

Dennis Riecke

DENNIS: Slide 1. So, all that Claire said was true. So you see I can only devote a part of my time to each one of those programs. And so Tom said all it takes is one person. Well, I'm that person, and in Mississippi for my agency, by default, by interest, and I'm the only one that really said, "We need to be paying attention to this." And I got thrust into it. Slide 2. Mississippi is a regulated riparian state. Our legal/policy basis for instream flow consists of the Public Trust Doctrine, state laws and rules and agency mission statements. The point of this slide (Slide 3) here is Mississippi doesn't use a lot of surface water, but we use a lot of groundwater (Slide 4). Back in '85 there was a document, and I think we were ranked 10th in groundwater use among all the states. And then you see all these red dots (Slide 4) which are groundwater permits and that big red arch is what we call the Mississippi Delta. It's intensive agriculture: rice, corn, cotton, soybean, and catfish farms.

So, the panel members for this session had a conference call, and Bev said, "I think it's really important for everyone to define what certainty is." So I started to think about certainty and what would my definition of certainty would be, and it would be I'm confident that what I'm telling you and how I'm acting is accurate and represents the truth. If I tell Ian that the sun is going to rise tomorrow in the east and set in the west, I'm pretty confident that that's going to happen. I'm certain that's going to happen. I'm uncertain about whether we're ever going to put a man or woman on Mars. Slide 5. And so then, I went to the dictionary to look up "uncertainty and "certainty". Here's all the things the dictionary said about certainty: free from doubt, reservation, suspicion, wavering, quite sure, exact, precise, inevitable, dependable, established as true, fixed or agreed upon, settled, stated, marked by complete assurance and conviction. Some synonyms were assured, confident -- ah, that was in my definition---- confident, positive.

Okay, so when I thought about uncertainty I would say it is "I don't know", "I have doubt", "I don't know what to do", and "I'm unsure". So here's what the

dictionary said about uncertainty (Slide 6): not confident or assured, not precisely determined. It just reversed all those terms I said before, right? Not dependable, vague, indistinct, problematic. How many times have you heard these terms when you're negotiating about instream flow? "Oh, that's a problem". "Open to doubt". "I'll question that." Ambiguous, unpredictable. Here's that certainty and control thing again, Tom. Undecided, hesitant, tentative, fickle, variable. Okay, so the synonyms for uncertainty are: indefinite, unsure, doubtful, suspicion. "I'm suspicious of your methods or your results". "I'm skeptical". "I don't know if you did the right thing there". Mistrust.

So, we use 7Q10 (Slide 7). Until 1994, it was the only method specified in the law. Now, how many of you don't know what 7Q10 is? Just raise your hand. A couple of people don't know. I'm going to tell you what it is. Okay, so we were certain that was the method. It was in the law. I was uncertain, everybody in my agency said "What was it?" It's two numbers a letter, what is that? We really didn't know. Okay, so this is when I picked up the phone and I started saying, "What is the 7Q10? What is 7Q10?" But the MDEQ came to us and they said, "Look, we need another methodology. We're constrained by this law. We're certain that we need to change." Okay? So then it was uncertainty again, "Well, what do we need to go to? What should we go to?" And we had some real concerns about that.

Okay (Slide 8), so 7Q10 is the lowest stream flow over seven consecutive days that happens once every ten years. Okay. So it was simple, it was easy to calculate. When the Clean Water Act came into being, this was the flow that they told sewage treatment plant designers, "You treat your sewage down to that level and 90 percent of the time or more, the stream is going to have more flow than the 7Q10 flow." So if the stream flow can assimilate what you're discharging, you're not going to plunge any of the water quality parameters into the toxic zone. Pretty good. You do that, and pretty good. So that's its only valid use, and here we are using it as an instream flow standard in Mississippi. And a lot of states did this.

Okay, so from talking to people and from the IFC books we found some information on 7Q10 (Slide 9). 7Q10 is in the first and second IFC books; it's critiqued. So here's what people are saying about 7Q10. "It does not protect aquatic life. Its use as a standard to do so is inappropriate."

Now, how many people have had the flu in the last 10 years? Okay, so this is what can happen with 7Q10. We're going to use our human health comparison to the Fish and Wildlife, to illustrate the effects of 7Q10? Dennis has the flu. He goes to the doctor. He feels terrible. Ian is my doctor—I'm picking on you Ian—I'm in trouble. Ian is my doctor. So I go to Ian and he says to me, "Dennis, you've got the flu, and there's nothing I can do for you. There's nothing I can give you to make you feel better, and I'm telling you it's okay for you to feel like this for the rest of your life." Well, that's what can happen if you use 7Q10 and you appropriate all the water. Instead of being a flow that comes about for seven days in frequency once every 10 years, it's the flow from now on.

So, for some streams, the 7Q10 flow can be zero (Slide 10). Well, we know fish, invertebrates, mussels, they need water. So 7Q10 can't be used on a stream with an altered hydrograph – like streams that have dams on them or have lost their groundwater base flow connection. And so in the Mississippi Delta, in that red region that I showed you, the USGS has not calculated a 7Q10 since 1975. And the reason is because of groundwater pumping, the streams no longer get any base flow from groundwater. So here's what a 7Q10 flow looks like (Slide 11). This is Leaf River at the 7Q10 flow of 56 cfs. I just want you to pick out some point on that picture and focus on it. Okay, you see that we don't have water across the whole channel. This is what Don Tennant did. He went to streams and he took pictures at various flows. This is what Christopher Estes says, "You don't need sophisticated models. All you need to do is show people pictures of streams at various flows."

Okay, so now we're going to look o at a different flow from the same vantage point (Slide 12). Okay, now we have a 443 cfs flow. So you see there's water from bank to bank. And let's go back to the previous slide (Slide 11). So, focus on your point. How much water is there, what can you see? Now, if you are in a canoe, or kayak, or fishing this stream, what kind of flow would you want to experience on that stream? It's an easy question, with a simple answer; you would want the higher flow.

Okay, so we knew that it was not an instream flow method (Slide 13). Well, the question that the MDEQ posed to us, very simple, you've all heard this, "How much water do you need for fish and wildlife?" Here we go, we're on uncertainty again. We know we need to use another method. We don't know what method to go to. So this uncertainty caused us to panic. We didn't know if we were doing the right thing. We didn't know what do to. So, we went on and we revised the law (Slide 14). So we amended the law to state "7Q10 or any generally accepted scientific method can be used". So uncertainty, led to vagueness. It led to more uncertainty, but it led to great flexibility.

And the other thing that we got was we wanted to see – we, the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) – wanted a seat at the table, okay, and we got it. Because we amended the law to include "you shall consult with us, and you shall consider the recommendations we make." They (MDEQ) don't have to follow the recommendations we (MDWFP) make. So, uncertainty led to flexibility and consultation.

So 15 years, 20 years, 21 years passed until last week. And so the message that I kept sending to the MDEQ was "I was patient, I was determined, and I was persistent, and I delivered a consistent message". Basically my message was this (Slide 15): "7Q10 was bad, anything else is good". Now, I may be selling the system short, okay? But I'm easy to please. I knew that whatever else we used, it would be better than what we had. And so, we used this precautionary

presumptive approach, a simple desktop method. Mississippi is a state limited in terms of resources, staff. We have good regulatory authority and laws, but we don't have the staff for instream flow. We're never going to do an IFIM unless it's a priority, but there's good methods out there, so let's just select one and let's try to mimic the natural hydrograph and let's try to limit water use.

So I kept telling them, "at ten percent withdrawal you're not going to see any perceivable or discernible impact to fish and wildlife resources, at 20 percent you're going to start to see something – like a moderate impact and a loss of diversity." So I get called to a meeting with the MDEQ staff last week. So remember, we don't use a lot of surface water use, but the fracking industry came to Southwest Mississippi and we had a previous meeting about it, and all I told MDEQ was this, "Don't let them suck all the water out of the stream. I don't want to get reports of fish kills in Southwest Mississippi." And we had a meeting last week and I got an update on this and, I'm going to read it to you because I'm a little confused on what the policy actually is. Okay, so when the fracking industry applies for a permit (Slide 16), the MDEQ writes a permit with approval to withdraw up to 10 percent of the water of the historical median flow. They are only going to use water for fracking for two weeks (Slide 17). Before they want to use water (Slide 17) they're going to make a phone call to the MDEQ, within three days of the intended withdrawal rate. The MDEQ is then going (Slide 18) to give them approval to use 10 percent of the real time flow. That's all. And the (MDEQ) is not going to permit more than two fracking companies to use the flow in the same water body at the same time. So that's the MDEQ's interim approach.

So you see the yellow down there on my slide that this (Slide 18) is the first time in 21 years that some other instream flow methodology besides 7Q10 has been used in Mississippi. So you imagine waiting for something for 21 years – it might be a vacation, it might be a new car, it might be a house. So you can imagine how I felt when I learned this. I was ecstatic. And so, in this chart (Slide 19) which is

a little dated you can see a comparison of instream flow methods used by the Southeast US state. But you see, Mississippi has moved forward in terms of having a more protective instream flow method at least in this one instance. We moved from 7Q10 to a percent of flow. So that's better. And so, where are we now? Here's Mississippi's instream program (Slide 20) as evaluated by instream flow professionals at the National Instream Flow Program Assessment in 1996. Mississippi has the highest legal protection in the Southeast US. Every other instream flow program element was rated low. Am I certain we're going to get improvement on anything else? No, I don't know. So, where are we now (Slide 21)? We have a big decline in the Delta aquifer. Here's is a quote from the MDEQ director of land and water, "We can't continue to do business as usual, the status quo is not sustainable," We are mining the aquifer even though that term (mining of an aquifer) is not defined in law or regulation. So, here are (Slide 22) some good resources from the IFC books that really helped me. If you don't have them, I suggest you get them. That's my shameless plug for the IFC. Thank you.