TECHNICAL ADVISORY COMMITTEE (TAC) MEETING

REVISING THE MANUAL FOR EROSION AND SEDIMENT CONTROL

Wednesday, September 10, 2014

University of Georgia Center for Continuing Education

Masters Hall

1197 South Lumpkin Street

Athens, Georgia 30602-3603

10:00 A.M.

Catherine B. Steele, GA B-1123

Certified Court Reporter

A P P E A R A N C E S

Brent Dykes, Executive Director, Georgia Soil and Water Conservation Commission

Ben Ruzowicz, Interim Urban Program Manager, Georgia Soil and Water Conservation Commission

Dennis Brown, Vice Chairman, Georgia Soil and Water Conservation Commission State Board

David Hays, Georgia Soil and Water Conservative Commission State Board

TECHNICAL ADVISORY COMMITTEE MEMBERS PRESENT:

Thomas Brown
Joshua Escue
Britt Faucette
Adena Fullard
Kirby Hamil
Betty Jean Jordan
Bob Moran
Reece Parker
Brian Watson

ADVISERS PRESENT:

Glen Behrend
Marc Mastronardi
Dewey Richardson
Brent Story
Guerry Thomas

POWERPOINT PRESENTATION: C. Joel Sprague, Engineer, TRI/Environmental, Inc.

PUBLIC SPEAKERS:

Gordy Adams, Third-party inspector
Larry Booth, Willacoochee Industrial Fabrics
Don Davis, DDD Erosion

PUBLIC SPEAKERS, continuing:
Kelli Davis, DDD Erosion
Keith Harris, Hanes Geo Components
Bryan Keller, Fayette County
Brad McCoy, GroGreen Solutions
Jamie McCutchen, SW FeeSaver
Michael Perez, Auburn University
Ron Sawhill, College of Environment and Design
Wayne Seabolt, Natural Growth, Inc.
Roger Singleton, Silt-Saver
Josh Still, Erosion Tech
Wesley Zech, Auburn University
(Other unidentified public speakers and attendees)

STAFF MEMBERS:
Jennifer Standridge
(Other unidentified staff members)

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MR. DYKES: Okay. Did everybody get an agenda and a packet of information from the back corners as you entered the room? If you didn't, if you'll raise your hand, we'll be glad to get you a couple of those.

Robert, would you mind doing that and handing them to the side? Just keep your hand raised and we'll make sure you have those. It has an agenda in the packet with other information, including the PowerPoint presentation for today's event. So I want to be sure you have that.

There's a couple down in front, guys, and one on the stage.

Good morning. My name is Brent Dykes. And I'm the Executive Director of the Georgia Soil and Water Conservation Commission. And I'll be moderating today's event. On behalf of the five State Board members of the State Conservation Commission, I want to thank you for attending today's public meeting of the Technical Advisory Committee.

I would like to recognize our State Board

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members in attendance today. Mr. Dennis Brown, our Vice Chairman, in the back of the room; and Mr. David Hays, a Board member also.

I would also like to thank the Commission staff that you will see throughout the day today for their preparations for today's meeting in advance and then for today also.

The agendas have been provided for your use, along with handout materials that have been passed out to you as you entered the room today.

The proceedings from today's meeting are being transcribed by a court reporter over to my left. Today's proceedings also may be videotaped. We were notified that someone may be coming regarding videotape, and I wanted you to be aware of that also.

I would also like to recognize any members of the media in the audience. Do we have anybody representing the media today?

(No response)

MR. DYKES: At the current moment I see no hands.

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Following the sequence of events on your agenda, I will provide a brief introduction of the Technical Advisory Committee members today. I will then be followed by Ben Ruzowicz. Ben is our Interim Urban Program Manager. He will provide a brief history of the process to review and update the Manual for Erosion and Sediment Control in Georgia.

Ben will be followed by Joel Sprague from TRI/Environmental, Incorporated. He will discuss the testing that was performed under contract with the Soil and Water Conservation Commission and the performance standards that resulted from those tests related to 6th Edition of the Manual for Erosion Control.

Following Joel's presentation today the floor will be open for comments from the public. Please take the time to sign the public comment sheet that was available to you as you registered to come into the meeting today.

Depending on how long the meeting runs, we may take a break between 12:00 and 1:00 for lunch.

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That will be determined by how long it takes to go through the presentation at the first part of the meeting today and then the number of folks that would like to make public comment. So let's get started.

Due to stakeholder comments received after the 2013 public comment period, the Georgia Soil and Water Conservation Commission Board voted unanimously on Friday, February 21st of this year, to reopen the Manual for Erosion and Sediment Control in Georgia, 6th Edition, and testing procedures for public comment and to make changes from the comments as needed.

On August 8, 2014, the Commission Board appointed members to a new Technical Advisory Committee to consider changes to the Manual and testing procedures based on the comments received. The role of the Technical Advisory Committee, or TAC, as they will be referred to today, is to receive public comment on the Manual, 6th Edition, and the testing procedures, provide technical expertise, and evaluate potential options in order

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to provide technical recommendations to the Commission State Board for their consideration for adoption.

In a way of introduction, I would like to introduce the current Technical Advisory Committee members to my left.

First, Mr. Thomas Brown. Thomas is a project manager with Griffin Brothers, Incorporated, out of Maysville, Georgia. He's a Level 1B certified inspector to the Commission Certification Program and holds several Georgia wastewater operator licenses also in the state of Georgia.

Joshua Escue. Josh is a land services manager and stormwater team lead at HighGrove Partners from Austell, Georgia. He holds a bachelor of landscape architecture degree from the University of Georgia and is a member of the International Erosion Control Association.

Britt Faucette. Britt is the director of research and environmental technical services for Filtrexx International in Decatur, Georgia. Britt

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holds a Ph.D. in ecology from the University of Georgia and also is a certified professional in erosion and sediment control.

Adena Fullard. Adena is an engineer with the Gwinnett Board of Commissioners in Gwinnett County. She holds a bachelor of science degree in civil engineering from the Georgia Institute of Technology. She is a professional engineer with a Georgia license and also a certified professional in stormwater quality.

Mr. Kirby Hamil. Kirby is a retired DOT engineer. He has a bachelor of civil engineering degree from the Institute of -- from Georgia Institute of Technology and also a master's degree from the same institution and is a professional engineer with Georgia licensing.

Ms. Betty Jean Jordan. Ms. Jordan is project manager with Hulsey, McCormick & Wallace, Incorporated, out of Macon, Georgia, who holds both a bachelor's and master's degree in civil engineering from Georgia Tech. She holds a professional engineering license in the state of

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Georgia and also is a Level II certified design professional in the state of Georgia.

Mr. Bob Moran. Bob is director of sales and geotextiles for Belton Industries from Belton, South Carolina. Bob also holds bachelor's and master's degrees, a bachelor's degree from Georgia Institute of Technology and an MBA from Georgia State University.

Mr. Reece Parker. Reece is vice president of technology for Breedlove Land Planning in Conyers, Georgia. He has a bachelor of landscape architecture degree from Louisiana State University and is a Georgia registered landscape architect and a Level II certified design professional.

Finally, Mr. Brian Watson. Brian is director at Tetra Tech in Atlanta, Georgia, and holds bachelor's and master's degrees from the University of Florida. He's also a professional engineer in Georgia, Florida and Louisiana, is a professional hydrologist and a certified design professional in the state of Georgia.

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I'd also like to recognize our advisers to the Technical Advisory Committee. And I'll ask these folks to stand up in the audience.

Mr. Marc Mastronardi, DOT, Department of Transportation. Thank you, Marc.

Mr. Brent Story, Department of Transportation.

Mr. Eric Harris could not be with us today. Eric will be representing the Natural Resource Conservation Service. He could not attend today's meeting do to a prior commitment out of state.

And the Environment Protection Division under the Department of Natural Resources will be naming a representative to the Committee in the near future.

Following those introductions, I'd like to call up now Mr. Ben Ruzowicz to come to the stage and give us a brief history on the process to this point. Ben is currently our Interim Urban Program Manager at the Conservation Commission. Ben.

MR. RUZOWICZ: The Manual For Erosion and Sediment Control was written in 1975. Since then

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many changes have come and gone in the erosion control industry. Through those changes in the years past, it had been noted many times that the Manual for Erosion and Sediment Control needs to be updated with the ever-changing environment around it.

Through comments and the need to update the Green Book, the first Technical Advisory Planning Committee, TAPC, as some people refer to it, was formed. The TAPC was formed in 2005 and tasked with developing a streamlined process for improving and updating the Manual for Erosion and Sediment Control in Georgia based on sound scientific principles. This group concluded in 2006 with the following findings:

Identifying funding sources and methods to establish benchmarks and methodology for testing.

TAPC also recommends that the GSWCC focus on best management practices, not the best management products.

And creation of a standardized system for new and existing BMP review, testing, and independent verification of testing results.

With these recommendations the Georgia Soil and Water Conservation Commission set out to fulfill the goals and to find funding to implement the recommendations of the first TAPC.

In late 2008 a grant became available, and which the Commission applied for, to start the process of revising the Manual. This grant was handed down by EPA to the EPD in which it was administered as a 319 Grant to the Commission with specific deliverables. These deliverables allowed for the formation of the Technical Advisory Committee, known as the TAC.

The TAC was made up of seven members and five advisers. This group's main goals were:

Selecting appropriate BMP tests and test methods to be considered for approval by the GSWCC Board.

Establishing procedures and criteria for accepting new products and practices into the Manual.

And provide recommendation to the Georgia

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Soil and Water regarding the revisions to the Manual, regarding other revisions to the Manual.

These goals were completed prior to approval by the GSWCC Board.

The Commission Board voted to approve the Manual prior to the first of the year. Since then, due to comments received after the public comment period, the Board voted to reopen the Manual for more further public comment.

The reopening of the Manual to address further public comment also brought some new members to the TAC and expanded it by two people. The newest TAC, which sits in front of you today, is tasked with addressing the public comments and making recommendation as needed to revise the Manual to the Commission Board.

Through the last nine years the Commission has been in the process of revising the Manual for Erosion and Sediment Control. So if any past or current members are here, if they would please stand up so we could recognize them. And on that sheet that we have there, you can see all the

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different names of all the different people that we have there.

Next, the next presenter will be Joel Sprague with TRI, who is going to talk to us about the different testing procedures that were performed through our grant.

MR. DYKES: And we're going to dismiss the Technical Advisory Committee out so they can see the presentation also and it won't be at their back. So they'll be in the room, they just won't be on the stage.

MR. SPRAGUE: I've cleared a room before, but not the people who asked me to be here.

While the committee people are moving, I would just like to say good morning and thank you for being here. And while this presentation is a bit lengthy, I'm going to kind of need to gauge whether I'm going too fast or too slow. So if it's okay with Brent, if I could ask you to, you know, if you have a question while we're going along here that requires me to slow down, please do that. Otherwise, I will kind of press ahead.

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I have some tech slides that have some details that are -- they are details about what we did, but it may not be all that important to you, especially as you have copies of those slides in the handout. So my guess is that your goal for the day is not to listen to me all day.

I'd like to just give a special thanks to our laboratory director, who did an enormous amount of work, especially during certain aspects of this testing that I will highlight when we get to them, and that's -- any of you who are dancer moms will share with me great pride when you think about a child who has, No. 1, become gainfully employed and, No. 2, who does a good job at it. That's my son, who is our laboratory director.

I wanted to just take a few minutes to put this in perspective. And this is my perspective and not the Technical Committee's perspective. I'll let them speak for themselves. But this idea of BMPs, which as an industry we use a lot, the first term is "best," which implies that we can quantify these procedures, these management

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practices. And that's long been a goal of our industry and not something that we necessarily had a good way of doing. And I think this testing that we'll outline here that was envisioned by the Technical Committee is just a huge step in the direction of helping us determine what is a best management practice by giving us some objective means to do so.

And what makes it especially valuable is point two. If we're going to use a practice for a given application, we'd like to be able to compare those on a relevant basis, a so-called apples-to-apples basis. And I think that the testing procedures that we've come up with are one of the good ways to do that.

As one way of validating all of this, I would just like to draw attention -- some of you may not be aware of a nationwide program called the National Transportation Product Evaluation Program. It's a collaborative program by the Federal Highway Administration and AASHTO, the American Association of State Highway and

Transportation Officials, that attempts to do some really good things in product evaluations used -- for products used in transportation applications and to address specifically this issue for the Departments of Transportation to develop their qualified products listings or to evaluate specifications, and that is to be able to do that quantitatively with objective information to determine what's best.

Thus far NTPEP has an extensive program for rolled products, a limited program of performance tests for hydraulically-applied erosion control products, and is actually initiating this fall a program for sediment retention devices which parallels wonderfully the work done here by the Georgia Soil and Water.

And that work at the NTPEP has been supported by the Erosion Control Technology Council, by the ASTM International in developing standards. That program likes to use existing test standards that have been developed by, if you will, the world at large and not develop their

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own, another goal of the Georgia Soil and Water. And also the International Erosion Control Association is really focused on this idea of needing to do quantitative objective measurements on these systems to facilitate their use.

As far as the NTPEP goes, as of earlier this week they indicated to me that these states have effectively engaged with the erosion control products, which also includes sediment controls coming up, a portion of the NTPEP. So we have got 20 -- 20, 25 states. And you can see we're surrounded by states in the Southeast here that have made the NTPEP results.

And I would just like to emphasize how compatible the Georgia Soil and Water work is with the work that has been done and will be done under the NTPEP. And this really kind of highlights. The NTPEP publishes these points of importance. And it kind of captures to me what has motivated the Georgia Soil and Water in this endeavor is this objective independent testing of systems that are used in erosion and sediment control. It

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relieves states of the economic burden related to doing it all themselves, each one doing it themselves. It provides consistency across the board when the testing is done and the results are relied upon. And it's really kind of a huge benefit for the manufacturing community to give them a one place rather than 50-plus places to have their materials evaluated and to realize if they've got something good, if they're going to develop a second generation, where they can improve if they need to improve right away. And the results are really dependable. So I think that these points really capture just the wonderful goal of objective independent standardized testing for the performance of these materials.

Just the testing that could be done currently through this program are large-scale erosion tests for slopes and channels and large-scale erosion tests for a number of different applications of sediment controls, which is the segue to Georgia Soil and Water. It so happens

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that Georgia has obtained experience with these tests that are being used at the national level as well. It gives it kind of a head start in kind of implementing this widely regarded approach to looking at performance tests. And we'll look at all the different testing here as we move ahead.

So what have we done for the Georgia Soil and Water? What evaluations? There have been four primary focus areas of the testing that's been done since 2012. It started out with looking at toe-of-slope devices, whether those be silt fence or some other device; it moved into channel testing for generally what we call check structures; then moved into inlet protection; and finally looked at floating pond skimmers, which are becoming kind of ubiquitous on construction sites, as the other devices are as well.

So let's look at the first one. An attempt to look at full-scale performance of sediment barriers used in perimeter controls, around the edge of a construction site. Might be a large construction site, might be small; might be steep,

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might be flat.

And just the picture there is the inside of our facility. And I'll show you a lot more pictures as we go.

What were tested, a number of silt fence systems, and those silt fence systems compared with the traditional straw bale to get a good sense of, No. 1, how good were the traditional approaches and, secondly, can we differentiate between the various silt fence systems that are used in the state of Georgia.

Quick rundown on what the large-scale test to look at these systems looked like. Well, it has 3-to-1 slopes, relatively steep. Sandy clay soil, representative of soils found widely around the state of Georgia. The slopes for this test upstream of the sediment retention device, 27 feet long and 8 feet wide. Rain trees, we call them, dispersed around the slope. Target rainfall of 2-, 4-, and 6-inch per hour in sequence to represent how a storm builds up into a real big storm. And three slopes so that we can kind of

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average out the results.

You might imagine that as the size of tests get bigger, the number of variables you're trying to control gets bigger. And so the advantages of averaging over multiple tests helps kind of average over all of that variability that you try and control.

And the bottom line, and this is something that goes with every sediment control, is there's not one answer. For sediment controls there's always two answers: How much sediment is held back and how much flow is allowed to seep through. Because we've known for a long time that a sediment pond, which virtually can be made to hold all the flow back, can hold all the sediment back. But the holy grail is how much can we allow to seep through while still holding as much sediment as possible back. So each test that we'll be describing here will actually have two answers. One inherently goes with the other.

Here is our facility up in Anderson, South Carolina, just a stone's throw from the border.

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And the areas circled is where two slopes just described are set up to do this testing. Now, this is one area I would like to highlight. These slopes were built outside. There are similar slopes built inside with different soils in them that are required in the NTPEP program. So we couldn't use those. But when you put something like this outside, rain is affected by wind, by even little bits of wind, just the slightest air currents. And it's hard to find a time of day when there aren't wind currents. So for us to do testing such that the rain is the size and distribution that it's supposed to be, we do our testing between 5:00 A.M. and 9:00 A.M. And so this program, while we were very pleased to be a part of it, some of our crew members were not quite so pleased. But it went very well.

You see in the distance a test track where we do some work with geosynthetics. You see in the upper right-hand corner where we do channel testing on erosion control products. We've got quite a lot of versatility here. But you'll see scattered around as I talk about each one of these tests we did for Georgia Soil and Water where we did it.

Here's a close-up of what these slopes look like. They are constructed to be 40 feet long and 8 feet wide. We did two of them side by side so that a total of four tests would constitute a complete test series for a product. That would be three tests with the product in place and one test with no product in place, a control to compare to. And each time we did a product test we'd have a control. So we accumulated quite a number of controls that we could consider all together to compare to each product test.

You see cups in place. We would actually measure the rainfall that was obtained during the course of the test so that even if there's modest 1-mile an hour currents, we'd see if that affected the results. And it would help us manage the testing. Sometimes you turn up the pressure on one side a little bit to get the coverage. It's a little bit of artwork there.

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The preparation of the slopes, it's 12-inch thick soil. We till it, we rake it, we compact it, and then we install products. And then we just turn on the rainfall. But as you can imagine, everything is done kind of really in a standard way so we do it the same every time.

Once the slope is prepared, we come out and we place those rain gauges and we get a sample of soil at different parts of the slope. We do moisture content. That will help us keep control on -- moisture content affects how much seepage there is versus runoff. So we'd like to stay in a relatively 4 percent actually range of moisture content to keep the early part of the test as consistent as possible. Then those three levels of rainfall, each for 20 minutes.

We collect all of the runoff between rainfalls. Between the 2-inch per hour rain, we'll reset the cups, we'll reset the containers for collection, then we'll move to the 4, and after that's done, we'll reset everything and move to the 6, so that we can distinguish throughout the test what the -- kind of how everything is increasing in both erosion and sediment control.

Then we let everything that's been collected sit for at least 24 hours. Sometimes that's assisted by flocculant to get the solids to settle out. We decant off the clear liquids and then the soupy, mucky stuff is collected and oven dried so that we -- our final analysis of what passes through the sediment control is dry rate of sediment.

Visually, here's kind of what it looks like. I guess I can look forward here. On the left side you see a test set up ready to go. A nicely manicured slope with the cups in place and the device at the bottom. In this case it's a silt fence at the bottom set up. And then our procedure takes place. And at the end of the day you can see on the right a Type A silt fence result; a Type C silt fence, which has some structural backing to it; a C-system, which is kind of a unique combination of silt fence and backing in place; a Type B system, which is

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basically a short Type A system; and one of the innovative devices that -- and this is kind of all set up to let innovators bring their products in to be evaluated and know -- and let the Georgia people know how to compare that, what does somebody's result on an innovative device mean relative to what a traditional device or a commonly used device, like silt fence, looks like. So you can see one of those is the compost sock.

And you can see what's actually happening in this test is that the sediment is caused by erosion in the test itself rather than in other potential tests where the sediment solution is kind of precalculated, mixed up and sent down. This is a combination of both erosion and sediment control.

The idea of running it on a control, you can see on the left there the idea of running it on traditional schemes such as straw bales shown here as well.

This testing was designed to create what's called a P-factor, a practice factor. What

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practices are put in place to control the amount of sediment that can escape from a site? It just so happens that that P-factor fits nicely into a commonly used equation used worldwide, actually, for determining how much erosion takes place under all the variables that can happen on a construction site. And that's why this is especially a relevant test, is that it creates a performance measure that's easily plugged into a design tool. Just kind of makes engineers get chills to realize when that happens.

Okay. So what you end up with, then, is by comparing the sediment loss with the device in place with the sediment loss without a device in place, and you've got a ratio of the percentage of sediment leaving the site. So if the control and the amount of sediment leaving there is considered a P-factor of 1, whatever erodes leaves the site, and we replace that with a P-factor of whatever is determined from testing, then we've determined how managing sediment, putting a device in place, helps prevent eroded material from leaving the

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site for the designer.

Okay. So, remember, I told you we're always measuring two things. There are always two answers to sediment controls. There's the retention of sediment; there's the allowance of seepage. And so our results are reported that way, and that's what you see here.

On the vertical scale, vertical side of the graph, that's seepage in terms of gallons going through the fence under this -- or going through the device, whatever it was, mostly fences; and on the bottom, the amount of sediment that left the site going through, under, or over the device.

And it's interesting, and we've added the line in a regression curve, that there's a certain amount of orderliness to this. So if we kind of -- pardon me -- know some of the properties of our devices, maybe we can kind of even predetermine. I think this is especially important to manufacturers who may be trying to design products for certain types of performance.

But all this information then gets

transformed into an ultimate performance number, that P-factor.

And in doing that we found that we can kind of categorize how these devices sort themselves out into are they particularly high retention devices, meaning they don't let as much seepage go on in retaining soil, or do they tend to be high flow devices and they let more seepage go through and, as a result, somewhat less sediment control.

And with that in mind in calculating P-factor, which is taking that previous information and relating it to the controls, we come up with this idea (indicating). And I'm going to come back. Here's the general conclusion, that we can actually define where these type of systems fall.

This is, you will see on the horizontal axis the P-factor that we talked about, the real measure of performance that you can plug right into design. And on the vertical axis is the amount of seepage that would go through along with that from this test. And kind of two boxes, the

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dark blue and the light blue.

And what I've done here is I've said, you know, for lack of a better way of looking at this, and knowing that in the real world of design the designer/specifier has to choose do I have area to pond water or do I not; downstream do I have a particularly environmentally sensitive area that says I don't want sediment there, it's going to be a problem, so I need to make sure that I emphasize sediment retention. How can we use these results to help guide that, to help guide the users of this information to one or the other, knowing that that decision has to be made?

So that's where this idea of an envelope for high flow where we don't want to pond water, say in the street where we can create a safety hazard for moving vehicles, or high retention envelope, an area where, yeah, we can pond water, we've got some extra room, but we don't want sediment released because we've got trout streams and we've got other environmentally sensitive areas downstream that we don't want that sediment to get to. So these products or the properties expected of these products fall into this envelope.

Taking those thoughts and kind of combining them with the existing specifications, guidance that has been given to people in the state of Georgia, we compiled a table that kind of says it both ways. Here's some of your standard index properties. If you put on top of this the performance measures that we can demonstrate through this testing, here's a way to kind of pull that all together.

You will notice on the right-hand column there's not a lot here on what I call the alternate systems, what I'd like to think in the future are innovative systems, kind of where we get closer to that holy grail of lots of seepage and a huge amount of sediment control. We're not really sure how to measure those individual properties like we are in silt fence. We now have a good sense of how to measure the overall performance but, getting back to those index properties, those are more system specific and

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something that was kind of beyond the work here to get a grasp on but probably is the remaining question to come up with a real overarching construction specification, if you will.

So with this information and looking at the 6th Edition as it's been proposed, here's kind of where that has been integrated, the test results have been integrated, that the Commission, the Technical Committee, feels like that we can go ahead and look at this decision process. Do we need something that has a preference for sediment retention? If so, then let's require a lower P-factor. Do we need something that has a preference for higher flow to eliminate the safety issues potentially? Then another property applies there, a higher P-factor, that one being .045 from the evaluation that we did.

So kind of closing the loop on doing this testing, kind of coming up with not just the specific answers but what those answers seem to tell us about categorizing sediment retention devices, how can that work its way back into an approach to specifying and selecting products? So I think that's really a good job.

All right. Second set of tests were channel check structures. There's an existing ASTM standard that has been developed and rarely used, so we kind of had to pull it out of the mothballs and kind of make it apply for what we're doing here. The idea was to, once again -- yeah, Josh.

MR. STILL: Can I ask a question?

MR. SPRAGUE: It's okay with me.

MR. DYKES: If you would just identify who you are for the court reporter, please. Stand up so she can see you.

MR. STILL: My name is Josh Still. And I represent Erosion Tech out of Juliette.

Would you, if you will, go back two slides where you have your boxes set up.

MR. SPRAGUE: Uh-huh.

MR. STILL: Would you help me -- I'm trying to wrap my mind here around total seepage and the definition of it. Because theoretically it's 2-inch rainfall, 4-inch rainfall, 6-inch rainfall, it's a controlled amount of gallons that's being released onto this slope.

MR. SPRAGUE: That's right.

MR. STILL: So is this seepage gallons per minute or gallons per --

MR. SPRAGUE: This seepage would be specific to this test, as is the P-factor specific to this test. So it reflects 27 feet long, 8 feet wide, and the cumulative of 2 inches per hour rainfall rate for 20 minutes. So that's a volume, depth and area. And then added onto that, 4 inch per hour and 6, is a total volume of liquid that was put on that slope.

MR. STILL: Right.

MR. SPRAGUE: Of that, some ponded behind the device and other came through. And it's the coming through that is the seepage --

MR. STILL: During.

MR. SPRAGUE: -- during the test time.

MR. STILL: Okay. Thank you.

MR. SPRAGUE: Did that work?

MR. STILL: Uh-huh.

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MR. SPRAGUE: Thanks. Good question.

MR. RUZOWICZ: At the end of some of those -- and my name is Ben with the Georgia Soil and Water. At the end of some of those pictures, there's actually a channel that collects the water that takes it to a place where it can be weighed out.

MR. SPRAGUE: Yeah, I should have probably made a better description of that. But we're catching all of -- everything that comes off. And every five minutes we're doing a bucket clock volumetric flow rate measurement so we know over time. And then we're collecting it all, so we know the total volume. So we get sediment concentration every five minutes. We get flow rate every five minutes. We get total flow rate each 20-minute increment.

MR. STILL: So at the twentieth minute and you cut it off, whatever is ponded up behind it does not count as seepage and everything that --

MR. SPRAGUE: That's right, that's right. Keith.

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MR. HARRIS: Does overtopping count as seepage?

MR. SPRAGUE: Overtopping counts as seepage, as does undermining.

MR. DYKES: Please stand up and state your name for the court reporter, please.

MR. HARRIS: Keith Harris, Hanes Geo Components.

MR. DYKES: Thank you.

MR. SPRAGUE: Thank you. Great.

MR. KELLER: Bryan Keller, Fayette County. Did y'all think about testing two rows of Type C silt fence instead of the required (inaudible)? Did you do any testing on two?

MR. SPRAGUE: Can I do a cop-out on this one?

MR. KELLER: Sure.

MR. SPRAGUE: We did exactly what the Technical Committee asked us to do. So I will just defer that question.

MR. RUZOWICZ: We tested one row at a time. I mean, if we went back and we made every single person that had a silt fence test two rows behind one another in order to be another application, that -- the Committee decided that that required that much more and that testing of one row would be sufficient for what they needed at this time to try to reduce the costs of testing.

MR. SPRAGUE: And that's a real good kind of heads-up, though. All of this was kind of money constrained. And there was some really interesting conversations associated with what should be set up and should it be a single event or multiple events, which, once again, kind of compounds the testing. And so it's a -- it's a judgment world.

But I think one thing to emphasize is the effort here to establish a baseline, as Ben said in his opening statements, was really one of the primary goals of all this so that any future testing at any laboratory following this procedure could then go on to answer some of these additional questions.

Wes.

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DR. ZECH: Wesley Zech, Auburn University. I just have a quick question. How were your thresholds established? Because just visually looking at the data, to me it looks like it's arbitrary. And I was just wondering if you had any statistical justification for selecting, for example, the P-factor of .03 versus .035.

MR. SPRAGUE: It's completely what you see there.

DR. ZECH: So it's arbitrary?

MR. SPRAGUE: Trying to conceptualize based on the results of the different products. Because there's really not enough common things going on other than a specific test result from a specific procedure to do much in the way of statistics with this stuff. And it kind of gets back to that previous statement here of trying to figure out really empirically what a -- what kind of these basic thresholds of performance are for products that are known that can eventually be extended to new products that are being developed and innovated so they have something to compare to.

And then the second step of kind of zoning these things is almost a shoehorning into the practical decision-making that's going on in the world today of this trade-off between, okay, I know I can't let it all pond, so if I could -- if I pick this device, it's all going to pond and I can create a safety hazard, let's say. And I know I can't let it all go through because if I do, I have the potential for creating an environmental hazard. So how do we guide that decision-making process a little bit? So that was the goal of kind of the zoning.

DR. ZECH: So basically they're arbitrarily selected?

MR. SPRAGUE: They're as arbitrary as us sitting here looking at that and saying, you know, do they fall out in certain threshold zones.

DR. ZECH: Because, you know, in the middle you have a cluster of data.

MR. SPRAGUE: Uh-huh.

DR. ZECH: And you drew a line straight through that data. And I bet you right there

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they're not statistically different. Statistically they're going to be the same.

MR. SPRAGUE: You mean on both -- within --

DR. ZECH: On both axes you drew a line through a whole cluster of data. And I would say, just from a practical standpoint, that those systems are probably performing almost identically.

MR. SPRAGUE: And that could very well be, that a lot of products will fit both categories. So, yeah, I think you're exactly right. But there are materials that kind of can fit in both areas, even nonstatistically, if you will, given just the limited database that we have.

DR. ZECH: So why define it by drawing a line between those data points?

MR. SPRAGUE: I'm open. Do you have a better idea?

DR. ZECH: Honestly, anything that's for a P-factor of .045 and lower is going to retain the amount of sediment you want. It's going to be 95 percent or more in comparison to the control. So,

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I mean, I would include them all.

MR. SPRAGUE: Yeah, and that's where as a tester, I'm not -- I don't make those -- it's the designers that have to decide on their sites whether they do need retention. That's why the idea of bisecting it this way to get a little finer differentiation between them is really kind of -- that's the designer/specifier role.

The idea, and I think it's conceptually what's pretty common, is folks know that the C-type silt fence is a more open material and generally passes more sediment. But, as a result, it gets higher flow. And, conversely, A and B types do the flip-flop of that. So this was more of an acknowledgement of what people are doing with these materials and maybe can do it a little more knowledgeably with numbers.

And, in a sense -- and I think this is good that you're bringing it up. In a sense it validates that the testing is kind of recreating the real world, which for a tester is something we like. That's one of our goals.

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DR. ZECH: But then from a seepage standpoint, I know you guys used a sealant on the bottom of some of the products, which that's not a function of how it's installed in the real world, which is going to prevent water from flowing under that product.

MR. SPRAGUE: What we actually did was the attempt was not to prevent seepage under the product but to prevent seepage under the plastic downstream of the products. And I apologize for not going into that level of detail. So that erosion isn't caused downstream of the products, we put plastic down so that water coming under, through, or over would go onto the plastic and into the gutter and be collected instead of creating additional sediment that we couldn't really know from one product to the next to the next what it was. So that bentonite sealant was used to kind of seal it off so anything that wanted to get under the plastic got stuck there and didn't have a path to come and do erosion. And sometimes we were more effective at that than

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other times.

Larry.

MR. BOOTH: Larry Booth with Willacoochee Industrial Fabrics. This was one of the points that we brought up in a previous meeting, that the use of bentonite as a sealant affected the results of these tests.

Now, if the water, if you were trying to prevent the water from going under the plastic, wouldn't it have been more logical just to have brought the plastic up and buried it a couple of inches there at the base of the product and then allow the water to flow and seep as it would based on the material that's being tested? Because as in one of the filter socks, you know, it's -- and you stated in your report that a couple of the drawbacks to these type of sediment retention devices are they're overtopping and they're undermining. By putting that sealant underneath that device, you stopped it from undermining it if it would have undermined it. We don't know that it would have undermined it. But, you know,

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that's a question that we don't know now and that's one of the questions that was raised at previous meetings, that that was an error in testing on that product. And so --

MR. SPRAGUE: But you do understand now that's not what happened?

MR. BOOTH: No, I understand why you -- your explanation as to what you did. But I I'm not convinced that it did not affect the test.

MR. SPRAGUE: But, I mean, you understand that there wasn't bentonite under the material?

MR. BOOTH: No, I don't understand that. Would you explain that?

MR. SPRAGUE: Okay. The -- and I think the whole point of putting the plastic downstream of the device but not trying to affect the device -- because some of these devices are trenched in, some of them have just the little hollowed out low trench -- that what we did was we took a sheet of plastic and upstream of that sheet put the little staples, the erosion control staples on the leading edge and then along that leading edge put the bentonite, so trying to keep water that had come over, through, or under from then getting under that plastic and eroding under the plastic and seeping out the bottom end under that plastic. And it was a constant challenge because we really didn't have a fixed upper end to it.

So perfect? No. But did it affect the results? I don't think so.

MR. BOOTH: I understand your explanation clearly. In the photos it shows the bentonite is stuck against the filter sock. So whether it was underneath it or up against it touching it, then it could have impacted the test, because the water could have reached the bentonite and that consequently stopped the flow from undermining it. That's the point I'm trying to make.

MR. SPRAGUE: Okay. And I don't think that could have happened, but -- yeah.

MR. McCOY: Brad McCoy, GroGreen Solutions.

Could you back up the slides just so I can see the photograph that we're kind of talking about?

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MR. SPRAGUE: Is there one here?

DR. ZECH: It's right there.

MR. SPRAGUE: Okay.

MR. BOOTH: As you can see, the point I was trying to make -- I'm sorry. Larry Booth again. The little picture on this one, the bentonite is touching the base of the product. Now, how much it protrudes underneath it, how little, or not at all is, you know, not something we can determine from this photo. But the fact that it's touching the product can, you know, cause a change in the flow underneath that product. If it potentially would have undermined that product, that bentonite sealant could have eliminated that from occurring. So, you know, the test was impacted by the use of that.

Preferably, I would like to have seen the plastic you have there brought up to the base of the product, use 6-inch sod staples, 4-inch sod staples, or whatever was available and met the requirement, and put it down, bury it 2 inches in the soil, 3 inches in the soil, right up to the base of the product and then let nature take its course instead of putting something like that that could impact the outcome of the test.

MR. SPRAGUE: And you can see we have -- we did it every time. We did it with silt fence and we did it with socks.

MR. BOOTH: You did it with four products. And nine products, it was not used on nine products, according to the videos that I reviewed.

MR. SPRAGUE: Okay.

MR. BOOTH: And I'm just pointing this out. You know, it's an unknown. And we feel like it impacted the results of that test on the products that it was used in and should not have been used, and I'm just trying to make that point.

MR. SPRAGUE: Okay, thanks. I'm with you. I disagree, but I'm with you.

DR. ZECH: Wesley Zech, Auburn University. You know, you talk about real world replication or real world testing, eliminating that plastic sheet on the back end and just letting it erode, and even if it undermined products or started eroding after it, that could be a failure mode for that product. And you would see that during the testing, which would really replicate what happens out in the field.

MR. SPRAGUE: Potentially, yeah. That's one of the specifics that was in the test method we were told to follow. So I don't disagree. We were just kind of told that's -- and that's -- I can see both sides of that one, yeah.

MR. SINGLETON: Please correct me if I'm wrong --

MR. SPRAGUE: Would you introduce yourself.

MR. SINGLETON: I'm Roger Singleton, Silt-Saver. I believe the test was to test the product itself for flow and efficiency, not the installation method. In order to test the product itself, you have to close off any escape of water passing through or under in order to test the flow through the product and the efficiency that passes through or over the product.

MR. SPRAGUE: And I guess I'd have to disagree with you on that one. The goal here was to run an installed performance test. And so the installation is supposed to represent how it's put in in the field and to do it in accordance with the procedure, you know.

MR. SINGLETON: Under perfect conditions.

MR. SPRAGUE: As best we can do it, yeah.

MR. DYKES: In the interest of time we'll take two more questions. I saw a hand here. Well, go ahead, Marc.

MR. MASTRONARDI: Marc Mastronardi, Georgia DOT. Joel, so I heard something that's very concerning. Do we have tests that did not have this same application of bentonite used on --

MR. SPRAGUE: I don't doubt Larry, if he has looked through it all. I mean, when we had a problem with seepage coming under the plastic, that's what we did.

MR. MASTRONARDI: So let me ask you something. I think I see in the picture the compost filter sock. So we've got a couple of wings that have been installed, so-to-speak. Is that bentonite behind the wing in advance of the

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filter sock?

MR. SPRAGUE: Now, with a three-dimensional product, seepage doesn't just go this way, it kind of goes this way (indicating). So our judgment was that we needed to kind of make sure we sealed off the edge so that the seepage we were measuring was kind of the through seepage.

MR. MASTRONARDI: Right. So --

MR. SPRAGUE: So, yeah, so we have to -- with the three-dimensional products we had to do a special job of sealing and sealing out enough such that that seepage came straight through and was collected.

MR. MASTRONARDI: So how did you deal with the silt fence installations then in --

MR. SPRAGUE: They turned upstream and we actually secure them to the wall so there's no way for --

MR. MASTRONARDI: But they do protrude.

MR. SPRAGUE: -- sediment to escape along the side.

MR. MASTRONARDI: Right. But I guess what

I'm looking at is with the post installation they do protrude inward into the test pattern. I guess I'm wondering if you have the same concerns that water is getting behind that fence or not as you did with the sock.

MR. SPRAGUE: We never had the ponding get behind the upward extension of the fence as you see it there.

MR. MASTRONARDI: Okay.

MR. SPRAGUE: So all of the -- all of the seepage had to come through. And we really secured -- you can see the posts right along the wall. Those are secured tightly to the wall.

MR. MASTRONARDI: All right.

MR. SPRAGUE: So that seepage can't -- you've got to go through the fence against the wall and then come down there and be a -- be representative of more length of material.

MR. MASTRONARDI: Let me ask one last difficult question.

MR. SPRAGUE: Okay.

MR. MASTRONARDI: If it turns out that there

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is not a uniform application of bentonite, what do you -- what would be the position on the test results?

MR. SPRAGUE: Well, I think that's kind of -- our judgment, or we wouldn't have turned them over, was that this is kind of good, really good orderly stuff. But, you know, the Technical Committee is our final arbiter on those things. I don't think you'll find anybody who -- you know, doing large-scale testing, you try and control the variables as they pop up. And water is a stinker.

MR. DYKES: There's one question over here. And we'll get to the comments during the public comments.

One question over here?

MS. DAVIS: Yes. Kelli Davis with DDD Erosion Control.

My question is if you're trying to simulate real world applications and you don't apply the same product to the same applications, the bentonite, in essence, becomes part of the application process for those products that it was used. The other products are treated differently by not having them applicable or having them installed with it. Therefore, apples to apples can't be compared in my opinion. Am I wrong?

MR. SPRAGUE: I hear what you're saying. And we're kind of pretty good at this. You know, with bentonite, you put it down and it gets really slick and impermeable. It's just like plastic. That's why we used it adjacent to the plastic, because we could -- we could kind of do that. I mean, I hear you. We --

MS. DAVIS: The definition of bentonite is it is a sealant. Is that not correct?

MR. SPRAGUE: Right.

MS. DAVIS: So if it's a sealant at the base of the product the full length of the product, then it -- in essence, any seepage, any water flow, any sediment concentration that was going to go off the site, that sealant would, in essence, block anything coming off. Is that right? Am I saying that correctly?

MR. SPRAGUE: You -- yeah, I understand what you're saying. I guess it's I'm just having a -- there is -- there is space between the device and the bentonite.

MS. DAVIS: According to pictures that were provided for the test, that's not correct.

MR. SPRAGUE: It didn't look like it?

MS. DAVIS: No, sir. You can -- they zoomed in and you can see it is not, there is no space between there in what we viewed.

MR. SPRAGUE: Okay. Certainly the intent was -- yeah, we're quite aware of these materials. And we've done, we've done quite a lot of them that, you know, you've just got to find the right balance between controlling -- being able to capture what you need to capture coming off of these and not affecting the test.

MS. DAVIS: As Mr. Larry said, there were nine products that did not have it and only four that had it.

MR. SPRAGUE: So you feel pretty good about those nine?

MS. DAVIS: We do.

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MR. SPRAGUE: Okay. So it's -- and you feel pretty bad about the other ones? You have expectations they would have done something else?

MS. DAVIS: It just doesn't look like it's a fair comparison if one has additional product on it.

MR. SPRAGUE: Okay. I'm glad to kind of get my head around where you're coming from. And I'm sorry my explanation wasn't -- wasn't satisfactory. Okay.

MR. DYKES: We'll address those comments during public comments. I hate to cut it off; but in the interest of some folks not being able to stay all day, I want to get through the presentation. But please note your comments or questions and we'll address those. But in the interest of time, it being five after 11:00, we want to move forward.

MR. SPRAGUE: All right. The second set of tests we did -- and to the best of my knowledge there was no bentonite here, so this may go better -- was large-scale performance testing of check structures using a standardized test procedure.

What we looked at here was a compost sock, straw bales, a stone check dam, and silt fence put in in accordance with the Georgia DOT W-pattern. In this test a trapezoid-shaped channel with a 5-percent bed slope, 2-to-1 side slopes, with a 2-foot wide bottom were used. It's a 30-minute flow rate. And we established the flow rate kind of two ways, both with a weir and with volumetric flow rate measurements -- or, excuse me, velocity measurements combined with the measurements made on the depth of the flow. It's metered into the channel. We have cross-sections set up to take measurements. Those measurements are intended for both measuring to the soil surface before and after the test as well as give us points to measure volume -- the velocity of flow. And we generate the resulting graphs off of that.

Here's the location at our facility. Here's a close-up of what the trapezoid looks like and flow coming in over a sharp crescent weir. We put a 12-inch veneer of sandy clay, as requested.

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It's a little bit of a unique procedure for re-establishing these after each set of tests. The install, the product that is installed -- and in this case we installed each product at one location to, once again, kind of get the best device-to-device-to-device comparison, regardless of the height of the devices.

We do immediately prior to the initiation of the test, we'll measure what the soil surface is. We'll check the moisture readings as well. We know what flow rate we're looking for and we've calibrated our weir to get us there.

During the testing we do flow depth measurements and try to do this after kind of the thing has stabilized. It's a little bit of a moving target. So sometimes we do this multiple times. And then at the end of the 30 minutes we stop and we measure things again.

Here you can see kind of the initial preparation, putting soil in place and compacting it with the trapezoidal channel. The critical area is always where the side slope meets the

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bottom. And it's hugely difficult to get stabilized. So a combination of compaction on the soil itself with just the plate and then pulling our form to re-establish the trapezoid while running the compactor in place. It's a rather noisy activity, but it works. And then putting the materials in place either in accordance with, in this case, the Green Book installation details or with the manufacturer's recommendations if it's not in the Green Book.

You can see the rock check structure and then this W-shaped silt fence installation.

And, once again, the results of this in terms of kind of how the different structures performed and how much soil was lost and how much soil was gained, because as most of you would know, the idea of a check structure being placed in the channel is so that it slows the flow, makes the flow pond up and act as a little baby sediment pond. The heavier sediments can fall out behind the device as then the flow backs up and cascades over the device hopefully to then meet another

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device at another check structure further down the channel.

The before and after measurements are key to determining where there's been erosion, where there's been accretion. And the standard requires us to measure -- or to convert that information into an index, an accretion index and a soil loss index. And so we had some tables put together to kind of express that along with some of the qualitative information that we found as we ran the test.

Now, as a little background, the idea that different channels and different devices may have -- have different design parameters. A small channel may only be exposed to a lower flow level; a larger channel, a larger flow level. For a small channel, it may be that a smaller device will work just fine and be much more economical. In a bigger channel, maybe it's necessary to have a much more structurally robust system. And, of course, that may have costs associated with it as well.

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So we did testing at one half of a cfs, cubic feet per second, flow rate, testing at 1 cfs, and testing at 2 cfs to arguably demonstrate a modest, a medium, and a higher flow rate and how these different devices performed in those different conditions, and with the potential that a device could do very well at a low flow rate and not so well at a high flow rate or do very well across the board. It's a little hard to envision a device doing well at a high flow rate but not at a low flow rate, but we tend to be surprised many times.

So in the process of all this we kind of focused on what the raw results were. And in that process, kind of under full disclosure here, with the help from our friends at Auburn, we found like a real calculation mistake in calculating the indices. And that was calculation of the total wetted area. So you see the note here, and it's in your information, the corrected data.

And kind of the natural extension of this is the question, okay, what does that do to the results and the ultimate recommendations? And I will get to that in a minute here.

But here you have the results of the low flow, the .5 cfs. And it probably jumps out right away that in the column of observations you see the term "blowout." Well, this was I won't say surprising, but I will say surprising, that even under the lowest flow rate both the straw bales, which are a traditional system used for check structures, and the silt fence as it was put in in accordance to this detail from the -- the DOT uses this detail, we got blowout before the end of the 30 minutes, meaning either a total undermining so that it would no longer hold a pond or kind of complete subversion of the system, which is kind of the same thing; that we couldn't get a full 30 minutes of test time without a really violent disruption in flow.

And I use that term "violent" kind of advisedly because, interestingly, once a device works for a while to pond but then catastrophically fails, it can be worse than not

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having the device at all.

And that's why you see over in column -- the third one from the right, the Net Percent of Unchecked, meaning ultimately the amount of sediment leaving the test section when compared to a section tested under that flow with no device at all can actually be greater than 100 percent, because this ponding and blowout can create some really huge erosive forces over whatever is remaining at the end of the test channel. And that's indeed what happened in both the straw and silt fence.

So then moving up to the 1 and 2 cfs tests, we just went ahead with the devices that passed at the .5 cfs level. And that's what you see here, the 1 cfs level, testing the control to compare to, and then straw bales, the compost sock, and a rock check structure deployed over a geotextile. Very good performance. And then under the higher flow levels, good performance.

You know, as those flows go up, it's harder and harder to keep erosion and carrying on from

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going on because it ponds that much more quickly, starts cascading that much more quickly and deeply, and it can carry more sediment with it to flow through the channel. Still, the results kind of just feel like this is what we're seeing in the world.

Graphically, here's a result of the .5 cfs runs. And you will see the ones that show blowout and the ones that don't.

Now, one thing I think we all felt was quite interesting was you can use straw bales effectively, like hugely effectively, but you have to put them in right. And Ben did his homework. Once we realized that the standard installation wasn't going to work very well, he came up with an NRCS approach and then shared that with us for us to try. And doing a real rigorous approach of installation changed that completely.

If we combine --

UNIDENTIFIED SPEAKER: Can you just briefly describe the difference in the installs?

MR. SPRAGUE: Yeah. Let me come back to

that one, okay, because it's substantial.

MR. BOOTH: I just had a question for clarification. Mr. Dykes, did you mean that we didn't -- that you didn't want us to ask any questions during the remainder of this and wait until the end of it?

MR. DYKES: No, sir. We're fine for you to ask questions. I just didn't want to spend all the time on the first test.

MR. BOOTH: I understand.

MR. DYKES: Yeah, I apologize for not making that clear. I don't want to spend all two or four hours, however long you want to be here today, or eight hours, however long you want to stay, on the first test, because I think there may be folks that are here that want to see all of the tests. So, certainly, yes.

MR. BOOTH: Could we back up one slide? I'm sorry, Larry Booth.

MR. SPRAGUE: Yeah, why don't we go back and we'll start -- let me -- I think we are talking here, right (indicating)? If we start with the

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difference in what makes a straw bale installation work. Okay. It's a little bit hard to see, but what you have here is the NRCS I think came out of Kansas or --

MR. RUZOWICZ: Colorado.

MR. SPRAGUE: Colorado, was it? Where you bury one row about 14 inches deep. So it's, what is that, about 6 inches high, sticking above, and about 14 inches under the soil, compacted; and then upstream from that put another line of silt fence that is embedded 6 inches deep, I believe it was. And that's what you see sticking up in the front line state. And what you see in the back line state is the much deeper buried one. So, in essence, you're kind of created a scour apron on the back side and a lip for the front ones to push against.

UNIDENTIFIED SPEAKER: And the GASF you see there is just double staked and 4 inches entrenched in the -- just like the 5th Edition?

MR. SPRAGUE: Exactly, exactly. Thank you for that clarification.

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All right, Larry, your question.

MR. BOOTH: Could you move forward -- I'm sorry, Larry Booth, Willacoochee Industrial -- one more slide, please. Again. Again. Well, back up one, I'm sorry. I did have a question on that previous one. One more back.

MR. SPRAGUE: That one?

MR. BOOTH: One more back. There we go. Type C silt fence, the last two categories there, 21 inch high. Now, Type C silt fence is 36 inches high, so could you please clarify what you mean by 21 inches high there?

MR. SPRAGUE: Yeah. The key to this is all ponding. And that point, that point of the silt fence down in the channel determines how much ponding there's going to be and, therefore, how much kind of hydraulic pressure there is on it. And that's the 21 inches.

MR. BOOTH: Okay, I understand.

MR. SPRAGUE: Right here (indicating)?

MR. BOOTH: Yes.

MR. SPRAGUE: Okay.

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MR. BOOTH: I was a little confused on that. Now if you will go to the next slide, you can see on this there's a lot of water backed up behind this product here. And if you will go to the next slide and then the next one -- no, forward, not backward.

MR. SPRAGUE: Forward, okay.

MR. BOOTH: The next one. And the next one. I'm looking for the graph, the vertical graph. Here we go.

MR. SPRAGUE: Okay.

MR. BOOTH: Where we're showing blowouts and no blowouts.

MR. SPRAGUE: Right.

MR. BOOTH: It would appear to me based on the photographs that the blowouts occurred on products like Type C silt fence because it retains so much water behind it and did not allow it to go over it, whereas other products like rock piles and compost sock were shorter in height and the water went over and overflowed that.

So theoretically, if you reduced the height

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of the silt fence in that check dam to the height of the rocks or the compost sock, then it would not have had a blowout also, potentially.

MR. SPRAGUE: Oh, I think that at least partly, yes, certainly. It may be that -- and it's hugely difficult to compact against wire. And if you remove the wire from this design, you'd make an improvement.

And the idea of turning these sharp corners and such is really hard to install. It's just really hard to install. And that's why we did two of them where we said, okay, guys, go install it, here's the details; and then we said, okay, guys, now go install it and we're going to watch you install it and do everything you can to get compaction in that trench and such. And so it's just hard. It's just really hard to do this detail right.

So I guess that's -- and it's important for me to tell you this isn't an indictment of silt fence. This is, in my mind, this is an indictment of what we test at that configuration that is

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required. And for those who aren't real familiar, the size of the channel dictates how much -- or how you're required to put the silt fence in, whether you use a W, whether you use a V, whatever it may be. And so for this testing, that fit the standards, the channel required in the standard.

There may be other ways to use silt fence that can work. And I think that goes back to kind of that comment earlier. I think the real goal of the Georgia Soil and Water was to establish baseline, a procedure that can be set up at any laboratory, any place, any university, to look at these and do future testing on whatever system of materials so that there's truly an apples and apples ability to compare.

Okay. All right. That's just another way of presenting it. Here's kind of the nuts and bolts of things, what to do with this information. And it's interesting, the standard itself, ASTM D7208 really doesn't give you a heck of a lot of guidance on what do you do with this information once you've measured it. And so we're kind of

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stretching there to work with the Technical Committee to say, okay, well, how do we turn this into something that could be used to guide the decision makers.

And so our thought was, okay, if we take these indices and take the net of the indices, how much is accreted upstream of the device versus how -- well, it could be upstream or downstream -- and how much is eroded upstream and downstream of the device. The net of those is kind of what left the -- well, a measure, anyway, of what left the test area, and compare that to a control, which is kind of a simple erosion control test going on. And does that ratio tell us how much improvement we could expect.

And so with that concept in mind, we proposed that -- well, you know, you do the test, you kind of line up this net of the Soil Accretion Index and the Clopper Soil Loss Index and see how that compared to the control.

Now, remember, I told you we had a mistake. The original recommendation was 20 percent based

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on these net indices. With the correction to the calculations, 30 percent seems like a much more appropriate threshold based on what we were testing. And, you know, that would be the wherewithall for the Technical Committee to decide if that was a good representation of everything they would see. But I think the concept of using that ratio and saying that's a percent improvement so that one could compare in a given test apples to apples is a valid way to go about it.

And so based on that -- and I think I kind of covered those conclusions -- we came up with these recommendations where here is kind of what we tested, so if that's useful to folks. This is a description of the materials physically and how they were put in. And then a large scale performance number accompanying that is one way to use the results of this test. And at this point kind of I don't really have an alternative way of using these results.

And as it's made its way then into the proposed 6th Edition, that it's not specific. I guess that's kind of something the Technical Committee is still wrestling with a little bit, should there be a percentage number put in there or whatever. But the concept of relying on the test method has been added and the concept related to relying on it for just the highest flow at this time, which, like we talked about at the start of discussing this particular method, this could even be broken down to categories, low, medium and high, and then have the test method reflect results at half a cfs, 1 cfs and 2 cfs. So perhaps another way of looking at things.

Okay. Question?

MS. DAVIS: Kelli Davis with DDD Erosion Control. You said that you did a performance modification for the hay bales because there was a blowout and it worked better.

MR. SPRAGUE: Right.

MS. DAVIS: So I would say that based off that that you say installation is key, is a key factor as far as how this product is going to perform and to succeed; correct?

MR. SPRAGUE: Sure.

MS. DAVIS: Was there also performance modification made for the Type C silt fence installation?

MR. SPRAGUE: Well, the only thing we did there was to go back and do a re-installation to double check that everything had been installed to the best of our ability. But an alternate type of installation? We really didn't. We were kind of at the limit of the budget.

I think we ended up kind of just throwing in -- if you'll notice the half cfs had more tests and, therefore, the higher cfs had less. And that's kind of how we jockeyed in some extra testing there. But there wasn't a lot of room in the budget to do extra stuff.

But your statement that it's installation dependent is -- is at least partially correct.

MS. DAVIS: All right. And my observation, just by looking at the Georgia DOT drawings, looks like the Type C installation for check dams is not installed correctly. The shape of it is not

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matching up with the drawing. I do not install for a living, so I'm not -- I'm just asking if that could have contributed to the failure factor.

MR. SPRAGUE: Yeah, if this is not the accurate installation, then we haven't achieved, you know, good testing of the range of what's already approved to set the baseline.

We worked pretty hard to understand those drawings. But, you know, as we've already shown, we -- we know how to make a mistake. So, yeah, if you can draw our attention to what we should have done.

Marc, you would know. Is the W --

MR. MASTRONARDI: I think the shape of the wings, we don't turn them square to the flow. I mean, they're not parallel to the flow. They actually create another apex. So in our mind -- and you gave me the opportunity. And you guys all know me. I would be remiss if I didn't say it again. I've always viewed them as velocity reduction to any downstream erosion issues, not sediment traffic.

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So this, in my mind, you know, you do have the ability to affect the RUSLE Equation by the number of checks you put in. And that is an item for that. Setting that aside, the design we came up with was to dissipate the energy. And so if it hits that initial apex, it then shoots to those other two apexes. And it's not square.

I think I saw -- I'm not sure if I saw that we actually had the silt fence tied to the wire back.

MR. SPRAGUE: Yeah.

MR. MASTRONARDI: And I don't know how much of any influence that is.

MR. SPRAGUE: Yeah. And, you know, it's the point in the center of the channel, then it goes out up to the top of the channel, which is another fun thing to try and do in a trapezoid, is to go out and up. And then it goes upstream a prescribed distance for how deep that channel is.

MR. MASTRONARDI: And what I'm saying is those actually, those actually are angled out in our drawing. I think they're inside your test

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here instead of out.

MR. SPRAGUE: Got you. Okay. And it goes up the -- okay, yeah, I think I know what you're saying. I'm not sure that that would -- yeah, that probably wouldn't --

MR. MASTRONARDI: And with the lower apex, I don't know how much, but I think that I -- you know, we just need to verify it was installed right, that's all.

MR. SPRAGUE: Yeah, it was certainly installed with all the expertise we could, because that's one reason we wanted to include this information here.

To do our installations, we thought that while we are not in a position for what we did to do a meaningful economic analysis of the installation, if we could just tell how long it took us to put the install in, then that might be useful to the Committee. And the idea that doing straw bales takes a huge time and rock check takes a huge time; and then here under the low flow, the silt fence, I mean, we literally spent all morning

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getting one installation in. It's just -- it's really hard.

So Kelli's point, it may be that it's just the materials aren't the issue here, it's just our install detail could be improved to make it doable.

MR. MASTRONARDI: Marc Mastronardi, DOT. I guess something that you just mentioned from one of our designers, in actuality we may argue that it should have been just a simple V and not a W, based on the width of the test pattern.

MR. SPRAGUE: That's what we looked at. It's really hard to figure out what the -- what was -- what we were required to do by the shape of this test channel, which I'm correct there that it's the test -- it's the channel itself, the depth, the width, everything, that dictates which detail to use.

MR. MASTRONARDI: Yeah.

MR. SPRAGUE: And that -- and that we had to, we had to go to the W because of the configuration of the actual test channel.

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If you take nothing else from this, though, this is hard, it's hard to make a silt fence installation into a distinctly shaped channel that will hold up under -- because it ponds a bunch of water. That's the key here. If it didn't pond so much, it wouldn't have such hydrostatic pressures behind it. But the -- it's tough.

MR. McCOY: Brad McCoy, GroGreen Solutions.

I'm going to get you to go to that last slide where it had the --

MR. SPRAGUE: This one (indicating)?

MR. McCOY: No. Where you just gave a description of the installation and what products were used in the installation. On the riprap check dams -- and I defer to Mr. Mastronardi again, but it shows 8 ounce nonwoven.

MR. SPRAGUE: Oh, in the table, I got you.

MR. McCOY: Yes, sir, in the table.

MR. SPRAGUE: Okay.

MR. McCOY: And correct me if I'm wrong, but in 15 years I believe the Department requires a monofilament geotextile to be used underneath all

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riprap applications, whether it's check dam --

THE COURT REPORTER: Can you speak up.

MR. McCOY: Should the 8-ounce nonwoven geotextile be used. My understanding is that the Department requires a monofilament geotextile for an underlier, underliner of our check dams or channel applications of riprap. Is that right?

MS. DAVIS: Yes.

MR. MASTRONARDI: I believe that's right. I would have to verify it, but I believe you're right.

MR. SPRAGUE: That's a real mistake from my perspective, that that's the requirement. You wouldn't use a monofilament for sandy clay for anything other than silt fence if you wanted it to pass through.

But, anyway, yes, yes.

MR. HAMIL: Kirby Hamil, old-time retired engineer from DOT. One of the things that's got to be considered is maintenance. When you get these disc shape built rocks, when the bat-wing mower goes over it, the drivers on these tractors,

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bat wings, a lot of them are prisoners, and etc., and they'll just run right over it and mess the blade up. If you have a silt fence with the wire behind it, they go right over that.

The socks will probably work the best in my opinion because they can go over that. Plus, I think you need more socks instead of one, make it two or three. Especially when you have a high volume with fast flow on a steep grade, you need a longer thing so that the crevice, the space in between the socks will be filled up with silt and grass will grow in there and it will be easier to mow over than the other two options.

MR. SPRAGUE: I think those are great points. And really something as it relates to your work in the Green Book is the place to highlight those things, sure enough.

Question?

MR. SAWHILL: Ron Sawhill, College of Environment and Design. Are all these different tests available somewhere, the reports, detailed reports?

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MR. SPRAGUE: In the book.

MR. RUZOWICZ: It's on our website. And it's on the website and we can --

MR. DYKES: Yeah, it's on the website. And following today's meeting, we'll make it a part of this meeting as either a link or put it on the website.

MR. SAWHILL: Thank you.

MR. SPRAGUE: Okay. Let's keep popping here now. More recently we've tackled the idea of sediment traps. Once again, the objective is to set a baseline for systems that are used using a test methodology that is arguably a good simulation but that can also be used in the future for a reasonable cost to evaluate future systems. And so we think that this is a really good way to go for the Soil and Water folks.

We did, looked at two different types of systems and we looked at two different sediment concentrations: Very heavy, as if it were just flush from a construction site; and somewhat lighter, as if it had already passed through some

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type of erosion device or toe-of-slope device or something.

But we looked at these designations in the middle column, you will see there, and compared to a South Carolina detail that had been tested using this methodology previously, to give kind of a good apples-to-apples comparison. And in this case we used Georgia sandy clay and in South Carolina they used a sandy loam, more of a top soil type material.

The procedure is a modification of ASTM D7351, which, in essence, a big tank mixes up a slurry of dirty water, expresses that dirty water. In 7351 it expresses it so that it meets at the bottom of an impermeable slope a device that's set up. To examine that device's installation and the materials themselves, it ends up determining how much water passed through, how much sediment passed through. The two pieces of the pie, if you will.

In this case instead of down an impermeable slope we piped it to an enclosed 8-by-8 area

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around a simulated inlet. And around that simulated inlet was a soil area that can accommodate an actual installation, if it needs staking, or whatever. And there's a zone between the device then and the walls of the ponding area for water to pond, if it's going to pond, for sediment to deposit if it's going to deposit.

And then in the course of the test, water is, dirty water is piped to the zone, deposited into the zone over a 30-minute period, and the measurements of what's being discharged, what's seeping through. Grab samples are taken so we can get a full measure of how much sediment is passing through with time, how much liquid is passing through with time, and total liquid passing through.

And for Georgia Soil and Water we did three replicates, three replicate events, meaning, okay, what if you're protecting that inlet and it rains, stuff happens, and it rains again and stuff happens? Has the protection changed because of the first event that affects the performance of the second event? And then do it again and see has the performance changed affected by the second event as it's exposed to a third event.

And you can't see it here, but it's located on the far side of our erosion slope testing house, but it looks like this (indicating). The mixing tank, here is the 7351 setup which expresses down that slope. The device is here (indicating). And we collect what comes through.

In this case we set up an inlet elevated so that we could pipe it, we could -- and I'll show you the inside in a minute -- but we could also see from underneath as if we were actually standing in the manhole what's going on. So we collect. These are on scales, and we measure the weight, we record the weight, and it's constantly measured. This is on scales. So we measure the -- or we record the weights to see we're dispersing -- not dispersing, we are letting the flow out on a uniform basis.

It's a big tank. It can hold up to 10,000 pounds of sediment-laden water. Pumping and water

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source to be able to repeat this test on a regular basis, it's kind of important to have it readily available.

We've got this simulated manhole inlet aboveground so we can look both above from ladders and below from just standing on the ground. And then the downstream tank to collect everything.

Once the -- and in this case we have specific details from the Green Book on how to install these materials. And we interpret that as well as we could for this setup. 2 foot by 2 foot opening.

And then the test proceeds by taking a slurry of water, and the slurry is determined generally based on use of the Modified Universal Soil Loss Equation, which is a way to use the Universal Soil Loss Equation for storm events, specific events.

And based on our understanding of how much erosion would take place in kind of a default condition, we have -- and let me back up. Not "we," the standard has a default which says if you have a rainfall on a sandy loam hundred-foot-long slope, that rainfall is a typical 4-inch designed storm, here is what you should mix up. That's kind of a gross generalization, but that's kind of where it is.

We also looked at it, okay, well, what if you have sandy clay slopes and you have actually some erosion control going on or, at the very least, something sediment control related, would there be a lesser concentration of sediment that would be appropriate? Because very often that's what we're seeing at inlets, right. If it's a curb inlet, it's seepage that's come off of a site or washed from the road or whatever, but it's not the, you know, full-blown bare soil erosion going on.

So we tested two different ones but used this Modified Uniform -- Modified Soil Loss Equation to make the calculation and determine in one case 60,000 milligrams per liter concentration and in another case 12,000, much lower, and both using sandy clay. Discharged uniformly, as we talked about.

As the runoff passes the system as it's set up, it's collected. We do grab samples every five minutes. In this case the standard says don't stop collecting and measuring at the end of 30 minutes, if there's ponding, keep going up to 90 minutes to see what's happening even after the storm event stops, the runoff stops, but ponding is continuing on. And so this total collection goes until there's no more in there or as far as 90 minutes.

We also do turbidity. But you quickly find out that these sediment control devices don't do a lot to affect turbidity. Sediment, dry sediment is typically what's used.

Here's an example of what it looks like inside the inlet simulation. This is impermeable. This is dirt 18 inches deep, so it can take a good deep stake, such as these steel posts. This is a steel post. This has steel backing on the inside and then Type C silt fence. This is the Sd2-F design.

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Here is an example of the Sd2-Bg. And you can see it does, even though 8 by 8 is pretty big, it can get kind of area constrained.

Here is the DOT setup that would be exposed to in this case instead of loam it will see sandy clay.

For curb inlet type applications, it's here's the curb, so it will have to spill over. We did the full 8 feet. Once again, these are three-dimensional products, so sealing off the ends so that we're seeing them straight through. Seemed reasonable to do.

This is wrapped stone. This is wrapped block.

MR. SINGLETON: Joel, can we go back to the inlets?

MR. SPRAGUE: Yeah. How far back?

MR. SINGLETON: That's the frame and filter -- not the frame and filter. Right there.

MR. SPRAGUE: Okay.

MR. SINGLETON: The success -- I'm Roger Singleton. The success of any product has to be a

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successful design. This is a multiple component system. The failure of any one of the components is a failure of the system. We've been driving stakes in uncompacted soil for years and we wonder why these things fall over. So if we're going to test the product for future use, it should be tested in the dirt that it's particularly used in on the job site.

Now, typically on the job site, the area around inlets is not compacted. You can't get your chute's foot or anything around those. And there's no individual compaction for that. And the DOT guys are here. We need to really look at the issue of driving stakes into uncompacted soil. Inlets receive concentrated flow. Every book across the country specifically says that silt fence shall not be used in concentrated flow. It's partially due to its flow rate, the fact that it impounds the water, it impounds the sediment, and, therefore, that's the reason it needs more of a structural frame under it.

So I disagree with this even being tested

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due to its continuous failure over the last 25 years in the use of this method.

MR. SPRAGUE: See, I think, Roger -- and I don't disagree with anything that you said up until the end. The point, and I think this keeps coming up over and over, is the point of this program is to establish testing protocols --

MR. SINGLETON: I agree.

MR. SPRAGUE: -- that arguably represent a good simulation of what's being done and arguably set a good baseline to compare to. And then it's up to those who have these special expertises and such to take advantage of having this now good measuring stick to actually demonstrate those things.

And so I don't disagree with any of it; but if we don't have something to compare to, when you spend your hard-earned money on the test, you're not going to get nearly as much value out of spending that money as if you have something to compare to. And so all -- and this is really the genius of the Georgia Soil and Water doing this is

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we're setting a baseline for anybody to then compare to. And I think in that way this has really been kind of a real effective way of doing that and kind of opened up the world to --

MR. SINGLETON: And I agree with you to the point of testing. But if you don't consider the failure of this system as you have with the other systems, then you've not considered fair testing. The failure, if this was driven into soil, uncompacted soil and tested, then the likelihood of failure would be 50, 75 percent. Then that failure would be considered as a component to be measured against our frame and filter, for instance.

MR. SPRAGUE: And so, you know, kind of the baseline is here's full transparency. So, you know, everybody can punch the testing guy in the nose and say we saw what you did and that just wasn't perfect. Well, okay. Now you're telling me I shouldn't do perfect, I should do awful. Well, give me kind of the everybody agree to awful for us to compare to.

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So I think really this is just first step. This is let's get a protocol that we can have some confidence in and then we can examine this, we can examine that, we can examine that. And really maybe the technical basis is that Roger is exactly right and a lot of these are going in wrong. So with our next availability of research money we can target that and get not the perfect scenario but --

MR. SINGLETON: So this is a point of discussion for the Committee.

MR. SPRAGUE: I think so. And, I mean, I shouldn't speak on the Commission's behalf, but it certainly seems to me like that would set the table to evenhandedly address that.

MR. SINGLETON: Fair enough.

DR. ZECH: Wesley Zech, Auburn.

Can you go to the next slide, I think it is.

MR. SPRAGUE: Up or down?

DR. ZECH: Forward, yeah. Next one. Right there.

MR. SPRAGUE: Okay.

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DR. ZECH: So this is just a standard installation. And I'm assuming that's bentonite again along the front face of that on the left-hand picture?

MR. SPRAGUE: It's not supposed to be. Let me put that -- what you have in some of these situations is wash that's in there. But, yeah, we're looking for seepage over, under. It's just counterintuitive that we would try and prevent --

DR. ZECH: But, I mean, I can see the bentonite on the sides.

MR. SPRAGUE: Larry, you've reviewed all these. Do we have bentonite?

MR. BOOTH: On the screen, right there on the left screen it shows bentonite there along the face of the product.

MR. SPRAGUE: Yeah, if we had a couple more pictures. And I don't have my -- the files are so big, I can't keep them on this computer. I can go through some of the others that were taken during this setup to see if that's just the light blending off the black or what it may be.

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And I think you will see in the report we're looking for over, under, around.

DR. ZECH: So it's under. But, you know, if you've got bentonite on the bottom, it will swell.

MR. SPRAGUE: That's why it's counterintuitive that we would do that. I see what you're saying, but that's certainly not what our intent was in doing the testing.

But I think everybody now has all the pictures of everything, so I will just say look through some of the additional pictures and see if this seems to just be, I don't know, some gravel washings or something that got in the way.

Any other questions?

Okay, just an example of how we kind of proceed through three storm events. Here is that initial setup you saw. We'll introduce sandy clay. There's a component of sand that tends to want to settle, as you can see building up in the corners. I don't -- I don't think that's -- while it's kind of partial to where these outlets are, I think that's pretty common to see around these

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inlets.

And then here you can see where it ponded a bit, but gradually seepage takes place and the ponding goes away. Likewise, here between events. And the events are spread apart by at least four hours, so seepage can take place. The new flow can be exposed to a segment of silt fence that maybe has some smear on it, some sediment collection on it, whatever, to try and get this idea on what is the effect on performance of repeated events.

With each case we try to do a control event in the paved and the unpaved condition so that we can have comparison to. It's pretty much a controlled event, means that everything goes through in these tests, although there is a little bit of deposition that takes place. So it's not a perfect hundred percent. Then, of course, the BMP results and the comparison we do between them.

We get both pieces of the pie here, sediment retention and seepage. And we did find out that this is probably the third leg of the stool on why

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I think it's so vital that we have a baseline to compare to, is what we're using now has virtually no effect on turbidity, okay. None of the systems. So that's still really important, right. So maybe generation two, three, four sediment retention device for inlet protection or perimeter controls will be able to address that. And this will be a good tool to compare back to.

Question?

MR. ADAMS: Gordy Adams. I'm a third-party inspector. Were any of these tests done where maybe they had mulch in place, straw or hay, 2 to 4 inches deep, and how those two BMPs put together --

MR. SPRAGUE: No.

MR. ADAMS: -- compared to like riprap with a bunch of straw that has gone downhill with the water, trapped in front of the stone, be different than the straw bale capturing straw. If you put it in correctly, you know, you should be putting down mulch too.

MR. SPRAGUE: Can you think of a way that we

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could use one of these procedures to simulate that?

MR. ADAMS: Well, straw --

MR. SPRAGUE: Maybe the first one we did, that that slope would be covered with a mulch material?

MR. ADAMS: And Hydroseeded or --

MR. SPRAGUE: Or Hydroseeded or whatever.

MR. ADAMS: Or sprayed.

MR. SPRAGUE: Because that's typically what we do in our slope house for erosion testing under the ASTM procedures there and catch the runoff. So I think what we've done with these type of tests is considered the idea of taking what we learned from the erosion control tests to design what our slurry needs to be for the sediment control test. So maybe we need to kind of pair the two, take the result from one as our basis for then stirring up the other.

Now, the interesting thing -- and, once again, I'm telling you something you all already know, is the lower the sediment concentration in

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the influent, what we mix up and send, the harder it's going to be to get a higher rate of removal by the device. So that's another piece of this puzzle that having standard procedures will help us investigate.

Okay, yeah, we do a pretty good job if we bring like a really heavily loaded sediment- laden flow to a device because a lot gets removed, a lot falls out of suspension. But what if we spike it with just real fine and not a lot of sediment? What percent removal are we going to get out of that? And once -- and the point is good measurements.

But you bring up a wonderful point of trying to marry two different sets of standards to make it even more relevant what the result is.

All right. We tested unpaved applications under both 1200 milligrams per liter -- 12,000 and 60,000 milligrams per liter. We did an initial test where we did one setup one time, replaced it, did it one time, replaced it, did it one time, to see how reproducible the test itself was, and got

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really good results between the three replicates.

And I couldn't fit it all on the slide, but this is the average of all three runs. And you would be able to see how good the reproducibility of the test was if I add it up here.

But here you see, you know, removal rates for seepage, for soil retention sediment, rather high, in the nineties. Little bit lower when you go to stuff that overtops. Because it's the overtopping flow, not flow seeping through, that captures the most.

And then we did paved. And I've got some graphs, and that's why I'm going to kind of bypass discussing that in detail. And in these cases in the paved where we had those low profile devices, the regularity of the upper edge and how uniform that is has a lot of effect on how quickly you get overtopping. And we recorded the time to overtop. And this is an average time out here as well.

So then we turn those numbers into some graphs. Here are unpaved traps, sediment traps, for unpaved applications, soil retention. And

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here's 90 percent, here's 95 percent, for Run 1, Run 2 -- or Event 1, Event 2, Event 3; Event 1, Event -- you kind of get the gist of that.

And here's for filter fabric on posts with a heavy sediment concentration, all right. And this is how reproducible those results were. And that's pretty good for one per installation. Then when we did three per installation with the heavy flow, and it got a little more retention each time. That kind of makes sense.

Here's the comparable lower concentration for that silt fence. And slightly lower retention, but it still steps up.

And that's kind of the characteristic of all these, is that you get a little more retention of sediments with each ensuing event, because some of that blinding that takes place helps you out that way. But where it doesn't necessarily help you out is where it's flow, because then you get slightly lower flows. So that the charts in some cases, anyway, tend to go the other direction. And this is pretty dramatic here.

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But this information for the Technical Committee is percentages for this test under these conditions for the different setups both for unpaved and then for paved.

Here's the wrapped stone, here's the wrapped blocks. It just seemed apparent to us that with blocks stacked side by side by side by side, you'd get a much more uniform crest, if you will. So the entire ponding has to come up to that level before you get overtopping versus wrapped stone where any low point, slightly low point in the crest of that installation is the place where overtopping starts. So overtopping can simply start sooner in a wrapped stone environment.

Is that important? Well, the percentages kind of are what we can use to make that judgment.

And, once again, this is seepage. So does seepage increase or decrease over time? And what you're seeing, especially here with the paved installations, is over time you get more overtopping more quickly, so you get higher seepage with the ensuing events largely.

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Some conclusions. But this is kind of, I guess, because we felt it useful to do this with the perimeter controls, we thought is there any natural segmenting that seems to take place with inlet where, once again, you're doing the retention versus flow tradeoff.

And this is kind of how that data fell out. We called it greater than 85-percent seepage effectiveness as high flow; greater than 90-percent soil retention, high retention. A combination of both.

And then, we, you're probably going to ask me is that significantly -- significant statistically. And I think probably not. But conceptually it helps us, I think, think about what the data might say.

DR. ZECH: Joel, quick question. Wesley Zech, Auburn. So how come in this test we refer to anything that captures 90 percent or more as higher retention but when you go back to that SRD stuff, it wasn't -- everything captured 95 percent or more in the slope testing.

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MR. SPRAGUE: Right.

DR. ZECH: But you drew a line halfway in between the data and you categorized some as high retention and some as moderate.

MR. SPRAGUE: Right, right. And, really, this is just, I guess -- do you feel like 95 percent then? We could put the line here.

DR. ZECH: Well, I'm just asking. There's differences between what you're calling high retention from one test to another test when, effectively, they're doing to same thing, they're capturing sediment.

MR. SPRAGUE: Right.

DR. ZECH: So the definition is skewed between the two tests.

MR. SPRAGUE: Well, it's actually -- I think it's fairer to say it's specific to the test. Right? So --

DR. ZECH: But, ultimately, if you get sediment that goes into your subsurface drainage system, that's going to be a direct conduit for it to be discharged offsite into a sensitive water

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body or --
MR. SPRAGUE: Well, it's not -- yes, conceptually. But realistically, this is just a guide to use the results of this test, which are distinctly different than the other test.
So I think your point is this is implying that we're measuring the same thing; right?
DR. ZECH: You are measuring --
MR. SPRAGUE: And that's not the intention. The other test is --
DR. ZECH: If soil retention --
MR. SPRAGUE: P versus seepage; right?
DR. ZECH: So P is soil retention; correct?
MR. SPRAGUE: P is --
DR. ZECH: Percent efficiency, percent sediment capture. So it's soil retention.
MR. SPRAGUE: Well, as demonstrated from the P calculation. But it's close, you know. It's not exactly the same, but it's close.
DR. ZECH: It's exactly the same.
MR. SPRAGUE: I'm --
DR. ZECH: You could assign a P-factor to an

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inlet protection device, if you wanted to, using the same criteria that you did in the other test.

MR. SPRAGUE: Yeah, but you'd have to use the controls. You'd have to establish the control comparison in the same way that you do. We don't do that here.

DR. ZECH: You had a control, didn't you? You have an unpaved control.

MR. SPRAGUE: The -- and I can take you back to how we go about taking the soil loss from all those multiple controls and turning that into the denominator on those. So it's a little bit -- it's a little bit different calculations that are gone through in that.

DR. ZECH: Okay.

MR. SPRAGUE: But I think what I understand you saying is that you would like to see these results reported the same way as the results from the other tests.

DR. ZECH: It's more like consistency in definitions. And we can talk about it later.

MR. SPRAGUE: Right, okay. Well, okay.

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So our conclusions, we did kind of feel like this helped really establish what I think is demonstrated in the field with what was some regularity, is that there are some choices to be made, there are some different systems. We can differentiate between the systems so presumably we can differentiate with future systems that might want to be used in this application. And that in general there's the potential to offer some guidance for those specifiers who are looking to say do I need to kind of be safety conscious or do I need to be environmentally conscious primarily. And, unfortunately, in sediment controls you always have to be one or the other first.

So when it comes to what has been proposed by the Technical Committee, based on what they saw from us, it kind of breaks down into this. It's under the Sd2 category in the Manual. For unpaved, a 90-percent retention efficiency with a minimum 65-percent seepage efficiency. And then for paved, 75 percent/85 percent respectively. So the idea you can take and do something practical

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with the results of the test can make it that much more useful to folks.

And so kind of our last step --

MR. DYKES: Let's pause, Joel.

It's ten after 12:00, and it happens to be lunchtime for some folks. But we'll be glad to pause for an hour, if that would be beneficial to the group, and reconvene at 1:15.

Is there any objection to that?

MR. BOOTH: Are you buying lunch, Brent?

MR. DYKES: That's the only answer I have a no to. At this point I can verify that.

So we're going to pause now. And I'm saying "pause" because we'll reconvene at 1:15.

One question.

MR. HAMIL: Where's convenient eating places around here.

MR. DYKES: If you go out the door, take a left and go up the stairs, there's a cafe in this building.

MR. HAMIL: Is that the only place close by?

MR. DYKES: Unless you want to walk down to

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the Creamery. And I'm not sure it's still --

MR. SPRAGUE: Brent, the other option is literally I don't -- is anybody here uncomfortable with the floating skimmer stuff? Because we've got like less than ten minutes on floating skimmers.

UNIDENTIFIED SPEAKER: Let's finish.

MR. DYKES: Y'all want to finish the floating skimmers and conclude the presentation and come back? I'm good with that. I want to be convenient to you guys with what works. Is everybody okay?

(No response)

MR. DYKES: All right. We'll proceed.

MR. SPRAGUE: Okay. The floating skimmers is -- this came out in recent EPA regulations as come on, gang, let's do this. So the idea of doing it on every construction site suddenly became a reality. And it got the innovators going crazy and it left the regulators with virtually no way of comparing apples and apples. So working with the Georgia Soil and Water to see if we could

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help with this, it happened to coincide with a pretty significant investment we made to look at just doing some simple measurements.

For those who are uninitiated, floating pond skimmers are just an inlet that can be made to float on the top of the water in a sediment pond so that it takes off the water that's the cleanest. More of the sediment has settled out from that. But also it can take off at a predetermined rate, so that the dewatering of that pond can be better engineered and time allowed for primary sedimentation to take place in the pond, or at least enough sedimentation to satisfy the regulators.

So charging forth, traditionally ponds have been dewatered by there being a pipe that kind of released from the bottom of the pond where sediment lays, or water has to seep through existing sediments to go out and, thus, it can take some with it. That would have some filtering capability, but new water coming into the pond can stir that back up again. So it just, all in all,

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there's just a greater efficiency to take it off the top and, in so doing, reducing turbidity and sediment concentration of the effluent and reducing then the retention time needed for the effluent to reach the levels required.

The important thing is to size it to be properly used in a given size sediment basin. So the need to know the size of the sediment basin that's going to be used is critical. And you need to know the flow rate that can be expected to go through the skimmer.

Well, what we quickly found, just this caveat, do not -- skimmers don't replace emergency overflow. That's kind of just something that everybody has to remember. This is not dig a hole and put a skimmer in and everything is fine. The -- it's still a body of water that needs good retention and needs a good dam and it needs all the emergency hydraulics associated with it, but this helps with water quality.

It's got a float. It's got to have some articulations. We kind of learned all this from

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testing different ones. We were looking for just simple gravity flow going through. We've got to be careful about siphoning taking place, because it can alter the rate of volumetric flow. We need to know the sediment pond design dimensions. You've got a flexible coupling, you've got a floating headworks, and a tube that connects the two. And usually then what's also included is a trash guard so that the inlet can take in just what it's designed to take in and completely what it's designed to take in. And something as simple as a rope, because these can sink and get into the mud and there can be a need to get hold of them, but you're in the middle of a pond. So being able to pull it to the side helps. And then also underneath, because it is going to be reaching the bottom when that pond dewaters, that it will have something to sit on and not just go "pppggg" into the mud.

It's important, and we have clearly seen from our testing, each device and each size of device has its own volumetric flow rate that

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changes with depth. They're not -- a skimmer is not a skimmer is not a skimmer is not a skimmer, okay. And so each one needs to carry with it its technical information, just like every silt fence carries with it its own unique property identification.

To picture what schematically one looks like, here's several that we've tested. I'm keeping this all generic because this is -- you know, we're just going to keep it generic. B-type, I call it, E-type, to give you a sense of some different designs that are out there. Okay. These are the ones that have been used. And this wasn't included in the Georgia program, but we've also done some with it. So we've got some experience with five devices. And to a device, they have unique characteristics. They are all uniquely engineered devices.

So how do we test them? Well, it's pretty simple. A big basin filled with water. We can measure how the water changes over time, how the depth of the water changes over time, and we can

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attach the skimmer to a pipe that has a valve on it so we can control when flow takes place and when it doesn't take place.

And we've done another outlet that we can lower from this high to this high to this high if we need to expedite testing, as is sometimes the case with small, with small devices.

We do that out there. Here's what the basin looks like. Clearly -- and this was one of the primary goals of the Georgia Soil and Water, was come up with test methods that can be done anywhere. We don't want to be told that we're sending everybody to TRI to do this work and it's a sugar daddy arrangement. All of these test methods can be set up right here in Georgia, South Georgia, North Georgia, even Alabama.

All right. Here we have our pipe attachment. This is the -- the pipe going to the left on top is -- can take volume out of the tank to lower from level to level to level. The pipe on the right attaches actually to the discharge pipe that connects directly to the floating pond

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skimmer.

Here you can see we use a tractor pump straight from the pond to do the testing. We hook up the device and then fill the tank. Once the tank is filled, we wait a little bit for everything to get still and then we open the valve and let it all be controlled by the inlet to the device itself, whatever is floating on top or near the top, and start our stopwatch. And we just measure how that drops with time and at different increments. Time on that area of tank with a depth is a volumetric flow rate. It's so straightforward.

And we collect all that data, we fit a curve to it, we take the value of the curve, or the equation for the curve and use that to build a table, a performance table for the device.

And here's what a typical table looks like, which is simply gallons per minute flowing through it with time. And you've got it in your notes, so I won't spend a lot of time on it, but those are just a selection of different devices we tested,

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Type 2, Type 4. I changed from what you've seen as Type B and Type E and everything to now Type 2. So nobody gets a competitive advantage out of here. I'm gradually learning.

But if you take a 3-inch of one material, of one type, and a 3-inch of another type, as -- and here's one of the major points I want to make, there's a Type 2 3-inch and their flow rate and here's a Type 3 3-inch. And it's basically twice what the other one is; right?

So if a designer says I need a 3-inch skimmer and doesn't know if he's going to dewater in four days or two days, two days is not going to give you the same settling time as four days. And that's really the theme in this one.

We turn those numbers into curves. And for some the change with depth is steeper than others. This area down here is where you're almost sitting on the bottom. So the flow starts just not really representing much of anything, so we just connected it to zero. This is where all the design takes place up here, anyway, and beyond.

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And I suppose that's one of the challenges we have with this, is can we extrapolate those curves with some level of confidence if we have a 6-foot deep sediment pond? Or do we need to have a 6-foot deep testing chamber?

And then we go to much larger. And you can see it seems like from our work that here's the Type 3 analogy, but that as you go up in size, here's 6-inch, that you get some really high flow rates and you get some real steep difference with depth.

And the final step we did, we said, okay, it's fine to have test results and such, but what do you do with them. So we kind of said, okay, well, if we can fit a curve to each product and product size depth with flow data, we can take that curve and the equation that goes with that curve and build a table with depth that can be related then to the size of the basin and the time to dewater. Where is that? Here it is, right under time, the time desired to dewater. And you just let the equations do the work on which of the

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available devices will work. And you can put any number of different ones in.

And this is just an example. It's not highly sophisticated, so each of the companies that make these can easily build their own tables for this kind of thing to facilitate either computer use of the calculation or even perhaps hard copy.

And I've already told you what my conclusions are as we went through.

And this shows up in the new independent section within the proposed Revision 6, Edition 6 of the Green Book, as Sk BMP and really just says, okay, if you want to use skimmers, you need to know the volume of your basin and you need to know the draw-down you need. And in order to determine the draw-down rate, you need to have some product-specific testing. And the methodology is included in the Sk document for just the simple steps you go through to do that.

So I think it's really set the stage for lots of good innovation in the world of skimmers and for the contractors to know what they have to have to select and for the designers to say I know I have to provide certain pieces of information so that the process can carry through.

Any questions on floating surface skimmers, pond skimmers?

(No response)

MR. SPRAGUE: See, that was worth getting it out, wasn't it?

MR. DYKES: Thank you, Joel.

We are going to take a break. Ben wants to make one comment before we take a break, and then we will -- let's see. It's almost 12:30. So we will reconvene at 1:30 to begin public comments. Ben.

MR. RUZOWICZ: I'd just like to say all these BMPs that we've tested are all BMPs that have come out of the Manual for the 5th Edition. So that's where we came up with all these BMPs. We weren't going outside the 5th Edition. We were looking for BMPs that were already in the manual so that people who do have a way to do a BMP or

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come up with another way to do a BMP can go back and compare it.

We were looking at setting a benchmark, basically a baseline of where a person who has an alternative BMP can come and get into the new manual or a way that they can be equally compared. So whether you've got a Styrofoam silt fence like I saw somebody had here -- and if I said that wrong, I'm sorry -- or a compost filter sock or a geotextile fabric, equally comparatively we have a way to do that. And we don't necessarily -- we just take basically the lowest product and made that the benchline.

And there's a lot of other factors that come into play with this stuff as far as the different decisions that were made that aren't necessarily reflected in the testing but might be in the little parameters that are seen within the Manual for Erosion and Sediment Control.

And with that --

MR. DYKES: Thank you, Ben. We appreciate that.

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So if anybody has any paper comments and you're not able to stay for the public comment period, if you'll just make those available right here at the top of this desk, I'd be glad to take those. Those of you that aren't coming back after lunch, you can still submit comments through our website. If you go to our website, it's pretty clear when you get there. But -- and there's some information in your packet that you got today regarding that.

Hearing no objections, we'll reconvene at 1:30.

(Whereupon, a recess was taken for lunch from approximately 12:35 P.M. until 1:30 P.M.)

MR. DYKES: Okay. It's about 1:31. We're going to reconvene the Technical Advisory Committee public meeting. Thank you for your indulgence for a few minutes to have lunch. The Georgia Center does a good job with food, so I hope you found something good to eat.

During the public comment time we've asked those people who would like to make a public

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comment today to sign the list that was posted out front. I currently have a list that has, it appears, eight names on it. We will call the names as they signed up here in just a moment. And if you will step over to my left.

Jennifer, if you will raise your hand.

Jennifer has a microphone. And if you will speak clearly into that microphone when you're making your comments. Please state your full name and the company or entity that you're representing. If you have any written comments for the record, certainly you can provide those to Jennifer there also and she'll make sure they get introduced into the record.

We will respond to some of the comments that are made today, if we have the answer today. We'll be glad to do that. Other things that have been brought up today that we're not aware of, certainly we'll take those comments and provide those to the Technical Advisory Committee for them to consider today. The Technical Advisory Committee may respond based on their own decision, from the Commission staff standpoint, and Joel will answer your questions, if we have the answer with us today to keep things moving forward.

Public comment will be limited to five minutes per person so that we can continue moving. And if you would like to sign up for public comment and have not, I will have this sheet down in front of the stage. So when the first speaker starts speaking, please come forward and sign your name, and we'll be glad to call on you at this time.

Okay. Starting public comment, the first person on the list is Larry Booth.

MR. BOOTH: Director Dykes and TAC Committee, several of the stakeholders have compiled test data from the report that was published, and we can't really present that in the five-minute time allocation. So I have six members, including myself, that have signed up for five-minute allocations. So with your approval, they have asked me to present this. And, you know, we will not go beyond the 30-minute time

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frame.

MR. DYKES: That's fine. And with only eight people having signed up, I think we've got time to do that, Mr. Booth, sure.

MR. BOOTH: And I have a handout that I would like to present to the TAC Committee, if you would give that to them, and it will help follow along since I don't have charts and graphs to present.

And do you want me to come back here?

MS. STANDRIDGE: Yes, please.

MR. BOOTH: First I want to thank the GSWCC and Technical Advisory Committee for allowing stakeholders to have a voice in this process. The decision made by the TAC Committee and ultimately by the GSWCC Board will have significant consequences on small businesses, jobs, and the environment in the state of Georgia.

So without further ado, I will go ahead and start going through the information that I have disseminated. The first is a letter from my company outlining some things in the reports that we saw. We went through -- and first I would like to ask for a show of hands on anyone in this room that has reviewed the tapes from the testing at the testing company. If you reviewed those tapes, will you please raise your hand.

Okay. All right. Thank you.

Okay. The following is a brief summary of issues stakeholders identified while reviewing videos and calculations in the BMP Testing for Erosion and Sediment Control Report published October 12, 2012.

The Technical Advisory Committee chose ASTM work item WK11340 for product testing. WK11340 is not an approved test method from ASTM and analysis of the test data clearly indicates this test does not yield repeatable and reproducible results. In a statistical analysis of the control testing it was verified that in the 2-inch control test for runoff there was a relative error rate of 94.26 percent, the sediment concentration showed a relative error rate of 115.54 percent, and finally in the sediment loss there was a relative error

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rate of 105.74 percent, which clearly indicates that this test does not yield repeatable results.

This was the error rate on a bare soil plot with no silt retention device installed. So it's our contention that this test is not a repeatable and a reproducible test, does not yield those results.

In review of the videos and calculations published by the testing facility, it is obvious that critical errors were made in test plot preparation, product installation, and calculation of data.

Now, some of this will be repetitive on what has already been discussed in this meeting, and I apologize for that because I didn't know what was going to be discussed; therefore, we just put forth the information that we had determined by viewing these tapes.

During the -- the use of bentonite on selected products during testing potentially alters the products' performance and, therefore, the results of these tests are biased.

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I think that was beat to death, you know, when Joel was up there, and so there's no need on going any further on that. I think everybody has a clear understanding of what it is and the potential that it may have impacted on the testing, so, you know, I will just leave it at that.

During the entire process, to my knowledge, only one company was aware that the test results would be used to determine inclusion or exclusion of products on the Georgia DOT Qualified Products List. This company's representative was present at the testing facility during testing of their products, which provided an unfair advantage during the testing process.

I have a copy of the letter that was sent out by the testing facility when they were asking for testing that says the testing facility is pleased to announce that the Georgia Soil and Water Conservation Commission has selected -- and I hate to use names here, because I'm not trying to point a finger at anyone and I'm not trying to hold anyone up for ridicule, I'm just trying to provide data for this Committee to review and to understand why we have concerns about this. Inevitably, some people or companies will have to be identified, and I apologize for that. It's not my intention to embarrass anyone, it's just my intention to report the facts. -- TRI's DDRF to perform baseline performance tests on sediment barriers and check dams. The testing will begin this month with representative materials that we are selecting from the GDOT Qualified Products List and the GSWCC Approved Product List. We would like to include your 1215 or 1216 silt fence as part of the sediment barrier testing program. If you are willing to support this program by providing a roll of the requested material, as soon as possible please ship a roll. On completion of testing, results will be reported to GSWCC. We hope you will agree to support this program.

This is an innocent-looking letter as it was construed by those of us who sent samples. We had

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no idea of the magnitude of testing that was going to be done and what was going to evolve as a result of these testings. I think it would have been very beneficial if other stakeholders in this industry would have been advised that these tests are being done for Georgia Soil and Water and they're going to use these tests to determine which products will be on the QPL.

Stakeholders have not been provided the scientific basis for selecting the .030 P-factor as the pass/fail criteria for products tested. What is the scientific basis for this number?

I think this has been already been addressed earlier, so there's no need in pursuing that any further.

If GSWCC truly wants representation from the Georgia silt fence industry, it will select TAC Committee members with extensive knowledge in design, manufacture, and installation of silt fence products. The random selection of additional TAC members does not provide an adequate representation of the Georgia silt fence stakeholders in the state. The addition of a representative from Belton Industries -- and I again apologize for singling that out, but this was the addition and I had to do that -- Belton Industries, the recent selection of an additional TAC member does not provide an adequate representation of the Georgia silt fence stakeholders in the state. The addition of a representative from Belton Industries does little to provide representation of the Georgia silt fence industry. Belton Industries does not have a product approved for Type C silt fence, which is the largest volume silt fence product used in the state.

I have known Bob Moran for years, and Belton Industries is a fine company. I think their participation in this Technical Advisory Committee is fine. But someone else needs to be represented from the silt fence industry that has some technical experience, design, manufacture, that can ask these questions that were asked today when they see data like this. These are the technical type of questions that need to be asked and these committee -- that this Committee needs to be appraised of so they can make the proper decisions to move forward.

Upon review of resumes submitted, there are clearly several personnel with extensive qualifications which can represent the Georgia silt fence industry adequately, given the opportunity to serve on the Technical Advisory Committee.

I have also attached a carbon footprint analysis comparing silt fence and compost logs for the Committee's benefit. Everybody is concerned about carbon footprint, so there's an attachment on that showing the carbon footprint.

It is the duty of Georgia Soil and Water and this Technical Committee to resolve all issues surrounding test plot preparation, product installation, and data calculation.

Now, we have already addressed several issues when Joel was at the podium. And, again, I apologize. Joel, are you still here?

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MR. SPRAGUE: (Indicating)

MR. BOOTH: I apologize for bringing out these points; but, you know, it's only my intention to point out discrepancies in test methods or installations. And it's no reflection of TRI. TRI is a great testing facility. We've used them for years. Joel audits our company.

Joel mentioned the NTPEP testing program, which we are all a part of, all manufacturers in the U.S. and many abroad are part of the NTPEP testing program. TRI is the testing facility and also the auditing facility for NTPEP. And audit comes to our facility -- I mean Joel comes to our facility once a year and audits our company. And it's kind of like going to the doctor for a full physical, but Joel does use petroleum jelly when he comes to us, so it's not quite that bad. But his testing facility is a very reputable testing facility, and he is very reputable. And I don't mean to, you know, cast any aspersions on that company or him personally. I'm just pointing out discrepancies.

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Several states have used data from the Georgia Soil and Water report to select products for use as BMPs in their states. Furthermore, Georgia Soil and Water should advise NTPEP and all state DOTs to refrain from using data compiled in the test report for determining products suitable for BMPs in their respective states until all issues are resolved.

Now, as a backup to that, if you will look on the last page of your handout. This has been used as a stepping stone. This test has been used as a stepping stone by companies in the industry to promote their product. And this is a -- and, again, I apologize to Filtrexx, but I have to give you an example of what I'm talking about.

This was published on July 3rd, 2014, and was taken off the Filtrexx website. "The Beginning of the End for Silt Fence." And we'll skip the first two -- the first paragraph. And in the second paragraph it says, "In many cases, the shift toward more sustainable BMPs is being led at the State, regional, or municipal level. Recently

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the Georgia Environmental Protection Division notified the Georgia Department of Transportation that silt fence check dams installed in ditches and arranged in either upstream V-shapes or W-shapes, as shown on GDOT construction Detail D-24D, should no longer be used."

EPD's decision comes after testing by the Georgia Soil and Water Conservation Commission that yielded failed results on the effectiveness of silt fence check dams. These issues were noted: Ineffective at retaining silt on the upstream side and excessive scour to the ditch on the downstream side due to water runoff around the ends and top of the fabric check dams.

Now, prior to the publish of this letter, DOT -- or Georgia Soil and Water reversed this decision and is allowing those products to be used. But this information was disseminated after that and is continuing to be promoted in the industry based on the results of the testing that was done by Georgia Soil and Water. And I think we've all seen clear evidence today that there are

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some issues with that testing and that these issues need to be resolved before private companies continue to promote their products based on this.

I think it's the duty of the Technical Advisory Committee and Georgia Soil and Water to make it known throughout the industry with the state DOTs that there are some issues here and we are going to resolve those issues.

And we are here to work with you. We are not an adversary. We want to contribute to this process. We desperately want to be a part of this process because we have the technical knowledge and know-how to make a major contribution to this so together we can formulate an erosion control policy for the state of Georgia that we can all be proud of in the future.

And under the next handout it says that in February of 2014 the GSWCC Board agreed to revert the process and open the comment period back up to stakeholders and industry regarding the implementation of the changes in the new Green

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Book 6th Edition Manual. We believe as stakeholders and industry that this particular action was the right thing to do.

We as industry and stakeholders have also had concerns during this open comment period due to certain individuals within the Committee as well as an employee of GSWCC which has continued to promote and advocate for the test to other state DOT members and nationally through NTPEP as well as NPDES Training Institute, during this open comment period, against the Board's recommendation.

Our industry does care about the environment and we want new product innovation to be encouraged. However, any new test, data, or benchmarks that are set have to be based on factual and scientific data; otherwise, we are going to open up the state of Georgia and our highways and waterways to possible catastrophic liabilities in the future.

Our findings. Through video, audio, pictures and test review, many inconsistencies

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have been found throughout this 11340 test report. Three key findings were notably wrong. This report states that GDOT, Georgia Soil and Water, or installation methods were followed; however, as per certain products were over-installed or incorrectly installed and the data was not included. Test plots were not prepared with the same moisture content and/or compaction in all tests. Natural growth compost logs was a GSWCC-approved alternative BMP product for Georgia DOT Type A, B and C, however the contracts stated there was only one product approved and, therefore, they were left out of the process completely even though they were approved in the contracts. If you will read those, it says, the statement was made there's only one product approved and that was the Filtrexx product.

Through further forensic analysis of the final report itself by professionals who work in the testing arena and specialize in this area of testing, it was found to have multiple formula inconsistencies and a significant lack of

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repeatability.

In regards to the formula issues on check dams, the wetted perimeter calibration was initially reported incorrectly in the final report. It has come to our attention that this formula was significant enough to change the end results and the lab test has updated -- the test lab, testing lab has updated these new calculations and given them back to GSWCC in a new final report last month.

In the sediment barrier testing, two critical formula calculation errors were identified. The P-factor calculation that was used to approve or disapprove products is made up of six different factors; and if any of these factors is incorrect, the P-factor will be changed. Both the R-factor calculation and the LS-factor calculations were found to be incorrect in the test data. The K-factor was not able to be replicated due to the data not being included in the final report. When recalculating these formulas correctly, all P-factors changed in the

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report and the analysis found that at least one DOT Type C product that had previously failed using the testing lab's data in the final report now passed the P-factor threshold set by the Technical Advisory Committee.

Repeatability. Typically relative error rates larger than 10 percent reflect a poor correlation in repeatability. In the series of 2-inch control tests, a relative error rate of 94 percent for runoff was found; in sediment concentration a relative error rate of 115 percent was found; in sediment loss a relative error rate of 105 percent was found; in the 4-inch and 6-inch control tests, the ranges in relative errors were also significant, showing that repeatability was not consistent in the testing.

Wind and weather, as Joel mentioned, wind and weather create problems in testing on an outside facility. Wind and weather was not recorded in the test data.

Final BMP report review showed installation inconsistencies. Check dam. C-type systems were

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installed incorrectly as per the GDOT specifications. And that was something we talked about earlier in the installation of the W-wings right there. This has also been confirmed by a GDOT representative, that this was an incorrect installation. See GDOT installation.

And that GDOT installation is in your packet of information, the next to the last part. No, that's not the next to the last one. Should be in there showing a drawing.

UNIDENTIFIED SPEAKER: On the next page there.

UNIDENTIFIED SPEAKER: It's stapled.

MR. BOOTH: It's stapled on the back page of this? Okay. I don't see it. Do you see it in your report?

MR. PARKER: (Mr. Reece Parker nods head up and down)

MR. BOOTH: Okay. There's a drawing there that shows it's not a "W," like this, but it's more of an outlet like this (indicating). And that was discussed by Mr. Mastronardi earlier, so there's no need in continuing to discuss that. That's certainly an issue that will be discussed in the future.

Filtrexx compost logs -- again, I apologize. Filtrexx was the only compost log that was tested, so I apologize, Britt. You know, that's the only product that I can identify there in that series.

Filtrexx compost logs were not installed as per manufacturer's recommendations or GSWCC methods. Seven hardwood stakes were placed in the product when the manufacturer lists check dams to be installed on 5-foot centers, meaning a stake every 5 feet. In the GSWCC it states that compost socks are on 4-foot centers for one application and 6-foot centers for another. Either way, the installation used seven stakes very close together.

And attached is an installation photo. And if you will look at your photo, in that right here it shows the additional stakes being put in. And this is an 8-foot width installation. So it was over-installed. The addition of these additional

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stakes does not portray the real-life installation and performance of this product. If the manufacturer states it's supposed to be every so many feet, then that's the way it should have been installed on this test so that we could have gotten actual results based on the manufacturer's recommendations.

And, there again, the bentonite was used on this and three other products that we have already discussed.

Sediment barrier testing. Bentonite, a sealant that looks like -- that blocks the water flow and sediment concentrations from leaving the test site was installed across the full base of the last four products tested and not in the first nine products tested. The addition of bentonite to certain products in this testing was not in the final test report. The addition of bentonite on construction sites is not part of silt fence installation or compost log installation. The use of bentonite along the full length of a product can reduce undercutting and result in lower

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P-factor than what may be experienced in the field. Over-installation in the compost logs with additional stakes can be viewed. Manufacturer's installation methods states one every 10 foot, meaning one stake installed every 10 foot. Actual pictures/videos showed four stakes in the 8-foot test plot as well as bentonite was added.

An instance for a product being tested that had a significant blowout -- and this, if you will watch the videos, and I encourage the Technical Advisory Committee members and anyone else that has an interest in this to look at the tapes and, you know, make your own judgment, you know. But you need to look at it. The implications of the decisions of this Committee and ultimately Georgia Soil and Water are going to have a tremendous impact on our state, and we need to do this right.

An instance of a product being tested that had a significant blowout, the test was stopped twice to repair it, then restarted with that data not being listed in the final report. The runoff for that test reported to be one gallon more than

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the first series of tests on that product that did not experience a blowout.

There was three tests done there. Two of them had no blowout. One of them had a major blowout where numerous, 50 gallons of water, come through just quickly like that. Stopped the video, went back and repaired it, and started it back. But there was no mention of that in the report. And also it's not possible that that could have only had one additional gallon of water in that test as compared to the other ones that did not have a blowout.

Based on the scientific analysis of this final BMP test report, it appears that the products charted on page 19 of the final report are statistically tied and the P-factor number was arbitrarily chosen, not scientifically based.

And I think that question has already been answered by Mr. Sprague over there.

We believe that GSWCC should notify the state DOTs, common agencies, national associations, and NTPEP of the findings presented today so that they may make an informed decision regarding their erosion control standards.

In addition, there has been no longevity testing done. This was a snapshot in time where testing was done in a controlled environment. And there's no longevity to back up what will happen after three or four months on some of these product installations. In the past I know Willacoochee Industrial Fabrics has had the privilege of supplying silt fence to the state of Georgia for many years. And initially when you used to submit a product, you had to submit it and they tested it and made sure it met all the physical requirements and then they installed it in the field and left it in the field for about six months to make sure it met the longevity requirements too. This is a snapshot in time, and further testing for longevity should be conducted on this.

And here's the little page I was looking for a while ago that shows the wings on the installation where it shows instead of being a "W"

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back this way, it's more on -- on a plateau there. But, there again, that's already been discussed.

I have another page in here; but, in the interest of time, it just details a lot of other inconsistencies that were noted when viewing these tapes. And I don't really want to take up any more time. I know everybody's time is important. But I felt like it was important for the Committee to have this for them to review and, you know, to discuss. But a lot of inconsistencies are noted here, and then the pictures to back it up are just a few. So I will leave it to the Committee.

One thing I would like to point out for inconsistencies, these two products here on this page, if you will see it here (indicating) -- do you have this page that says 1216 Silt Fence Test Plot? Both products present, GASF-A, right, and 1216, left, pictured below, both products manufactured by Willacoochee Industrial Fabrics. Both the same style of fabric, the same construction of fabric. One product passed for sensitive areas, one failed.

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A lot of companies private label products. There are a few manufacturers that sell their products to other companies who private label it. And the State is aware of that. So when you -- if you pull a product from Willacoochee Industrial Fabrics and if you pull a product from another distributor in the state, it might be the same product because it may be a private label product that a manufacturer produces for another company.

In addition to that, again, another test or another picture of an installation of two products here, on this right here (indicating).

And, Kelli, jog my memory on this. These were the inconsistencies in the testing. This is the C system?

MS. DAVIS: On the C system products there are two products that are manufactured also by the same manufacturer. Both of them failed. Both had different test results present. And upon the re-evaluation and further analysis with the professionals who reviewed the test, when they put in the correct calculations, one of those products actually fell below the .03 P-factor, showing that repeatability is not, was not achieved in this particular test.

MR. BOOTH: So, as I stated earlier, it's not our desire to be an adversary to this Committee and to Georgia Soil and Water. We want to be a part of this process. We feel like we have valuable information that we can contribute to this process. And we would respectfully ask the Committee and Georgia Soil and Water to allow some of us to be part of that process.

We have two representatives for filter socks, we have one representative for silt fence on the Committee. We would like at least one more representative for silt fence and someone that has extensive knowledge in design, manufacture, and installation of these products to be able to provide and answer questions that this Committee may have when they are reviewing data like this. I think it's critical that this be achieved in order, you know, to come up with a final result that is going to be good for our great state of

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Georgia.

Thank you very much.

MR. DYKES: Thank you, Mr. Booth. Appreciate your comments. And certainly you've raised issues I think the Committee will want to address as we move forward. Certainly the Commission will continue to work with Joel as it relates to the testing and review the things that have been brought up today.

Mr. Hamil.

MR. HAMIL: Larry, who was y'alls expert that did all this reviewing and found the inconsistencies?

MR. BOOTH: We are -- it's certainly above my head. I'm a layman. And so we knew that we had to talk with someone that had expertise in this, so we went to Auburn University. They have a great facility, their testing facility. And these two gentleman right here, Dr. Wes and --

MR. PEREZ: Michael Perez.

MR. BOOTH: -- Michael Perez reviewed this data and provided some insight into that. And I'm sure you are familiar with Dr. Wes because he had some questions earlier in this meeting.

MR. HAMIL: Well, I don't want to get into an argument between Georgia and Auburn. That will occur in a few -- in several weeks. But I would love for us to have another meeting and let both sides present their information. Just from hearing this side and this side, I think I need more information before I can make any recommendations.

MR. BOOTH: Well, I think it will be obvious. You know, we pointed out inconsistencies in testing that was done by the testing facility. I think if the Committee will review the tapes, it will be obvious to them if they have someone present like a Georgia Soil and Water representative that can say this is installed correctly, this is not installed correctly. Look at the manufacturer's recommendations, the Georgia DOT's recommendations for installation, and Georgia Soil and Water's recommendations and say: Okay, here's a product. It's installed here. The

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recommendation is by Georgia Soil and Water or whichever entity makes a recommendation or supersedes the other. Naturally, my manufacturer's recommendation is superseded by Georgia DOT. If Georgia DOT says they want a stake every 6 inches, then we're going to put one every 6 inches regardless of whether we think it's needed. So that type of information needs to be present or that type of knowledge needs to be present, personnel with that type knowledge needs to be present when these are reviewed.

MR. HAMIL: But the formulas y'all use have what, seven different variables, and some of those variables have to be chosen by some procedure. And y'all said some of them are wrong.

MR. BOOTH: I yield the floor to Dr. Wes on that.

MR. HAMIL: I need someone to explain what's wrong with them.

DR. ZECH: So there are several errors in that sediment retention barrier testing part of it.

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Joel, maybe you can explain a little bit further on how you selected that R value of 231 or came to that conclusion. I know you used a 2-inch, 4-inch, 6-inch rainfall event for 20 minutes, but you didn't take into account the time in between those tests which is dry time. It's not raining and allows water to seep into the soil. So that situation would change your R-factor and actually would reduce it if you considered those dry times. It might be 10, 15 minutes as you guys change pressure and things like that.

MR. SPRAGUE: Well, that wouldn't affect the R-factor, but --

DR. ZECH: Actually, it does.

MR. SPRAGUE: Well, this test standard which is now termed TM11340, Test Method 11340, so as not to be confused with the evolving work item ASTM, is based on test standard for slope erosion that's been a standard at ASTM since 1999. And it follows just the protocol that's been established as the general procedure for handling rainfall,

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all of the variables in the Universal Soil Loss Equation.

So it is a -- it's a grand compromise; but in order to standardize, you do that. And we were just following the generally accepted procedures, which is the level of care that would seem to be appropriate in this case.

DR. ZECH: So, then, in your calculations I think you may have made a mistake when you're taking into account the total area of the test plot, because we recreated your calculations and it actually ends up being a 40-foot long area by 8-foot wide, when in the report it says that the test area that was rained on was 27 inches -- or 27-feet long by 8-feet wide.

MR. SPRAGUE: Right. Which calculations?

DR. ZECH: Which one is that?

MR. PEREZ: It's a calculation of your A-factor, called the A-factor. You're converting the sediment loss in terms of pounds per the given plot area to factor in tons per acre. And taking into account that conversion where you go from a

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given plot size to an acre size, you use a plot area of 320 square feet, which is representative of an 8-foot by 40-foot test section. So it accounts for about a 33 percent larger -- or I should say smaller A-factor. And, in turn, that affects your overall recorded P, because that goes into that calculation.

MR. SPRAGUE: I will have to look back. Did we do it for both the control and the product testing?

MR. PEREZ: You did it throughout.

MR. SPRAGUE: Because the P is a ratio of both, so ...

MR. PEREZ: And --

MR. SPRAGUE: Is the wash in that, that --

MR. PEEZ: No, it was not a wash (inaudible).

MR. DYKES: Going back to Mr. Hamil's comment, I do think it's something to look at, moving forward, to have Dr. Zech and certainly Joel to get together. And as has been evident today, when Joel was giving his presentation, an error was found and it was disclosed today. So if other things need to be addressed, as a public entity, the Soil and Water Commission -- and I cannot speak for the TAC, but for the Commission, if things need to be adjusted based on coming to an agreement, certainly we want to do that, as was disclosed today in the PowerPoint discussion. So the issues that have been raised I'm sure the TAC will want to address.

And if the professor from Auburn is interested in working with our folks, certainly we'll be glad to do that. We have no intent to not work toward a compromise to do the best, get the best information out. That is our intent.

MR. RUZOWICZ: I'd just like to say that the testing that we've done, none of it stopped any product from being used. It's just setting a limit on the bottom ones that new people can get in with. In the past we had types A, B and C. Somehow they were decided as well. So basically the group looked at it and decided, well, we want to look at it and try to make the ones that are

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filtering out more sediment, put them closer to the (inaudible). And, again, it's being reopened, so it's something they could look at. But we didn't stop a single one of any of those products from being used. We were never trying to say you can't use that product. We're just saying if you're a new BMP coming in, you've got to meet the minimum of whatever that one, you know, the product was doing.

MS. DAVIS: Mr. Ruzowicz, I would beg to differ, because immediately upon publication of this report Georgia DOT announced that based off the test results, Type C could not be used in ditch applications anymore, based totally upon that part, on that particular issue.

MR. DYKES: That's correct, Ms. Davis. And you're the next commenter, so we'll give you the mike. That was a decision between EPD and the Commission -- excuse me, not between EPD and the Commission, between EPD and DOT. And they can answer to that if at some time they might think that was not a condition initiative.

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And, Ms. Davis, you're next up on the comments, if you would like to make a comment, please.

MR. HAMIL: Can we at least get a written comment from both sides so we can review? Right now all I'm getting is blurred back and forth. We need something if we're going to make -- I presume Georgia DOT and us and all will eventually have to come to a decision, I presume. I don't know. And we need -- we need the information, not just this stuff that's in these picture reports.

MR. DYKES: Yes, Reece.

MR. PARKER: Before the next comment, I'd like to clarify something. At the beginning of your comments, Mr. Booth, you asked who all had seen the tapes. I wasn't clear on the question. We did see Joel's -- a collection of video when he presented his findings. I'm not sure that we saw them all, but I did see some.

MR. BOOTH: You did see some?

MR. PARKER: Yes.

MR. BOOTH: I think, you know, it's

important, imperative, that the Committee as a whole review these tapes. It's very informational. And the decisions you make, you know, as a Committee are going to have a significant impact on our state and the industries in our state. And I think it would be very educational for you to look at those.

MS. JORDAN: I would like to clarify too I actually -- I didn't see them in a format to study them as you obviously have done, but I did see them at a Soil and Water Conservation meeting, what was it, about a year ago. So I have seen at least portions of it that were made in the presentation.

MR. BOOTH: It's not quite as exciting as the Auburn-Alabama game, but, you know, it's worthwhile viewing.

MR. SPRAGUE: And I might just add that on all of the videos, all of the pictures were a complete donation to this project, not a part of a contract or anything like that, under the spirit of like we're trying to figure this thing out together. We're trying to figure out the test methods, we're trying to figure out how to do it, we're trying to figure out -- and to think for a moment that they would be used as -- as the basis to suggest that there's incompetence going on here when these are not standardized procedures, by and large, is just -- it's flooring me. But, you know, I guess that it is what it is. But I just wanted to say that. I mean, this wholly demonstrates our attempt, anyway, to be completely transparent and ask for help. Is this what you want? Is this what you need? Is this suiting the bill?

So I hope that at least those who are a bit fair-minded will see it that way.

MR. DYKES: Ms. Davis. Oh, excuse me, Mr. Hamil.

MR. HAMIL: There's four new members. This new member has seen things I haven't seen. The only thing I have got is the Green Book and started reviewing that so I could get prepared. I haven't been told anything about tapes or films or the --

MR. DYKES: Yes, sir.

MR. HAMIL: I don't even have a copy of the test, the original test you're talking about.

MR. DYKES: We will make all of that available. It's publicly available. We'll make sure all Committee members have it, Mr. Hamil, yes, sir.

Ms. Davis, your five minutes begins.

MS. DAVIS: Okay. Mr. Booth addressed the majority of my comments or the issues that I have found. But one of the key issues I believe that the Technical Committee needs to be aware of is that a number was arbitrarily chosen and it included some products and it discluded other products from certain applications. When that happened, it did affect our industry.

If you can reach a 95-percent sediment retention rate by using any one of the products, why draw a line right in the middle? Why? What's the purpose behind it? If it's not scientifically based, it was arbitrarily chosen. And that is a very key concern for industry. And we would like for you to take that under consideration and look at that, because if a product is going to work and it's got a 95-percent retention rate, why would you disclude it from certain applications and include it in others?

And that's pretty much -- that's my -- that's my key concern here. And I will yield the floor.

MR. DYKES: Thank you, ma'am. Yes, ma'am, I understand that concern. It's certainly something I'm sure the Committee will want to look into.

Next on the public speaking agenda is Mr. Roger Singleton.

MR. SINGLETON: I appreciate everybody's time today. I know there's been a lot of time spent on these committees, various committees, several committees. And we now have committees looking at other committees' work. And I want to tell everybody I appreciate your time on previous committees that has made recommendations that's been ignored and whatever.

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Guys, we don't live in a perfect world. We've been operating out of a Green Book that's 25 years old. It's been reprinted so many times that you can't hardly see the pictures in it. We've got items in that Green Book that we're still teaching new generations as to how to do it the way we did it 20 years ago.

I come from the construction industry. I've been in the construction business for 45 years. I've been using these products because they've been on a QPL that has been accumulated for 25 years. Products that were tested and approved 25 years ago are still considered an equal to the products that we have now.

This is the first effort that we have put forward to test products on the performance and results and compile those results for comparison to other products. In the past we've had material standards that were never tested and never has been tested for what we use it for. We've been taking geotextiles that were developed and designed for paving underlayment and ground stabilization fabric. In fact, in the early '80s we stood them up and made silt fence. It was based on the materials and knowledge that we had at the time. Those products have become standards in state manuals across the country. There are material specs that are written in that have never been tested.

As time has gone forward, the construction industry has been under the control or under the domain of the EPA to bring forth cleaner water off our construction sites. The products and methods that we've been using for these last 25 years have not proven satisfactory. We -- as a construction person, I'm responsible for the results that come through that silt fence. I wrap up my lots with silt fence and wonder why the street fills up full of mud.

You guys have now come up with a solution to at least create a baseline of testing products for the use that we now use them for. It encourages manufacturers to meet that baseline. In the past there's been no encouragement to do anything other

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than what we have always done. And now you've established a baseline, a fair baseline based on the top performance, which was our product, BSRF, and the other products, and you took a happy medium in the middle of that and established a baseline in order to be fair to others.

I could be sitting here making the same argument as Larry, you know, or this lady that spoke before me. Why not take the best product and actually specify that best product? That'd be our product. But I think you ought to be fair. And you put a baseline in there that includes several products.

There is no set procedures on our job sites that says that you use this, this, and this. If this doesn't work, you have the opportunity and the responsibility to use something else. That's the guidelines you're given. If it takes an extra stake or whatever in order to establish some stability to a product, put the stake in there. You're responsible for results.

But without this going forward and passing

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into the 6th Edition, we have absolutely no testing and we will be set back to where we have always been for the last 25 years. This is a step forward. Please continue your progress in establishing the 6th Edition. If we don't regain control and support for the Georgia Soil and Water Conservation Commission in maintaining their business and creating a QPL of products that work and have the ability to work, then the future generations that come after us have nothing. They pick up an empty book that only teaches history. We need a little bit of the modern science, which has been created by Joel Sprague and TRI and the Committee that approved it to come forward and test products based on today's materials and knowledge.

And as I have been saying for ten years now, my product was tested ten years ago by the University of Georgia, proven to be more effective than some of the previous speakers, and then ten years later it's comes up in a test again and shows to be still the best product on the market.

But it can't get into the marketplace because of all the commodity products that sell cheaper, they're imported in, they're relabeled and they're imported in and they're not tested. And they're thrown out here to the construction industry and says: Here, guys, you take this. We say it works; you ought to believe us.

Well, I'm a firm believer in knowing what's in the bag. If I pick up a bag of seed, that bag's got a label on it and it tells me what's in that bag. If you go buy a bag of fertilizer, it's got a label on it that tells you what you're getting in the bag. If you go buy a can off the shelf in the store, it has a label on it. We, as a construction industry, deserve that label to know what that product has the ability to do.

You engineers in the audience, you guys are charged with the chore of designing an E & S plan on every project out here. I've asked many engineers how do you design a plan that's supposed to get you a road map from point A to point B, how do you design that plan when you don't know the

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performance of the products you're putting in your treatment plan? I don't get an answer. They said we only put the little X's on the plan where we're supposed to.

This gives us the opportunity to have a manual and to have a QPL that an engineer can design specific products and won't be ashamed to actually specify a product based on its performance. He will get a better job, the public gets better water, and we all get better economy for what we spend our money on.

Thank you for your time.

MR. DYKES: Thank you, Mr. Singleton.

Next on the comment list is Keith Hanes. Am I saying that right?

MR. HARRIS: Keith Harris with Hanes.

MR. DYKES: Harris, I'm sorry. I apologize. Your handwriting is similar to mine. I can't read my own either. Sorry about that, sir. Thank you. If you don't mind, speak your name into the microphone.

MR. HARRIS: Keith Harris, Hanes Geo

Components.

And most of the stuff I want to talk about was covered. I just want to talk about the test method 11340. A couple of concerns I have with it is the variability. We actually were one of the products that was tested, exact same fabric. Our product actually failed, below the line, and their product passed, the exact same product. So I would like to see if you're going to set a number, 3, you know, have some variability in there, plus or minus, because you're running this test once every three years, I think is what the requirement is, one time, and it's a very expensive test. So because of the variability that's been shown, I think you need to have -- to set a proctor with a plus or minus percentage so that you can allow for some variability. Because you could have the exact same product and you may have to -- you could run it three times and one time it passes and, okay, now I have a passing product.

Another issue I have is the overtopping. Because of the way the test is designed, any

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overtopping doesn't pick up the scour that would happen in real life from having dirt behind it because there's basically a scour apron of plastic. So if you're going to allow overtopping to be considered as an apples-to-apples comparison to the products that don't overtop, then you should probably have to require them to have the scour pad behind the product so that you know you're getting the same performance that happened on the test when it was run.

That's it. Thank you.

MR. DYKES: Thank you, Mr. Harris.

Next on the list is Mr. Brad McCoy.

MR. McCOY: I yielded my time to Mr. Booth.

MR. DYKES: Thank you, sir.

Next is Mr. Don Davis.

MR. DAVIS: My name is Don Davis, DDD Erosion.

The longevity checking, some products that's passed this test, the 11340, the DOT actually failed a couple of these years ago. I sent products in to the DOT and they failed. So some of the products we're talking about today the DOT actually failed before. So we need to put longevity testing before you do a one-hour or two-hour test. It just is not fair.

That's all I've got to say.

MR. DYKES: Thank you, Mr. Davis.

Mr. Wayne Seabolt.

MR. SEABOLT: Let me just be real brief here after all of this and everything. I've never done anything in my life that came easy. Everything I've done that's been worthwhile has been very difficult. And I'm just saying that I am relieved to see the kind of dialogue, the kind of conversation that's going on, and the end result is going to be something I think very, very positive for the industry.

So I yield my time to someone who has much more important -- something more important to say than I do.

MR. DYKES: Thank you, Mr. Seabolt.

The last name I have is Jamie McCutchen.

MR. McCUTCHEN: I'll be brief so we can get out of here. My name is Jamie McCutchen. I'm with SW FeeSaver. We're the maker of the Marlee Float, which is a new skimmer surface drain on the market.

And just real briefly, I would like to commend Georgia Soil and Water for taking the approach that they have. We spent months doing testing of our product, and a lot of that time was at Joel's facility, and had a lot of surprises going through there. It did not necessarily perform as we expected. And we spent the time and effort to make sure that what we provided engineers for design is based on real performance. And there are huge differences between real performance and theoretical calculations that some other products publish. And I really just want to commend Soil and Water for taking that step. I applaud you for doing that. And I think that it is definitely the right direction to go in.

Thank you.

MR. DYKES: Thank you, Mr. McCutchen.

Is there anyone else wishing to make public comment today?

Mr. Hamil.

MR. HAMIL: I love to run my mouth. I started work for the Georgia DOT in 1960. They sent me out as an engineer on bridges out on the I-75/285 interchange on the north side. They were doing grading work out there. And nobody even knew the word "erosion" out there, much less what to do. And that runoff from that construction went into the Chattahoochee River.

And later on things got a lot more difficult for us engineers when the Environmental Protection Agency and the federal government and state government, when we engineers were confronted with a terrible problem of how to satisfy all these what we thought were crazy folks making us do all these things we hadn't done before. So we came up with a silt fence. And we came up with detention ponds, which were a lot better than silt fences.

And then when I was in charge of designing Georgia 400, and there at Peachtree we went underneath the Financial Center that was already

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built, and we had a -- a cover running down through there. And the engineering company that designed it, they thought they had it done perfect. But when you looked at the State's construction plans, you couldn't build it because there was a railroad track down there and we had to relocate it.

So we were faced with a terrible problem, but we came up with in my opinion a perfect solution. We had some remaining property that was landlocked on one side of 400, so we made wetlands out of it. We drained that box covered in that was getting -- and sometimes it was coming into there before we got the box cover finished. We had to make it go crooked. It goes down the middle of the road, in case y'all don't know it. We got that worked out and set up a wetlands, and that was in my opinion the most perfect solution you could get. Because if any of you have ever worked with clay, you know the clay molecules are real small molecules, and they get into solution and they don't fall out until you get the water

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sitting still for a long time.

Then later on I was charged with trying to design a road from the west side of 400 -- I mean the west side of the Chattahoochee River along some power lines that went across the Morgan Falls Dam. And I don't know if any of you ever get a chance, but go out and look at that dam. It was built in 1919 to furnish the electricity for the street car system in Atlanta. And go out and look at the dam. It had about seven dynamos in there.

We went up on top of the dam, and there were plants growing within 150 feet of the dam. That whole lake, about seven, eight miles long, was completely filled up with silt. The only thing left was a little channel that the river flowed in and it turned around. And then they kept one of the dynamos and sometimes two. And that was the only place that there was a pool there.

So you see what can happen if we don't do something about erosion. So we have done all these things.

And then later on after I retired, I was chairman of the Carroll County Water Authority and we were building the Lake City Reservoir. We went and we hired a tech, a third-quarter engineer to come out and work every summer. And as the lake filled up, we saw silt coming in. So we sent that engineer out to trace down where it came from. And we traced it down to several subdivisions. This was when the building boom was going on. And we went up there and looked at them, and one of them didn't have anything to protect from erosion and one of them had a few hay bales. And mud was all collecting and it was running over.

And we went to see the County. They gave us lip service. They said, "Oh, we're going to do something." They never did. Why? All those people building those buildings in subdivisions were giving big campaign contributions, so they didn't do a thing about it.

And so we got to investigating and I started talking to people in Douglas County. And Douglas County built a reservoir on Bear Creek and they said it would last ten years. And they were going to raise the dam on the Dog River Dam later on. Between Chapel Hill Road and Georgia 5 a big shopping center was built. And that lake lost 60 percent of its capacity and made that reservoir not last but three or four years.

And when they went down to raise the dam on Dog River, they found out there was silt on top of the lake. They spent several million dollars cleaning the silt out.

We've got to have proper enforcement in the local government. It doesn't do any good with all these tests and getting everything perfect on the tests if you don't have proper enforcement. Douglas County, if you go out there, man, they're going to inspect everything you do. Carroll County, they're getting better, but they still have got a lot of room for improvement.

So, plus, I've reviewed some plans for erosion control. I grew up engineering-wise, we learned how to finish contours on all our roads. We learned how contours worked and we knew how the drainage worked. We've got people designing it that don't know what they're doing. If they don't design it right, it ain't worth a hill of beans. You need to use double rows sometimes when you've got a lot of water, etc. There's a lot more improvements other than testing the fabric and the socks. The whole kit and caboodle needs to be straightened out so that we don't fill up all our reservoirs in 30 or 40 or 50 years and lose all our water supply that's used to furnish City of Atlanta and all along the Chattahoochee River with water.

So that's my two cents' worth. And y'all can take it for what you think of it.

MR. DYKES: Thank you, Mr. Hamil.

Anybody else on the TAC wish to make a comment today?

(No response)

MR. DYKES: Okay. Thank you, members of the public, for being with us today and for your comments.

MR. HAMIL: Well, I've got one more question.

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MR. DYKES: Yes, sir.

MR. HAMIL: What's going to happen after this meeting?

MR. DYKES: That's where we're headed. I'm going to tell you. Or I can listen to instruction from you as the Committee.

We have a question in the audience.

MR. BOOTH: In closing, I would say that I'd like to offer the services of Willacoochee Industrial Fabrics to work with Georgia Soil and Water, this Technical Committee, and anyone else to provide a product that the State would like to have. I worked hand in hand with Virginia DOT when they were having issues with silt fence and designed a silt fence with them.

Silt fence products can be designed to do anything you want them to do. We have products from 30 AOS to 70 AOS that will flow the same amount of water. So if you're interested in retaining finer particles of silt and continuing to allow water to pass through, we can design a fabric for you and would be happy to run numerous tests and send it to your labs for testing or TRI for testing.

Joel is aware of a lot of products, specialized products that are already being used in various states that have higher water flows and finer silt retainment.

So, you know, we're at your service. That's our job, to service you.

MR. DYKES: We appreciate that offer. Thank you, Mr. Booth. And I think we all in the room have a goal of having the best product at the end of the day.

We encourage you to send in additional comments via our email address, which is greenbookcomments@gaswcc.org. That's greenbookcomments@gaswcc.org. The public comment period will close on December 18th, 2014.

We do anticipate an October meeting of the Technical Advisory Committee, coming up next month. That will be announced on our website, as listed on your agenda today, the website address. It will also be communicated out via email.

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I encourage you to go to our website and subscribe to our Manual for Erosion Control email list to ensure that you get emails. Most of the folks in the room will probably get it from your sign-in sheet. But just to be sure, please go to our website and sign up for the Manual for Erosion Control email list.

My work assignment from the Committee seems to be at this point to provide the Committee certainly copies of the tapes that have been discussed today of the tests, a copy of the final report as produced by TRI, and those type of things.

Is there anything else the Committee asked us to do as far as supplying the Committee that we can provide the Committee today?

(No response)

MR. DYKES: We do anticipate working at the next Committee meeting, addressing the issues that have been brought up today and certainly discussing it at that point.

MR HAMIL: Will it be an open meeting?

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MR. DYKES: Absolutely. Good question, Mr. Hamil. Every meeting we have will be an open meeting. And we will have public comment at each meeting also, yes, sir.

Okay. There being no further comment, please have a safe drive home, and this meeting is adjourned.

(Whereupon, the meeting was adjourned at approximately 2:35 P.M.)

C E R T I F I C A T E

STATE OF GEORGIA:
COUNTY OF DEKALB:

I hereby certify that the foregoing transcript was taken down, as stated in the caption, and the questions, answers thereto, and statements were reduced to typewriting under my direction; that the foregoing pages 1 through 182 represent a true, complete, and correct transcript of the meeting to the best of my ability. I further certify that I am not of kin or counsel to the parties in the case, am not in the regular employ of any of said parties, nor am I in anywise interested in the result of said matter.

This 25th day of September 2014.

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CATHERINE B. STEELE
GA CCR B-1123

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