

USACE ERDC
Collaborative Decision Analysis for Stakeholder Engagement – Horseshoe Bend
Moderator: Julie Marcy
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Julie Marcy: Hello everyone this is Julie Marcy and I'm with the ERDC Environmental Lab in Vicksburg, Mississippi. Welcome to our joint Facilitator's Exchange and Collaboration and Public Participation Community of Practice Webinar.

Our presentation today is going to be on Collaborative Decision Analysis for Stakeholder Engagement in particularly looking at a Horseshoe Bend Case Study. This series of web meetings is intended to share facilitation and collaboration topics of interest and to provide an informal venue for exchanging best practices for collaboration and facilitation. We record the Web meetings and the archive files are posted on the Facilitator's Exchange Web Page at the address showing on the introduction slide that you should be seeing on your screen.

Just a few general notes before we begin - if you would please keep your phone on mute when the lines are open to remove some of the back round noise. And, if you have a question during the presentation please use the chat feature to send to everybody, but we will address most of the questions following the presentation.

Note that we will be using the shared desktop feature during the presentation and once we activate that, it will move your chat and participant boxes up to the top of your computer screen. You'll see a little green button up there and you can click on that and it'll show you the participant and chat features where you can enlarge them again if you need to see them or use them. After the presentation I'll return everyone to an interactive mode and you can ask

questions verbally although you may still need to use *6 or undo your mute button to speak. You can also use the chat feature to ask questions if you prefer.

Finally, in order to have a more comprehensive list of participants, if it's not apparent in the participant list – how you signed in - if you would please use the chat feature to send me - Julie Marcy - your full name and your office name or office symbol, that would be very helpful. If it already appears that way in the participant's list than you're good.

Now for a little more information about today's speakers from the ERDC Environmental Lab - Dr. Mandy Michalsen is a Supervisory Civil Engineer and she previously served as Chief of Soils in the Seattle District of the Corps. Her private and public sector experience has included building interdisciplinary teams comprised of research professionals - academia and engineers to plan and execute studies on field scale - technology demonstrations and full scale remedial actions in the support of site clean ups where ground water - soil and or sediment have been impacted with contaminants.

Our other speaker - Dr. Matt Wood, is a Research Psychologist who is a former SMART's Scholarship Fellow with the Environmental Lab. Matt's research focuses on the psychology of team problem solving - engineering design and decision making processes. In particular, those that facilitate shared problem understanding and lead to mutually desirable outcomes. Matt's experience includes empirical work and problem solving and decision making tasks in individuals and teams - natural language processing and modeling cognition through computational and diagrammatical approaches.

More information about our speakers may be found in their bios posted on the Facilitator's Exchange Page, along with a copy of the PowerPoint they will be sharing today. So Matt and Mandy, we're very happy to have you with us today and look forward to hearing your different perspectives on this initiative. If you give me just a moment I'm going to put everyone in a listen only mode and then assign Matt presenter rights so give me just a moment.

Operator: All participants are now in listen only mode.

Julie Marcy: Okay and Matt should have presenter rights now.

Dr. Matt Wood: Yes I just saw that note.

Dr. Matt Wood: So welcome everyone and thank you. So I'll be spending some time talking today about a case that we - a little over a year ago - out in Seattle District where our team used a collaborative decision analysis process to help facilitate stakeholder engagement in a resource management problem. So I'll start with a brief description about some of the decision analysis tools that we typically use and also some of the stakeholder engagement benefits of those or how they might facilitate stakeholder dialogue. And then we'll push over into some inspiration for the approach we used at Horseshoe Bend and then finally the Horseshoe Bend Case Study.

So the overview - the way that we typically describe the need for using these tools or approaches to decision making is that - especially in environmental contexts - there's a lot of different implications for what you do with a particular site. So in Horseshoe Bend it was management of the Green River, but you can imagine in coastal regions a beach nourishment project might have impacts on economics - might have impacts on local communities - etcetera.

Furthermore a successful decision making process is really important so I know often times cost is a convenient thing to pay attention to and in fact there are often mandates associated with where to keep costs for a project, but (look) about the only factor that should be considered often times. And develop - especially developing consensus on what those factors might be for making a decision becomes really important.

Also we need more sustainable approaches to deliberate decision making and making decisions that are honest to the needs and desired benefits for all groups especially in light of increased social involvement in public engagement, you know, either via digital media or otherwise. So when I talk about stakeholders, for the purpose of this presentation often referring to groups with - I'm referring to groups with diverse back rounds that might represent different organizations.

In the case of Horseshoe which we'll get to in a bit - these were different regulatory agencies, but for any given problem going back to our beach nourishment example you can imagine that there's a variety of different groups whether they be local business owners - local land owners - folks who might be using navigation channels near by - etcetera. And developing a constructive collaboration on what you should be targeting when making a decision is really critical for when you're designing systems.

This often leads to an evolving understanding as we'll see in the case later in development of goals - objectives - alternatives and related properties of a problem you're trying to tackle. And also stakeholders often have different perceptions of the risk (that they're willing to take). Some folks might be very welcoming of trying out new things because past approaches may or may not have worked. Other groups may be very resistant to trying something new

because of their position is a group that's actively trying to manage risk or for other reasons.

So when we talk about decision analysis this is a simple graphic that gives us the recipe for what you need to execute one. So at the top of the stool there is some action which you'd want to take. That action is contextualized in some problem frame - the ground the stool stands on or how you develop what action you might take. There's different components that inform what that action might be for different things that you can do or the alternatives you have available - the different items that you might know or information that is available to you. And also and most critical for the cases I'll be describing is the values of each of the parties - so the 'what' we want out of the action that we might take.

So there's a portfolio of tools that can be used from decision analysis to facilitate stakeholder engagement. I'm going to focus predominantly on the first and last of these. Formal decision analysis includes developing a decision model and talking it through with different stakeholders and a structured stakeholder engagement process. There the things not directly related to developing that decision model - how you structure dialogue between groups and the source (of that).

A challenge when you're making the pitch for developing a process to help different stakeholders cogently describe the values or needs they might have and the alternatives that they think are available to them for solving some problems. I hear some of the answers to that - why bother in engaging in developing that infrastructure. For the purpose of this case the last two are particularly salient.

Often times when we're brought into a - when our team is brought into a case like - like in Horseshoe Bend or in like in - like in Long Island Sound which I'll describe in a moment, groups often start from a position that they're already in - we're called in to help to identify the reasons for that and identify some solutions to help get groups to collaborate with each other or encourage groups to collaborate with each other.

And this last quote which is from Institute for Water Resources - technical report which I liked a lot - "there is a temptation to think that honesty and common sense will suffice". Well common sense is only - pardon me - is only common to the individual that's just holding that perspective and what's common sense may or may not be common sense to (Mandy) or to any, you know, any of the participants - listening in based on your different perspectives and different experiences to what may be common or what might make sense so or be intuitive.

And so a deliberate process to get everybody to say what they think is intuitive or what they think is important for making in decision is really key in helping to identify what some of those synergies are as well as what some of the discrepancies are - develop ways that you can go ahead and resolve those. So the tool that we primarily use in a lot of these stakeholder engagements exercises is called Multi Attribute Utility Theory or Multi Attribute Value Theory depending upon the academic literature that you're citing.

And so this tool kit seeks performance of alternatives on objectives explicitly in terms a utility or value function. And it allows assessment of these functions and compares information about the range over which alternatives may vary. So say that I'm trying to pick a restaurant to go to dinner - there's a couple ways of which a restaurant might vary. The type of food that they serve - price - how far it is from my house.

And so when you conduct a decision analysis often it's not useful to make comparisons in absolute terms so how expensive is the most expensive restaurant that I could ever go to - instead it's usually more useful to take the reasonable range that you're willing to spend or the reasonable range of which alternatives might vary and use that to anchor what alternatives you might consider.

There's a series of steps that we tend to follow when conducting one of these decision analyses. The first of those which is similar to other design processes or other facilitation processes that you might be aware of is the (side on) and overall goal or objective for a decision. And so this often takes a form of some discussion over email or phone in preparation. Often times the front end day or portion of the day - engaged in sitting in a room with different stakeholders in developing that exercise, but that's really critical.

If you don't know what you're designing for you can't know how to achieve it or what tools might be appropriate to get there. Once you know overall what you're solving for you develop a set of objectives and so these objectives you can think of them as sub-goals that get you to that top boarder goal or objective that you've (designed) upon.

You'll then identify unique as for (full) attributes that you can measure the sub-objectives. So these are in the restaurant example things like cost or proximity to your home and you can plot those out independently to develop a value function where the best score is the thing that I prefer most and the worst score is the thing I prefer least. From there you identify the alternatives available to you - score them based on that value function for each of those sub-objectives and then you independently assign weights to those objectives and then do some simple multiplication and addition across those and you

produce a score that represents the usefulness to you of that particular alternative given the way that you've framed the problem.

So here's an example that we like to use to emphasize this - mostly because everybody at one time has pushed the car or has had a need for transportation at least. And so let's say that we want to purchase a car and to there there's a few criteria's that we want to keep in mind - cost - resale value - fuel efficiency - etcetera.

So a car is pretty easy to identify what those metrics might be that you would use to compare alternatives against each other so for cost you might use thousands of dollars - for resale value thousand of dollars in some time period - for fuel efficiency you can use the EPA estimates or estimate from your favorite auto enthusiast magazine - etcetera.

And then we can develop the value functions. Of the few we have here is number of passengers so let's say for instance that after some number of passengers - four or five - you don't have need for a car that's any bigger than that so after five passengers I don't care about the difference between the sedan and the mini van because I only ever have a few people riding in my car with me at one time.

Next step is to illicit those weights -- like I mentioned earlier -- and so this is for each tier in that model that you developed you compare these different sub-objectives against each other and say, to what extent do I prefer cost over resale value - to what extent do I prefer resale value over fuel efficiency and you can develop some percentages or some ratios that describe your relative preference for each of those sub-objectives.

We often express those as weights where they sum to one so percentage are a really convenient tool for doing that. In six here we generate some alternatives - we can then in seven score those on the different metrics. I've given the value functions that we have and then roll them up into a final decision analysis score that represents how much we should prefer to those alternatives. I've given the weights that we've expressed for each criterion and given their score on that value function for each of the sub-objectives.

Once you have that all in place you can do things like analyze sensitivity and so what I mean by this is so what if all of our alternatives were - became suddenly ten percent better on fuel efficiency than they were before. Would that help to change our decision? Or alternatively what if I didn't care at all about cost because I just won the lottery - how would that change my preference?

So now we go into an overview of the particular project at Horseshoe and some of the inspirations of the approach that we took leaning on the - some of our work in Long Island Sound. I'll talk about the regional pollution team approach and process that we enacted. Some of the results and some conclusions in it like - so the problem contact - Horseshoe Bend is a little under a two mile reach of the Green River in the city of Kent, Washington.

There's a levee that runs - you can see illustrated here that runs around the interior of it and that protects a lot of the commercial and industrial space on the interior. It was rebuilt in 1996, but has since - there's some need for some repairs there - primarily vegetation growing on the levee. And so there's two natural sort of positions that started over this levee vegetation. One was that a lot of the concern for flood protection or for engineering design was that levee vegetation sometimes can compromise the integrity of that levee and makes it susceptible for breaching and other things of this nature.

So there was concern - given that you had vegetation that was growing on the levee - big trees and things of this nature - do we have to be concerned that the levee will not perform as designed? However one benefit that some of this vegetation provided is it was shading the Green River which is a reach that salmon run through different seasons and to be here to spawn and the shade helped to produce benefits in water quality if you're able to keep the water cool that you usually have happy fish. And so there's sort of a duality between making sure that the piece of engineering infrastructure was sound for what it was designed to do and protect, but in contrast address some of these environmental concerns.

And there was a variety of different permutations of these different local interests, some of which are outlined in the slide here. We took our inspiration for our process based on a project that our team in EL did out in Long Island Sound several years ago. Dredge Material Management Plan is a plan where you take in drudge material from a navigation channel or from work that you're doing to develop a navigation channel and often time you'll place it out in open waters some place and - or to some place up on land or etcetera.

And so for each region they - there's a plan associated with what USACE does with sediment that's taken from any region. And in Long Island Sound the development of this plan was particularly contentious. We were brought in after three years of discussion where various stakeholders disagreed about the use of open water placement or upland placement or different sorts of disposal techniques.

Some of those concerned about, you know, having the capability to dredge and have open navigation so that they can conduct commerce successfully. Some of these groups were concerned that fine silty material might wash up

on their beach front property and/or impede their ability to go yachting or do some recreational work. Others of groups were concerned about some of the environmental ramifications from placing slightly contaminated material in different locations.

And so our team here developed a process for these federal agencies to collaborate with regards to developing the Dredge Material Management Plan aligned with the federal process for developing these things that requires public input. Earlier attempts at generating criteria usually focused on safe specific screening constraints - is particular dredge material clean or not clean where it is it being placed - what about the properties of the area where it's being placed - and did not really address stakeholder values or considerations beyond that.

In addition the Corps had been hosting a series of working group (meaning) whose goal was to establish a list of evaluation criteria based on stakeholder interest and concern. So our team developed a process for creating a decision model and identifying where those inputs might come from. The different stakeholder groups sited a slide or two above identified all of the criteria for making that decision. The four top level aspects for environmental media and so are we talking about water or land or air that we may have concerns about sediment being placed in or near.

The second main criteria are ecological receptors so this is different flora and fauna that may be subject to impact from placement of dredge material. The third criteria - human welfare so this is broken down into health - will placement of this material make me sick in some way and social - will placement of this material allow me to engage in the recreational or other things that I'm used to doing in this region.

And the fourth criterion is economics and that's considered both short term and long- in terms of long term impact. There's metrics associated with each of these that the Corps of Engineers Team set up that locked into each one of these sub-objectives and the alternatives that you see with - there are those that had been commonly discussed leading up to our engagement with Long Island Sound, but had not been described in terms of these particular criteria or sub-criteria that express what stakeholders really are concerned about in that area.

So we applied this approach in Horseshoe Bend where individual stakeholder organizations weighed the criteria and sub-criteria. Staff from the district - the Long Island Sound District performed technical - would perform technical assessment score - those placement sites were relative to the sub-criteria identified in the metrics used to measure them and the stakeholder weights and technical scores that would be rolled up through the decision model.

So in Horseshoe Bend specifically this was set up as primarily the pilot to engage the Green River System Wide Improvement Framework stakeholders in a collaborative effort to identify some of the needs and concerns as for the Horseshoe Bend reach that ideally could be extrapolated to other reaches of the Green River. The different members of this Regional Solution Team were invited based on their jurisdiction or historic involvement in the Horseshoe Bend reach and we had several project objectives in developing this team.

First correcting the deficiencies in the Horseshoe Bend levee -- like I described -- to provide both flood protection and environmental benefits. Second, provide an opportunity for regional stakeholders and the Corps to work together to develop a systemic solution. Third to develop a process that identified and developed attractable holistic alternatives and then hopefully address both flood protection and environmental benefit needs among others.

And finally to inform the Green River system wide improvement framework with regards to deficiencies on that particular levee and maybe extrapolation to other levies as well as the authorities that might help to resolve this.

A listing of the different solution team members here - they're about roughly split between engineering or flood control agencies and ecological or environmental agencies. Here is this - a timeline of our process so we started with a project kick off that describes sort of the set up for the process and how we would be engaging it. The top line there - this Criteria Workshop is the first full day engagement where we identified some of those goals and objectives as well as some of the sub-criteria or sub-objectives that might feed them.

After that meeting there was time and feedback permitted so really refine that hierarchy. Toward the end of that process Solutions Workshop was held out in Seattle District to identify particular alternatives - conceptual alternatives that might be used to address some of the sub-objectives that were identified earlier. And finally there was a Results Workshop that rolled up a waiting exercise that was done after identifying some particular solutions as well as including some of the - including weighting's from the criteria. And then a report was finalized on the basis of those.

So developing this value hierarchy - this was done collaboratively in an open session and a series of break out groups with the Regional Solution Team. We provided a few seed criteria which were some of the high level concerns or sort of hot button items that were suggested based on historic engagement so flood risk environments - recreation - other items. And then these were -- as I mentioned -- refined and supplemented both during the Criteria Workshop as feedback was provided and also after as representatives from each of these

stakeholder agencies went back to their home offices and described what happened during the course of that engagement.

The Results Workshop - a handful of solutions for develop concurrently in small break out groups - there was the stationing for features that you'll see in some of these - sketches are based on the Corps conventions for that reach. Many design features were proposed including riparian buffers so that the end offset between the water and the sort of the levee that simultaneously address both flood control needs and ecological considerations.

And things like riparian buffers they provide places for water to go and they also provide some offset that you can plant some trees or place some debris - large deadfalls and these sorts of things that can help alleviate the area near them. One solution in particular proposed by one our teams was a little bit of a hack to test our assumptions about what are some of the things that we value - what would happen if you maximized some of those in particular ways.

So here's a more feasible example that was provided so this is an option where the break out group proposed to place - do a lot of large woody debris and do repair work on the levee - do a collection of set backs on separate sections that had been proposed by one group or another and past examples and also, you know, sort of develop some new places where some work could be done as well as some buyout or re-evaluation of different sections of that reach were proposed.

And so you'll notice for each of these alternatives we provided a visual medium that you can see on the right - there's a big print out of the reach that may encourage team members to mark out where particular solutions would be implemented. And also a brief narrative description on the left so it helps

facilitate identifying how those different alternatives might stack up on particular metrics that are aligned with this sub-objective model.

Just after that - alternative development exercise - we did a series of structured interviews with representatives from each of those stakeholder groups. We provided them with a small workbook several weeks out that described the process to date. The purpose of the interview provided some examples of what the weighting exercise would look like using the - the example that we have in front of us here are the top level criteria - sorry - top level objective for the model that was developed back in the first workshop.

And then we also describe the normalization process about how you take your weights at each tier of the model and turn them into a proportion of a score from zero - that ranges from zero to one. Here's an example of one of our interview items where we asked folks to trade off the different criteria you see on the left hand side. We provided a definition that was developed during and just after that Model Development Workshop. We asked each of these representatives to first rank from one to N the different criteria in terms of what's most important.

And then as you'll see in the instructions at the top they were instructed to give the - the thing that was ranked first a score of 100 and give all the other items some score less than 100 that is aligned with the difference between your preference for addressing that objective versus the one that you have ranked first. And so we use these scores and we throw them into the decision model - the ranking exercise is mostly used to help provide some direction and introspection about what relative preference for each of these criteria might be.

In terms of the process up through that point - well in terms of the feedback from the process a lot of what we heard about - especially just after those interviews were completed through the praise for just the exercise of walking around with this workbook in hand - asking different colleagues who might be informed about the differences between cost - the preference - the organization's preference for cost versus some other criteria.

It really encouraged agencies to scrum, you know, across their membership and think about what are the things that we really value. A lot - a couple of the environmental agencies mentioned we don't NOT care about flood protection though we're tasked with doing one thing, but it's - it helps us to understand or helps us to think about how complex the problem really is.

And conversely for a lot of the flood risks and engineering groups similar comments - we don't - nobody's going to say that they don't care at all about the environment - that's silly. So it helps everyone to think really hard about what the relative tradeoffs should be from the perspective of their respective agencies.

The process - especially in those workshops that we had in the Seattle District allowed for open communication in a safe environment - we started with the goal of, you know, developing some - a tool kit that can help inform a decision. And starting with that goal instead of - we're going to have - instead of the previous frames sort of encouraged a negotiation across we could or could not do helped to create some trust amongst the different groups.

You should note that the different agencies do not make their rankings public so there was some feedback there from a couple of the groups that to be more thoughtful about the decision to make those rankings open or not - to think about that as you're setting up the process. There was some of those

stakeholders saw that as a lost opportunity to understand the perspective of some of those other groups to, you know, maybe historically might have been at odds with each other.

And the last note from stakeholders is this process established - a pretty clear understanding of what some of these deficiencies were that some of those groups had not been as clear on - cited a real education moment both on the engineering constraints for some of the environmental agencies as well as some of the environmental considerations for some of the flood control groups.

In terms of lessons learned a key consideration is to get the composition of the stakeholders right and so there was - Mandy can certainly speak more to this, but there was an attempt to get as many groups together that had sort of knowledge to bring to bear on the problem as possible. But after our actions - the King County - the technical advising committees is - are responsible in large part for developing this System Wide Improvement Framework.

Also they included groups that might have other interests in terms of businesses and real estate groups that should also be seated on the committee because they're also impacted by whatever decisions are made about whether the rehabilitation or making changes to the flow of the river there. A lesson that we learned based in part on stakeholder feedback is that the results of this decision analysis process - the scores that get spit out should be a discussion midpoint and not an endpoint.

So when I say a midpoint I mean a note - these scores are helpful for spurring further discussion and helping to introspect back on why are we are weighting certain objectives or sub-objectives the way we are is the -- in the example that I showed earlier -- one alternative it's called the Big Dream proposed to

basically eliminate all of the commercial work inside of that Horseshoe and well you don't need to worry about flood control if you return that area to it's natural flood plane state, but you're getting rid of a bunch - a big economic engine and so do you really want to do that?

Having an opportunity to further discuss what about big changes like that might be valuable or might be frivolous. Those seen a little bit - it's a little bit of lost opportunity. Other lessons learned - spending more time developing terms and definitions with stronger cross agency consensus. There was a lot of time spent early in narrowing down specific definitions for specific criteria which our process was very short and so there was a little bit of frustration that those items ought to have been nailed down a little bit better before proceeding forward.

There's this sweet spot for technical brainstorming that's needed so in the case here at Horseshoe Bend they're looking for conceptual alternatives and we're considering objectives that included flood protection and environmental considerations as well as recreation and others. But some groups thought this scoping was really broad and there were very limited constraints placed on the process to help refine or direct thinking either with respect to what criteria ought to be considered or what alternatives conversely ought to be considered.

And this last point that I sort of echo back to some of the comments I described earlier - there's a real - a lesson that we learned in engaging that process that there's a real need for deliberate upfront rules about how open or how closed -- so to speak -- these data from weighting interviews should be. And so at one end you just - there's safety and this safety and confidentiality where you can weight as you prefer and that's considered in the decision model, but becomes a black box to other stakeholder participants.

And at the other end here you have a learning opportunity about what other groups care about, but also vulnerability there. You might think, you know, concerns about learning about what other stakeholder groups might do and then if there were to be a next (time set) for gaming or strategically changing my own weightings to help get the alternative that I prefer bumped to the top.

Okay so in terms of what's next - the principals that we use for developing this Regional Solution Team formed a foundation for the SWIF Process in a couple of different ways. First it helped to provide a trust exercise and develop strong working relations among key stakeholders. Second, this Horseshoe Bend reach in part from our work of about a year ago was nominated as a capital project candidate in that SWIF Process. The Regional Solution Team model criteria helped to inspire some of the project goals that are being considered in that system wide improvement framework.

And really helped to inspire some of the county (spanking) in aiming for a solution that provides flood protection and helps to subsidize fixes to the current levee, but also helped them to consider other benefits whether they be ecological - recreational or otherwise. In terms of what's next the last point here is the county's working on submitting the SWIF to - for court review in August -a set of references - some of our previous work or some of the work that we grounded this case in and in case you're interested in learning more. I guess at this point Mandy and I are happy to take any questions you may have.

Julie Marcy: Okay and this Julie – Mandy, did you have anything to add before we open it up to general questions? You may need to do *6 to unmute yourself.

Dr. Mandy Michalsen: Okay, I think Matt did a really nice job...

Dr. Mandy Michalsen: I can chime in as needed as far as questions that are asked.

Julie Marcy: Okay let me unmute everyone - just a moment.

Operator: All participants are now in interactive talk mode.

Julie Marcy: You may still need to do either a *6 or take your phone off of mute if you're on mute and we'll go ahead and open the floor to questions now. I have a few that have come in on Chat so let me share a couple of those and then we'll open it up to the floor.

What part of the Levee Safety Program would this process be a part of? Is it life cycle? Would it be under the Life Cycle Program for Rehabilitation or do you know? Did that topic come up?

Dr. Mandy Michalsen: Not specifically - I think that this - the MCDA approach - is applicable to a lot of different programs and processes where large groups of people with different interests and motivations need to come together and reach consensus on a path forward and so this was applied to the Green River SWIF Process, but it could be applied to other projects and other programs within the Levee Safety Program.

Julie Marcy: And in the instance of the SWIF Project, which district office was the lead for the effort?

Dr. Mandy Michalsen: The Seattle District was the lead for the effort. Headquarters provided funding to do the kind of the MCDA pilot study I guess we called it or Regional Solutions Team pilot...

Julie Marcy: Okay, but any particular office within Seattle District that took the lead like project management or planning?

Dr. Mandy Michalsen: Yes so the - Charles Ifft and Keith Rudie from the Soil Sections and at the time I was the Chief of Soils Section so we kind of - we were one part of the technical team. Doug Weber from (Asset) Management was also closely involved and Leah Wickstrom from Project Management was the Project Manager for the team.

Julie Marcy: Another question - did you use any specific type of facilitation or conflict management techniques during the process like if you encountered biases, how you dealt with that?

Dr. Many Michalsen: I'll let Matt take that question.

Dr. Matt Wood: ...yes bias is interesting. I think that a lot of our approach was focused on turning the process into something that's collectively goal oriented so we did have a facilitator that helped walk through the, you know, the specific moment to moment interactions amongst the different folks in that regional team. But in terms of the sort of high level and getting everybody focused on what the thing is that we're trying to accomplish and what's the task for each of those individual agencies - I think that was mostly steered by the approach that we described.

So yes - so to answer the question about particular tools - moment to moment I'm not sure - sort of strategically this MCDA approach was the lead for our thinking.

Dr. Mandy Michalsen: And maybe I can add a little bit to that and this isn't a particular tool that was used to address any kind of conflict that occurred, but it's kind of in a big picture sense for these kinds of teams that are regional teams with

regional stakeholders where there have been challenges in the past and there's a lot of baggage that gets brought to the table and it just happens.

And so this MCDA tool was really powerful to give this group of people something objective to focus on rather than kind Matt and I've talked about - the two dimensional focusing on the differing issues across the conference room table and rather getting the folks sitting around the table focused on that goal. And the third dimensional goal - bring people together around a goal and that was really successful in this case.

Julie Marcy: I have a couple more questions in Chat, but let me open it up to our folks on the telephone if someone wants to ask a verbal question before we continue with the Chat questions. And again, remember you may need to unmute yourself. Don't be shy. Okay, while you're thinking let me cover a couple of other Chat questions and comments.

Is technical assistance available to Civil Works project delivery teams who want to use MCDA, but don't have previous experience with the tool? And Matt and Mandy I'm not sure if you can comment on that, perhaps along with (Seth Cohen) or (Maria Lantz)?

Dr. Matt Wood: Yes so this Matt - so in terms of getting a deeper level of description about what this tool kit is and what some of the applications are Mandy and or I'd be, you know, happy to, you know, start some dialogues offline concerning that. In terms of sort of funding to help kick off some pilot efforts I know that there - it depends on the initiative and so I know that in EL there are programs like dredging operations and technical support that who's intended to fund, you know, brief one or two week sprints of work, but the focus there is typically on sediments or navigation dredging. There's another - others - a few

other programs we also have in our lab that deal with that sort of water quality and these sorts of things.

(Rhiannon): So this is (Rhiannon) and I'm the one who asked the question.

Julie Marcy: Hey (Rhiannon).

(Rhiannon): Hi. We have a watershed study that we are underway with and our Division Support Team has recommended us to use MCDA with our stakeholder group. However, I've never run it and so we are not to do with dredging or navigation - we're a watershed study with FRM Ecosystem Restoration and Water Supplies as its purposes.

Dr. Matt Wood: Okay.

(Rhiannon): So would you be the right person to talk to then Matt, Mandy or should I talk to (Maria) or someone else at IWR?

Dr. Matt Wood: Yes - no I think that I could probably help provide some, you know, help to sort of walk through that and, you know, Mandy as well with her insights in this particular process. You know so be happy to talk to you offline about the particular problem context there for sure.

(Rhiannon): ...thank you.

Julie Marcy: (Rhiannon) yes you could talk with Matt or Mandy and (Seth) and (Maria) would also be good contacts as well because different folks are doing various aspects of MCDA and can probably find the best combination or application for you.

(Rhiannon): Okay great.

Julie Marcy: Another Chat question - how to deal with quantifying the inherent subjectivity of the weights given to stakeholders? Aren't some opinions more valuable than others and what if you have more or less from a particular group or camp? How do deal with that?

Dr. Matt Wood: Right so in terms of dealing with preferences for specific objectives compared to others we do a - I guess sort of a kludgy thing where assume that everybody's input is equally valuable and we just do a simple weighted average or normalized average across those criteria weighting. So we make - we don't make any assumptions about who's more able to speak about a particular technical aspect of the process.

Dr. Matt Wood: That said if you have a particular a priori hypothesis about that and if everybody agrees that that's likely the case you can set up different weighting schemes or elicit weights for technical specific - for example environmental criteria from specific groups and specific flood, you know flood management criteria from other groups - as long as there's consensus upfront that that's the thing that it'll be executed.

Julie Marcy: Another question - one of our participants noticed a lot of Lean Six Sigma - parallel type tools with the model and they wondered if you had any folks with Lean Six Sigma experience on your team. And, she said she noticed that facilitation might be beneficial overall as part of Lean Six Sigma training. Did you all have any interface with that?

Dr. Matt Wood: Yes so we have - yes so for this particular effort we didn't have any direct interface on our group over with respect to Lean Six Sigma - we do have Cate Fox-Lent who's in our shop here in -- we're out of Boston -- who's training

up on the approach. Mandy over in your shop do you have folks that have some back round there that might be able to interface on some of these MCDA tools?

Dr. Mandy Michalsen: You know I just wrote Lean Six Sigma down because I've never heard of Lean Six Sigma before so I just wrote a note to self about it. That doesn't mean that it doesn't exist here at the district.

Julie Marcy: Okay. It's a great tool for - used very commonly in improving efficiency and effectiveness of business processes so...

Dr. Mandy Michalsen: How interesting.

Julie Marcy: ...it might be a nice overlap there. Another question in Chat - did you show ranked order of the alternatives for different stakeholder weights?

Dr. Matt Wood: We did not - we showed the high level omnibus weightings across all the members of our regional team. It's certainly possible to develop breakouts if you desire to do that for different collection of stakeholders, but again you need to set those ground rules upfront for their acceptability.

Julie Marcy: Seth Cohen sent a helpful note to everyone in Chat - you might want to take a look at that that he and (Maria) can also provide you some advice and that one of other participants - (Michele Haynes) - also has some experience of structured decision making and might be a good POC to share notes with or bounce ideas off of as well as Matt and Mandy.

That's all that I had in the Chat feature - any last questions from any of our callers on the line? All right. Well, we've gone a minute or two over, but I think that our discussion was great. Mandy and Matt it shows how much

interest there is in the presentation and the subject matter and we really do appreciate your taking time out of your schedules to share your work with us. Participants we also thank you very much for tuning in today.

As I mentioned, I will be capturing the recording of this event plus a PDF of a PowerPoint and transcript of the narration for posting on our Facilitator's Exchange Website. That should be available to you in the very near future. One last note especially since (Seth) had to sign off - all of you on either the collaborative community of practice mail out or the facilitator's mail out you should have seen a recent related notice from (Seth Cohen) at IWR about how IWR and the US Fish and Wildlife Service have teamed up to provide a new course titled Decision Analysis - Collaboration and Conflict Transformation.

That's going to be taught at the National Conservation Training Center in Shepherdstown, West Virginia - June 15th through 19th of this year. If you didn't receive information on that if you'll just send an email to me - Julie Marcy - and I'll forward that announcement to you. If you have specific questions about it, (Seth Cohen) at IWR would be a great source for that. And with that Mandy and Matt thank you once again and that will conclude our presentation.

Dr. Mandy Michalsen: Thanks Julie.

Dr. Matt Wood: Great - thanks Julie.

END