that are ongoing, and two areas happen to be Washington and California, and we also have some in Texas, too. But as we continue our discussions today, I ask that you always keep in mind the big picture of what we're trying to do here which, is to reduce risk for the public. Okay, thank you, (Dr. Fleming).

Beth Fleming: Thank you, (Pete).

Julie Marcy: Now we'll hear from (Dr. Maureen Corcoran) with some details about the R&D workshop and some of the current research.

Maureen Corcoran: Okay, thanks, (Julie) - good afternoon, I'll be discussing the results of our workshop that we held in December of last year. The intent of the workshop as (Dr. Fleming) already mentioned was to bring scientists and engineers together for discussion on vegetation research and to get input on the direction of the research to provides scientific information to decision makers concerning existing noncompliant vegetation on levees. These objectives were to encourage an exchange between scientists involved in this field of research and to share key highlights of completed and also ongoing research.

We asked for input from this group so that we can identify and prioritize research areas. The last bullet is what I'll be discussing today - and that's how [USACE] will be using the results of the workshop. We had 30 participants both within and outside the federal government; you can see from this list we had quite a variety of organizations that participated. There were several principles presented at the workshop to the workshop participants for the consideration when discussing the research topics.

The first one to consider is that vegetation is just one part of a broader base risk assessment approach used by USACE. Another point is for the participants to consider tools and methods to improve the decision-making and to also provide specific topics rather than broad research areas and also make these as descriptive as possible. The topics should include creative solutions and also recognize regional considerations. The workshop was then organized into four breakout sessions to discuss the four primary topics. This list includes documenting case histories of incidents related to vegetation on levees, developing analytical tools and methods for levee vegetation condition assessment to support levee vegetation variance process as defined by the

USACE Policy Guidance Letter. Characterization of noncompliant vegetation on levees so that USACE can make better decisions about noncompliant vegetation, given all the variables that should be addressed. And the fourth one is risk assessment to include the understanding to relative risk of vegetation contributing to a breach on a levee system or compromising the levee performance.

This study - the case history study involved developing of inventory of incidents where vegetation has impacted an activity related to the levee system, such as inspection, maintenance and flood fighting. For this topic, it was also suggested that we also record nonincidents - and these are cases where vegetation is present or was present, but did not impact these activities. This group also suggested developing interim recommendations, such as trimming and maintenance guidelines. It is also suggested that the vegetation type, maintenance, and description of the vegetation and also seriousness of the incident be recorded, as well as the quality of the source data. The study would also include the response to the incident if vegetation was a primary or a secondary issue. The data collection would also include recording if a variance exists.

The next step for this research section is for ERDC to develop a scope of work for two to three year efforts - the scope of work would undergo both internal and external review.

The second suggested topic of research is to develop analytical tools and methods for vegetation assessment to support the vegetation variance process by improving the geotechnical methods used to assess scour erosion when a tree is present. This first suggested that a study should develop geographic information system-based screening tools that levee sponsors could use and then also forward this information to decision makers. The major tasks

suggested by this group is to improve tools for scour erosion analysis for standing and also for wind thrown vegetation to improve the geotechnical analysis methods that address the impact of the presence of vegetation, such as in stability and seepage analyses. Also, to develop software for handheld devices to collect real-time data, such as levee deficiencies, maintenance and accessibility issues and incorporate the data into the [USACE] National Levee Database.

Also, this group suggested that we need to ensure that the current database can adequately accommodate all types of current and future data and format and also to perform case studies to select and analyze representative vegetative levee reaches for application to variance process. The next step for USACE is to develop a scope of work within the [USACE] H&H [Hydrology & Hydraulics] Community of Practice to develop a scour model that will adequately address scour and erosion from vegetation.

We will look at this from several phases of research - from modifying existing scour models to developing models from physical tests, and we will further develop this as we progress with the research.

The third topic discussed at the workshop is a characterization of noncompliant vegetation on levees. This group suggested that an inventory plan with peer review and consensus building to confirm accuracy needs to be developed and use these data to support a risk assessment. It was also suggested that two approaches be used, one where an observational method would be used to perform a systematic assessment of levee performance to evaluate the effects, and the second would be where there are focused experimental and numerical studies on key factors, such as tree size, soil type within two or three levee systems

The last topic that was discussed includes a risk assessment approach. This team suggested that the relative risk of vegetation contributing to failure mechanism or failure modes on a levee system should be known. These include underseepage, through seepage, scour, overtopping, erosion and wave wash and slope stability - vegetation is one of the multiple that can contribute to these.

The situations posed by this group were that it is assumed that all vegetation must be removed, but this group also considered that some vegetation might be retained in some locations because of a variance approval. The consequences of tree removal, as well as the need for access for inspection, flood fighting, and maintenance, would also need to be considered. The group also encouraged expanding existing risk assessment tools, such as the USACE levee screening tools.

The suggestions from this group included continuing modeling research on slope stability, as well as furthering studies on vegetation effects on seepage, erosion and scour. The next step for USACE is to develop a proposal through interaction with our [USACE] Risk Management Center.

In addition to the breakout session, there were a few general points of discussion that I'd like to present here. As I mentioned in the information from the last group of the breakout session, decisions on vegetation should be addressed in a risk context to include both positive and negative impact. We also discussed that the scopes of work developed for research on vegetation should be submitted for both internal within USACE and external peer review.

To summarize, the actions of USACE include that we will continue to coordinate with the workshop participants for input on all scopes of work - in particular the scopes for scour erosion analysis and a case history study that will be funded and executed for FY12. These scopes will soon be finalized and submitted for review.

I'd like to make a note that the research that we've discussed here and then also was discussed at the workshop are not constrained on what we will offer in our research program. If you have any other ideas outside of this or want to add more to what we said today, please contact me. My email and phone number are on the last slide that you see here. With that, I'll turn it back to (Julie), and we can answer any questions.

Julie Marcy: Okay, thank you, (Maureen). Why don't we begin with the comments and questions that we currently have in chat and then we can add additional questions either verbally or via chat once we get through these. Our initial one from (Steve) was suggesting that levee vegetation variances be mentioned as part of the Corps vegetation standards. (Steve), did you feel that that was addressed?

(Steve Fink): Well, kind of and not exactly. I think where I was coming from - and I run into this all the time where you talk about a levee transitioning to the national standard and the knee-jerk reaction that people have is automatically that that means no vegetation on the levee, which in general is probably correct, but we also have the opportunity to apply for a vegetation variance and so - and that also is part of our national standard.

If a variance - if you go through the variance process and it's adopted, then that becomes the standard for that levee. So, it's kind of a nuance but

sometimes it's good to just make that clear as we're talking about it to the folks outside of - even in the Corps, but mostly outside the Corps. Thank you.

Julie Marcy: Sure, yes, that's a good point just to be sure that that variance is included. You had an additional comment. I am reading these because sometimes we have folks who are just calling in versus being online. How will vegetation research as allowed under Paragraph 12 in the SWIF guidance be viewed if it is included as a component of SWIF - for example, if a sponsor includes a several year effort to perform interim vegetation maintenance while the vegetation is monitored along with levee performance with the intent to prove minimal adverse impact to levee integrity as a basis for future variance requests? (Pete), do you have any insights on that?

(Steve Fink): Yes, I guess where I'm coming from is that I'm hearing through the grapevine in some cases where a sponsor is interested in, but our variance request set up right now is you pretty much have to have a very robust levee, it has to be well overbuilt or setback and some other things. In some cases, levee vegetation may not be as adverse to the levee as it might be in other cases.

And so, the thinking is that in developing a System-Wide Improvement Framework - that is you're trying to develop your path from being where you are today with vegetated levees and other deficiencies to some - to future states that complies with our standard, vegetation is going to be maintained over that period of time until the vegetation part of it becomes the piece that they're trying to -eventually they've got to deal with the vegetation they can address or other deficiencies.

But I guess what I'm wondering is that if there's been consideration for the concept of as you're allowing the vegetation to be managed on an interim

basis, if they're doing some kind of monitoring to see how the levee is performing and then use that as a basis for their variance requests?

Pete Rabbon: Yes, this is (Pete), let me respond to that and also provide some clarifying comments to your first discussion, (Steve). Your first question, you are correct that an approved vegetation variance will be then considered part of the vegetation standard for that particular location. Our standards do allow vegetation, so it is incorrect to state that our standards do not allow vegetation.

Now referring to your next question about allowing R&D to be part of an approved SWIF plan, this is the first we have heard of that kind of a concept. We definitely want to talk more about that and specifically on the particular SWIF you're contemplating, however, my first reaction is that to do research in the SWIF would be a inappropriate, especially if the research was to ultimately prove that that particular vegetation in place was harmful in the public that was being protected. So, based on your very short description using the SWIF to do R&D, I think we have reservations with that.

Julie Marcy: Okay, thank you for clarifying that, (Pete). Let's look next at comments from (Mike), are we considering differences in tree species where some may be preferred over others?

Maureen Corcoran: Hey (Mike), this is (Maureen), could you clarify that a little bit more, are you talking about any of the studies that we've discussed here today or are you talking about how the effects on slope stability or seepage?

(Mike Jordan): Well yes, you know, as part of the work that you all are doing, are we looking at some trees have a deep tap root, they tend to grow more down then out, other trees have more radial root pattern that tend to follow more closely to the ground and so those would be more harmful on wind throw and things like

that. I think it would be helpful in development for our sponsors when they're trying to develop SWIFs and variances or coming in with proposals planning environments or other qualifications to allow more trees that there be some guidance as to these kinds of trees are more preferred over those kinds of trees.

I'm not an agronomist or a tree expert, but I know that they don't all grow the same.

Maureen Corcoran: Sure.

(Mike Jordan): So I'm wondering, are we incorporating that kind of distinction in our R&D, where there's some species that if you're going to have them, these would be preferred over others.

Maureen Corcoran: What we have included for this FY in our case histories is that we will be recording the species, the age, the size, the dimensions of the tree, and we will be doing a statistical analysis based on the incidents and nonincidents. So, the information could come out as far as the species and also the same with the scour model really, we'll be using different types of roots that you mentioned earlier - and so you're right that is definitely something to consider. The problem we have is that it's sometimes not consistent for the tree species.

(Mike Jordan): Yes, sure.

Maureen Corcoran: But we are going to include that.

Julie Marcy: And (Mike), this is (Julie), I think your next comment is really related to this when you're asking are we also going to revisit the requirements for tree

removal with respect to root size and how far you chase these through the levee.

(Mike Jordan): Right, because we've already been up against that one. As you know, the current requirement is to remove roots down to a half inch in size and that can be onerous. I mean, we've done it here in Dallas, and you can end up taking your levee all the way down - a single half-inch root might go for 30, 40 feet in any direction and it's one root. And at some point you have to say okay, you're doing more harm than good by taking the levee all the way down and having to rebuild the levee.

So I mean, I think that's something that would help our sponsors a great deal if we can - and I know the variances are always an issue, there's no two situations identical, but that's a onerous requirement as it stands and it requires some judgment in the field on the part of the levee inspectors to say enough's is enough, you guys have taken out 90% of the trees so we stop at that point.

Maureen Corcoran: Yes right, this is (Maureen) - I'd like to elaborate a little bit on that, on what we're doing with the case histories, too. Our case history study has really different segments within it - and one of those I already mentioned is to record the incidents and nonincidents. I briefly touched on the fact that we'll be looking at the tree removal and that is what is being conducted within the [USACE] district and divisions at this time and also like the problems that you just mentioned - so that's good information. And so we do realize the importance of that, that was a very discussed topic at the workshop, by the way.

(Mike Jordan): I don't know if we followed through on this, but we did quite a bit of documentation on that where we removed a couple of hundred trees on the Dallas levees, and we have that documented by way of photographs - and I

don't know if we ever - we intended to send those to you and I don't recall if we ever followed through on that.

Maureen Corcoran: Yes that's right, no we never did get that information so if you do have copies of that and can get it to us, that would be great.

(Mike Jordan): Let me - I'm glad - it's a good reminder, so let me follow up on that and see if I can't get a CD of those pictures out to you all - maybe that will be helpful to you.

Maureen Corcoran: Oh, that would be great.

Julie Marcy: That would be great. You can send a CD, but you can also use the Army file transfer site, the AMRDEC site and it will let you zip up those photos and send via email. If you're interested in that, I'll send you information on it.

(Mike Jordan): Oh, that would be good, I'd appreciate it - thank you.

Julie Marcy: We have a question from the Galveston folks - first let me ask, Galveston are you a party of one or multiple folks?

(Man): There are two of us listening in.

Julie Marcy: Great, and you're question was, will the research result in different guidance for coastal systems versus river systems? I remember that was discussed somewhat at the workshop as well, (Maureen), do you have some extra thoughts?

Maureen Corcoran: Well, as far as producing guidance, we'll be doing the research and then, of course, providing it to the decision-makers, but we will be looking at

different environments. And (Pete), you may want to add something more on that.

Pete Rabbon: I'm trying to figure out how to use my phone again, what was that?

Maureen Corcoran: About using - the question was using R&D in guidance on different types of environments.

Julie Marcy: Like coastal versus river.

Maureen Corcoran: My answer was that I will be doing the research and then providing the decision makers with that information, but we do plan on studying - looking at different environments. Of course (this is why) we are focusing on the case histories and also scour models. But I do have a lot of [USACE] divisions and districts and also some private companies and local agencies that contact me almost daily talking about different scenarios, different environments and so that's been very helpful.

And we try to accommodate that by visiting these sites and getting the different concerns of the areas and the different environments, soil types and so on so that's helped us a lot. So (Pete), that's what we were just talking about. I don't know if you want to add anymore about that or not.

Pete Rabbon: Well, specifically to result in different guidance, we're not going to be able to predict what the results of the research are so I'd say the answer is that we have to wait and see. I just don't feel comfortable trying to speculate.

Julie Marcy: This is (Julie), I remember, too, at the workshop there was a lot of discussion about variances in the types of flooding, the participant talked about the different impacts from very short term, flashy type flooding versus flooding

inundation that occurred for days, weeks or months on end and how that variation and the flood frequency and tide and then the regional differences and the species and soils was also pretty extensively discussed at the workshop.

Do we have any additional questions or comments from the group? You can either ask us verbally over the phone or use the chat if you prefer - any additional thoughts that come to mind? Remember, if you're on mute to unmute yourself so we can hear you. Any additional thoughts or questions? Okay, well hearing none, we will be providing a copy of the PowerPoint and the transcript for the three Web meetings.

As (Dr. Fleming) mentioned, we had one yesterday, the one today and then we have a final one on Tuesday, and we'll be sharing those results with everyone. You have (Maureen's) contact information if you want to contribute additional information to her or perhaps the results of some additional studies that you may have done on your levee system, and that would be very beneficial.

Maureen Corcoran: And I'd like to mention one thing about that, too, (Julie), any information that we can get since we will be doing case histories this FY, any information that you have on case histories would be very, very helpful and also on tree removal.

Julie Marcy: Okay, and (Pete), did you have any final thoughts to share?

Pete Rabbon: No, I don't, thank you.

Julie Marcy: Thank you for joining us on this Friday afternoon and we will follow through with getting the Web meeting products to you. Have a good weekend. That ends our Web meeting.

END