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STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

GROUND WATER RESOURCES COMMISSION
15TH REGULAR MEETING
WEDNESDAY, FEBRUARY 3, 2010
11:00 A.M.
LOUISIANA STATE EXHIBIT MUSEUM
3015 GREENWOOD ROAD
SHREVEPORT, LOUISIANA 71109

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OFFICE OF CONSERVATION
STATE OF LOUISIANA

GROUND WATER RESOURCES
COMMISSION MEETING

Report of the Commission meeting held by the Ground Water Resources Commission, on February 3, 2010, in Shreveport, Louisiana.

IN ATTENDANCE:
GROUND WATER RESOURCES COMMISSION:
REPRESENTING THE OFFICE OF CONSERVATION:
SCOTT ANGELLE, Secretary, Natural Resources
KYLE BALKUM, Wildlife & Fisheries
ZAHIR "BO" BOLOURCHI, Department of Transportation & Development
JAMES S. BURLAND, Louisiana Chemical Association, LA Mid-Continent Oil & Gas Association, Louisiana Association of Business & Industry, LA Pulp & Paper Association
GLENN CAMBRE, Department of Health & Hospitals

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(IN ATTENDANCE) (CONTINUED):
GENE COLEMAN, Sparta Ground Water Conservation District Board of Commissioners
ELLIOT D. COLVIN, Farm Bureau Member
WILLIAM R. DOWNS, Geologist/Engineer With Expertise in Ground Water Resource Management
PAUL D. FREY, Louisiana Landowners

Association
DAN HOLLINGSWORTH, Louisiana Municipal Association
PAUL "JACKIE" LOEWER, Representative of the Geographical Area of the State Underlain by The Chicot Aquifer
MICKEY MAYS, Police Jury Association of Louisiana
PAUL D. MILLER, Department of Environmental Quality
EUGENE OWEN, Capital Area Groundwater Conservation District
JAMES WELSH, Commissioner of Conservation
GARY SNELLGROVE, Ground Water Resources Division
JOHN ADAMS, Staff Attorney, Conservation
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(IN ATTENDANCE) (CONTINUED):
TONY DUPLECHIN, Ground Water Resources Division

PUBLIC COMMENTS BY:
ALICE STEWART, Sparta Commission Member
JOHN NELSON, Administrator, Desoto Parish Waterworks
PHILLIP LANE, Resident of Keithville, LA
THERESA WYATT, Lincoln Parish Police Jury
JODEE BRUYNINCKX, Director of NW LA Louisiana Oil & Gas Association - LOGA

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GROUND WATER RESOURCES COMMISSION
15TH REGULAR MEETING
WEDNESDAY FEBRUARY 3, 2010
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SECRETARY ANGELLE: Okay. We'll go ahead and call the Ground Water Resources Commission Meeting to order. Thank you very much for your cooperation, pleasure to see you all. I do want to thank Commissioner Welsh and his staff for all the work they have done in preparation for today's agenda, and I certainly want to thank the members of the Ground Water Commission for agreeing to a very robust meeting schedule over the last 18 months.

I think this marks the seventh time we have meet and the statute requires that we meet

only once every six months. I think we are doing the necessary work to understand the ground water resource issues in Louisiana and to try to address those issues in a very responsible and appropriate way.

So, Commission members, I know that the pay that you get is only outdone by the retirement benefits that you get from doing this. So I

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appreciate the personal sacrifices that you make to be with us as we travel around the State. I'm also very pleased to better put forth that I would bet there's not too many committees in the State of Louisiana that have crisscrossed as we have, from Baton Rouge to Eunice, to Ruston, to Minden, to Shreveport, to Slidell, Mandeville area. But I do appreciate, I know often you have to take time away from your work and your family to be with us so I appreciate that.

I also want to recognize we have six members of the Louisiana legislature that are here with us today. And after introducing them I will ask Senator Shaw and Representative Smith for a few comments. But we are very happy to have, and if you would just please stand and be recognized. We have Senator Shaw from the Louisiana State Senate here. From the House of Representative we have Representative Jane Smith, we have Representative Jim Morris, Representative Richie Burford, Representative Sam Little, and Representative Thomas Carmody. Thank you all very much, I'm sorry, and Senator Sherry Cheek is with us, too. Thank you very much.

(Audience applauds.)

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I certainly appreciate, many of you sit on a committee of jurisdiction over the natural resources of this state, and again, I appreciate the great cooperation we have with you from our Department and the other Departments in the State holding us accountable and making sure that we are doing the things that we need to do to promote and protect the natural resources of our State.

With that being said, I'd ask for Senator Shaw to perhaps now make an announcement.

MR. SHAW: I think I'm going to stand this way to you, I want to make the announcement. These folks I think realize that.

I serve on the Environmental Committee for the Senate and Senator Sherry Cheek is also on that committee, and we have agreed to meet in Bossier City at the City Council Chambers on March the 11th at 9:00 a.m. and we would appreciate it very much if you would like to attend to come. And I appreciate today, this group meeting.

All of us are interested in these fundamental questions and it's always good to have them addressed in public and on record. And we would like to invite you to that committee meeting

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that day because at that time we will be hearing from the DEQ, Department of Environmental Quality, and it's the quality that we're interested, the quality that we're interested in in that particular day.

And thank you very much for allowing me to make that announcement.

SECRETARY ANGELLE: Thank you, sir. We appreciate your support, Senator Shaw. Representative Smith.

REPRESENTATIVE SMITH: Thank you. I just want to welcome all of you here to Northwest Louisiana. It's great to be able to meet people that don't talk like we do. And that they came, they got to drive north to visit with us. We've got some great things going on in this area, and I'm just extremely proud of the legislative delegations from this area and the good work that's going on on their behalf.

I will tell you that I was recently in Washington, D.C. at a roundtable discussion discussing energy. And, of course, this area is absolutely on the forefront and everyone is looking at what's happening in Louisiana right now, especially in Northwest Louisiana. And

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Secretary Angelle was one of the speakers there and you would have been most proud of the job that he did and I was extremely proud to have someone so knowledgeable and so dedicated to what's going on. So I want to thank him for the great job that he did that day and he represented Louisiana in a very special way.

But the good news is that we are here today to become better educated and understand what's going on with our natural resources and what we're so concerned and happy about and the great things going on in this State. So thank you for being here today. I would love for y'all, if you get an opportunity, if they'll allow it, if you have any free time to go through the museum on the other side. It is fantastic.

When I was growing up and we got so hot at the fair we came to the museum to cool off and that's when we found out about some wonderful things going on in this area. Thank y'all so much for being here today and thank you Commission.

SECRETARY ANGELLE: Thank you very much. And I don't think I talk funny but you sure do.

I also want to recognize just a special

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hello to former State Senator Clo Fontenot, former Chairman of the Senate Environmental Committee, thank you so much for your service. Okay.

Item number, one via roll call. Mr. Adams.

MR. ADAMS: Yes, sir, thank you, Mr. Chairman. Before I call the roll I would like to point out, for anyone who would like to speak

at the public announcements or the public speaking section, please fill out one of these blue speaker cards and when it comes time to do the public announcements, if you would, come up to the podium, hand me your speaker's card so I can give it to the court reporter and then you can put whatever comments you'd like in the public record.

You can pick these cards up back at the desk back there or if you need to, I can give you one when you get up here. Thank you very much. All right, for the roll call.

MR. ADAMS: Scott Angelle?

SECRETARY ANGELLE: Here.

MR. ADAMS: Kyle Balkum?

MR. BALKUM: Here.

MR. ADAMS: Bo Bolourchi?

MR. BOLOURCHI: Here.

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MR. ADAMS: James Burland?

MR. BURLAND: Here.

MR. ADAMS: Glenn Cambre?

MR. CAMBRE: Here.

MR. ADAMS: Gene Coleman?

MR. COLEMAN: Here.

MR. ADAMS: Elliot Colvin?

MR. COLVIN: Here.

MR. ADAMS: William Downs?

MR. DOWNS: Here.

MR. ADAMS: Paul Frey?

MR. FREY: Here.

MR. ADAMS: Garret Graves?

(NO RESPONSE).

MR. ADAMS: Dan Hollingsworth?

MR. HOLLINGSWORTH: Here.

MR. ADAMS: James Johnston?

(NO RESPONSE).

MR. ADAMS: Jackie Loewer?

MR. LOEWER: Here.

MR. ADAMS: Mickey Mays?

MR. MAYS: Here.

MR. ADAMS: Paul Miller?

MR. MILLER: Here.

MR. ADAMS: Eugene Owen?

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MR. OWEN: Here.

MR. ADAMS: Kelsey Short?

(NO RESPONSE).

MR. ADAMS: Brad Spicer?

(NO RESPONSE).

MR. ADAMS: Jim Welsh?

MR. WELSH: Here.

MR. ADAMS: Mr. Chairman, we have 15 members present, ten are required for quorum so we do have a quorum.

SECRETARY ANGELLE: Thank you very much. Item 2 is the adoption of the minutes of the December 2nd meeting.

MR. ADAMS: Yes, sir, thank you, Mr. Chairman. All of you received, within the last couple of days, an e-mail containing the minutes from the previous meeting. There's been

one amendment that was made in the section dealing with Southern Hills Aquifer System outlook and stability.

A correction was made in that it said, Chairman Angelle introduced Mr. John Lovelace, Supervisory Hydrologist for the U.S.G.S. Louisiana Water Science Center who gave a presentation on the current status of the -- it

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stays Chicot, but we need to amend that to say Southern Hills Aquifer System.

SECRETARY ANGELLE: I'm going to entertain a motion to approve that amendment.

MR. OWEN: So moved.

SECRETARY ANGELLE: Motion by Mr. Owen.

MR. BURLAND: Second.

SECRETARY ANGELLE: Second by Mr. Burland.

Any objections?

Any discussion?

Hearing none and the motion is adopted.

Thank you very much.

Again, I would say to the committee and members, just to reorganize ourself some 18 months or so ago, and one of the things that I required is that we have a court reporter at these meetings so we have verbatim testimony that is being recorded for public transparency. And again, I think that's one more step in some of the things that our Governor is trying to bring to this State. And I appreciate John, Mr. Adams, going through those things and making sure that we are being as perfect as we possibly can.

Going to Item 3 which is introduce

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Mr. Gary Hanson to present an update on the Northwest Louisiana water resource issues. I saw Mr. Hanson here earlier. I didn't get a chance to say hello. I'm trying to see where he is.

MR. HANSON: Here.

SECRETARY ANGELLE: Thank you, sir. We appreciate you being here. You have been a wealth of knowledge for several of us and I do appreciate your interest and your passion for the ground water resource of the State and with that in mind, sir, if you would go ahead and take us through your presentation.

MR. HANSON: Thank you very much, Secretary Angelle. I appreciate very much the Commissioners coming here to north Louisiana and also to have Jim Webb up here, our Commissioner, and yes, I appreciate you coming all this distance. I've been traveling to Baton Rouge for a number of years now and I really do appreciate you coming up here and taking the time.

The next slide will show what we're going to cover on this topic as an update in Northwest Louisiana.

Water Resources Committee of Northwest Louisiana, which is what we've put together over

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the last, almost seven years now, a voluntary group of people after the last -- well, as we were forming the Water Commission, I'm on the Governor's Ground Water Task Force, the original and the present one. The Red River Watershed Management Institute which is an LSU system institute here in Shreveport. It's the only one in the State. There are not too many actually in the country.

Water issues I want to cover. Obviously, we can't go anywhere without talking about Haynesville Shale and the issues with water. The Haynesville Shale is something that has grabbed the imagination of a lot of people. We're looking at a paradigm shift here in the way we look at energy worldwide. And by the way, the US just exceeded Russia as the largest gas producer in the world.

But the Shale that we're seeing, not just in the United States but internationally, has added just an incredible amount of energy which is considerably more cleaner than crude oil and certainly it's more cleaner than coal but this gives you an idea here. It's a whole new game changer as BPCL mentioned.

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Also some things that happened in the last few weeks, the large companies like Mobil, Exxon Mobil, have decided to get into this play. Looked like they just weren't going to be involved in it too much, although they've been involved in the Barnette play, but their acquisition of XTO will give them a lot more resources or Shale-type resources. So it's becoming a very important source of energy here in the United States and certainly here in Louisiana, too.

Next one.

When we look at the potential unconventional gas Shales, as a geologist and an instructor in geology for many years and as a working geologist, too, we always start with, when we look at oil and gas reservoirs we start with reservoir rock, a good organic shale and then we see that gas and oil migrates from that reservoir rock into, from that source rock into a reservoir rock, usually a sand or limestone, sometimes fractured. But today what we're looking at is actually the reservoir and the source rock are the same and incredible amounts of gas are being stored in these gas shales.

The tight gas sands, I was involved in

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that development back in the '70s with an oil and gas company, has been going on for about 30 years, maybe 40 years now. And so that technology has proven to be quite, quite well known.

In the coal bed methane, we have coal bed methane reserves in north Louisiana and central and north Louisiana. They don't produce as much gas. One of the issues there is you pump

a lot of water out to get the gas out and that water is basically contaminated.

So all of these types of resource plays have one thing in common.

Next slide, please.

In that you're dealing with water, lots of water one way or the other. Either using it to stimulate the formation or you're pulling it out through coal bed methane. And we're talking about what sounds like a lot of water, it is five to seven million barrels per well. It's been inching up over the last two years. But as I'll show you a little bit later, it's not that much water when you consider what we have in resources at the surface.

When you look at the plays, we've got major plays throughout the United States. The

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oldest one is the Barnett Shale. It's been producing about 11 years. Marcellus is a huge area, the Devonian Shales accompanying that, all the way from New York to Tennessee; the Fayetteville in Arkansas and the Woodford over in Oklahoma. A new one that's come into play in the last year is the Eagle Ford Shale, very similar being that it's a fairly young rock, just like the Haynesville Shale is.

This number is U.S. future supply considering the gas shales that are being found today and that are expected to be developed. We're looking at 2,074 trillion cubic feet of gas. That's equivalent to 350 billion barrels of oil, which is the same as what Saudi Arabia has as reserves.

When I started out years ago I developed a sand over in Carthage as a petroleum geologist, and keep in mind I've worked on both sides of the environmental side and also the oil and gas side. I found a sand over there that looks like it's going to produce about two trillion cubic feet of gas. I mean, that's just an amazing amount of gas.

But look what we're talking about here.

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Over 2,000. This can really change the whole picture here in not just America but the world. In fact, here's that field I was working. It was the Carthage field. The Carthage had about seven TCF before the 1970s when the tight gas sand fracing started there.

Monroe field about eight TCF, but almost all of that was produced to produce, was produced from the ground to make carbon black. There was no distribution system for natural gas at the time. So it was basically wasted for us as an energy source.

This is an early slide of the development of the Haynesville Shale. Each one of those squares is a square mile unit and the development had just started a few months before that. And we could see quite a few wells are

being developed right here on the Caddo Parish/Desoto Parish line.

Next slide.

In the last year this is what it looks like. We're talking about here 1260 units. One of the operators has stated in the past that they have about a third of the play and they expect to drill about 10,000 wells. That's 30,000 wells.

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My dad was an old time driller, started in the oil business building wooden derricks and he went to many of the old boomtowns around the country. In fact, he took the first rotary rig up to Pennsylvania. He also went to the west coast, first well drilled in Oregon State. So we really haven't seen booms like the 1920s. What we're looking at now is an equivalent to the 1920s and '30s oil and gas booms here in the United States.

When we look at the Haynesville Shale play it's a fairly large area. It's extending more down towards the southwest towards St. Augustine County now, not so much to the east, but an estimate of this area is greater than 250 TCF of gas. For one area that's a tremendous amount of gas.

Okay.

This is something that nobody here will probably understand except the geologists and there are several of them out here. We had a convention in Shreveport in September which is called the Gulf Coast Association of Geological Societies and they rotate from literally Mexico City to Florida every year and Shreveport's year came up in September of '09.

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I was fortunate enough to be Chairman of the technical program. And in working with the executive committee I was kind of surprised that the other geologists, mostly petroleum geologists, were very anxious to include water issues in the convention, which has not been a big issue in the past.

This is one of the slides from the local specialists here in oil and gas. This is where you're getting the Haynesville Shale. It's a fairly undisturbed organic shale that was in fairly deep water but sitting over and around this area we call the Sabine Uplift today. This same formation has been producing to the north and east some of the better wells. In fact, I worked in that area years ago, five billion cubic foot wells. That's tremendous wells for the area.

When we look at this, many years ago the outcrop for our aquifer here, the Wilcox, shapes just like this, everywhere you see it's dark, that's where the Wilcox outcrop. So our aquifer literally was at the surface here in Northwest Louisiana. It's the oldest aquifer in the State of Louisiana. The only one in Northwest Louisiana that we can use. It's been called, for

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obvious reasons, the "Gorilla Uplift" for many years.

So this is our source of ground water right here in that one particular zone.

Okay.

This is a shot of a recent well. We had a field trip which I co-lead out to EnCana Rig. They've been very good working with us on these issues. Just to show you what these look like. They're massive rigs known as top drill rigs. They also, in some cases on these super pads, are developing a well moving over after they drill it, move over and develop, move over and drill another well, up to four wells on this pad.

And, a pretty efficient operation here. Two roads going in, one for the drilling of the well, and one for the completions. An incredible amount of costs. These wells costs anywhere from eight to ten and a half million dollars per well.

In that convention last year, this is the cover for our transactions, it's about a 4- or 500 page transactions, which we come up with every year. We put this theme together, A Fusion of Geology and Technology. And what you're looking at here at the top is an actual infrared

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image, which I had funded through the Watershed Institute, that gives us a very good view of what's happening with the water issue on the surface here.

Below it a geologic map, this is actually an image of a curvature analysis which helps give you an idea of fractures from the Haynesville. And here's an indication of a 3-D model of what the Haynesville looks like. And over here is the new types of logs that are being developed just for the Shale plays worldwide.

This is a conventional log, oil and gas log, electric log. This is the new type of log, the Shale log, for this particular company, Halliburton. Gives an incredible amount of data involved here and will tell you literally exactly where you wanted to drill horizontally. Now, they're actually logging those wells horizontally and know exactly where to put the perforations to get the gas.

Next slide.

I think many of you have seen these slides like these. It's a huge operation to frac one of these wells. This is actually in the Barnett. Very high pressure pumps, fairly large

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footprint there to put all the equipment in. It's not so large an area to drill the well, but you need a large footprint to actually do the stimulation, to frac it.

This is a common diagram that's been used for a number of years now about horizontal wells and fracing. I draw one thing to your attention here is scale. You're talking in this

area 11- to 12,000 feet before you go horizontal.
But here are the important things.
They started out with what they call a slick water frac, which is just mainly water, a little surfactant and some Abocide, and a lot of sand too that goes along with that. That sand is not just a normal sand, it's usually a high strength type of proppant and it's pumped in under high pressure.
Next slide.
If we were to take that diagram and stretch it a little bit, which is exactly what I did, this is what our picture really looks like, fairly much to scale. Our freshwater zone here, the Carrizo-Wilcox, most of the wells are no deeper than 400, 400 feet. The company has put in 2,000 feet of casing to be sure that below any

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freshwater zones. And keep in mind below the Wilcox all you have is a marine shale and then you go into oil and gas production.
In fact, that's how gas was discovered here in Shreveport. A refrigerant company was drilling for water and struck gas in downtown Shreveport. It's right under where the Hilton is today.
But notice again it's 11- to 12,000 feet and then it goes horizontal for maybe 4,000 feet. And the frac itself doesn't go more than probably 100 feet up and down. So you're talking about a zone here that's fraced that's 100 feet thick down 11- to 12,000 feet in our basin here.
Next slide.
This is a popular diagram that's been floating around and it's a pretty good diagram showing the equipment on the surface. You've already drilled the well, drilled it horizontally and holes have been put in the pipe and you've pumped in your frac and now you're having it flow back. That's where we get the term "flowback water". Again, the scale, a truck is what, 50 feet long and you're going down 12,000 feet.

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Next one, please.
These are some rough numbers looking at average production in the plays in the United States. Average gas wells are about 500 million or 500,000 cubic feet per day. That's a half a million cubic feet of gas. The average Barnett well is about a million cubic feet a day. Roughly, the average on the Haynesville, it varies quite a bit, I'd say around ten million, eight to ten million cubic feet per day. So these are much, much, larger highly productive wells.
Also the Haynesville Shale is over pressured, which means a lot more reserves are packed into that formation. That's why you have these tremendous reserves here. The normal, other plays are normally pressured. They don't have that much gas per well. I'm not going to go into

all the details, but when we start talking about production and cumulative production, you're talking in billions of cubic feet.

Okay.

We have to do a couple of things here as we move forward dealing with water issues, dealing with the public, dealing with drilling and fracing these wells. We need to, to one thing to

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really keep in mind that you're dealing with fairly large amounts of water, certainly from a surface water source. We need to look at these older plays. And that's what's been going on at the Barnett, to have lessons learned. You learn a little bit more each time you go to the next well.

Water sourcing, hydraulic fracing and water disposal. All of these are issues for all three, or the three major plays right now. All of the shale plays. These are huge issues you have to deal with.

Next.

The Marcellus is a little different from what we have here. They're not used to oil and gas drilling in that area of the world. It's a new concept for the people up in New York and Pennsylvania except for the small areas that had the very first oil in this country and it was oil mainly. But when it came to the Haynesville Shale, one of the things that the operators, and all of us, I guess, encountered was that the public was a little bit more aware of what was going on with ground water. We had some problems here to start with and I'll get into that in just a moment.

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Here's another slide.

This is water management infrastructure can make or break Marcellus. It's a huge issue up there as it is in all of these other plays.

Next one.

This is one thing that maybe a lot of people don't realize but there's a different understanding in Northwest Louisiana about oil and gas development. Turn of the century, here's a church just north of Shreveport, got a pumping oil well right on the location. It's a very important issue because we're talking about old production here, but also no matter where you're at water is a huge issue. It's part of the culture worldwide.

This is a shot taken, I believe, in 1915 up on Caddo Lake. For those who are not aware, Caddo Lake was the first location, literally in the world, where over water drilling was done. This is prior to offshore south Louisiana. The lake became, there's a field right under the lake. But here we're having a, a baptism is going on right now. A lot of people showing up there in the boats. They're in the lake. They deal with the lake. It's being used with the religion issues here and culture. So

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it's a really big thing, water.

Go ahead.

As it started up, there were a lot of concerns and issues started coming about. Keep in mind, in trying to keep a balanced view of this, this is an explosion of activity. No one was prepared for what would happen. And keep in mind also, oil and gas is a very competitive business. That's what's made the income that we have in this country today, literally the standard of living. It's very competitive.

In this play and in the other Shale plays it's turning a little different. The competitiveness seems to be more in the acquisition of leases, and as we know today, with leases going as high as $20,100 per acre. Keep in mind, too, that three or four years ago a lease around this area would be $200 an acre, extremely high leases were in south Louisiana at $600 per acre. We're talking, it went to that value. This is just an incredible amount of money for leasing. But once it's leased, it's pretty much tied up.

I've seen an amazing thing here, because the risk of finding the gas is a lot lower than typical oil and gas exploration, there's a

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tendency for the, for the oil and gas companies to be able to work together. And that's shown in a good way. And that they're working together on water issues now.

Next slide.

This is a, I put this slide together to just show all the different potential things we have to be concerned about in water management. At the end of the talk, I'll try to put this together for you. It's pretty awesome when you start thinking about everything that has to be involved, where do you start first.

Next slide.

The ground water in the area here is the Carrizo-Wilcox Aquifer as I mentioned before. It was initially the main source for fracing, for frac water. So we had surface water, but it wasn't being used very much. Surface water is very expensive to transport. If you can drill a well right beside your rig, which has been done ever since the business has been here in Louisiana, it's handy and easy to get to. But to go get pipelines and start buying water, that's a different issue totally.

The Carrizo-Wilcox outcrops here in

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Northwest Louisiana as we showed a little earlier, but that's the aquifer right in here.

Next.

This is the latest report from U.S. Geological Survey, and the State works on this too dealing with water issues. This is Caddo Parish, took Caddo Parish and looked at it. This is what, with the withdrawals for the Parish, surface water

and ground water. You're looking at here for ground water 7.7 million gallons per day. A lot more on the surface water in our area of the world here as compared to other parts of the state. That happens to be about the amount of water used for one frac job, a little bit more. So you can see a scale here of what we're dealing with.

All of the Parish uses about seven million gallons a day. One well takes up that amount of water.

Next slide.

A simple diagram here, schematic, shows we're looking at water resources of surface and ground water. It sounds very simple and I guess it is. When they go into drilling a well, they use some water for drilling and a lot of it goes to fracing. Less than a million gallons goes into

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drilling a well. And companies are pretty much still using ground water to drill their wells. Much larger volume is going for the fracing.

Next slide.

Again, a more detailed outcrop here in Northwest Louisiana.

Next slide.

Here's a cross-section from east to west showing where the Carrizo-Wilcox Aquifer comes into play here in Caddo Parish. The Red River would be there. To the east of us we have the Sparta Aquifer, a combined aquifer here. An aquifer that's dropping 1.5 feet a year, still dropping. That has not been solved, that problem. Except in Arkansas.

Union County, Arkansas put together a Sparta Commission and has been using Ouachita River water for the industry and the public now has the ground water. Some of their wells in the last three years have jumped up 30 or 40 feet. It's restoring the aquifer in south Arkansas, but it doesn't reach all the way down into Louisiana.

A couple of wells inside of Louisiana are increasing somewhat, but it won't be able to help the overall aquifer.

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Next slide.

This is a recent outcrop. We did a field trip up here in September. This is a geologist with the State of Louisiana who is in a geological survey. And by the way, before I forget it, we now have approved by the three parishes of Bossier, Caddo and Desoto, an extensive ground water monitoring program where 1200 domestic wells will be sampled and 26 chemicals per well will be analyzed. I spoke to Doug Carlson with the Louisiana Geological Survey and I really appreciate, and he certainly does too, the three Parishes funding this effort. This will be a baseline survey pretty much of what the water conditions are right now, just a couple of years into the play, but you can see it pinches out here in the northern part of north Louisiana.

Next slide.
Not a great slide to see here but you can see a couple of things. This is showing the thickness of slides. This is U.S. Geological work in about 1995 here in Caddo Parish. You can see thin sands, intermediate thickness sands, and then thick sands. Notice that most of the Parish is thin sands. That's one of the big issues here.

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In a way I think we've helped the industry, too, because there really isn't great productivity coming out of that Wilcox Aquifer. A typical well would be 75 maximum, about 75 gallons per minute. The Alluvial Aquifer we're going to talk about in a minute, out here that's continued being recharged from the Red River, is up to 1600 gallons per minute.
Next slide.
A cross-section showing what the Wilcox looks like and this is one reason it's very difficult to model, it's very difficult to determine literally how much water you're taking out of the aquifer, because it's a series of lenticular sands, old channel sands. In some of these sands, the dark ones here are actually brackish. So you actually have some saltwater in wells here in Caddo Parish.
Next one.
Very poor aquifer. This is a map showing how much water has been pulled down. The Commissioners are well aware now of this type of situation, cone of depression. This occurred in a golf course south of town about 15 years ago and we found that this has not rebounded very much at

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all. So once you start pulling down the Wilcox you're not going to see it recharge very quickly.
Next slide.
And one of those reasons is, this is a recharge map of part of Caddo Parish. And if you notice over here on the scale, green would be high recharge, moderate is kind of that brownish color, and then the dark brown is low. And then no recharge is gray.
What we have in here are a series of monitoring wells that we'll talk about in a minute that we have done jointly with the Caddo Parish and the Watershed Management Institute. Here is the beginnings of the horizontal (indiscernible) play.
Notice there's practically no good recharge. A little bit right over here across from Bossier Parish. That's one of the problems. It doesn't recharge very well. It's a surface water aquifer, but it's not recharging very well.
So we've seen a lot come out in particular The Shreveport Times and also in the papers around the country literally, and certainly north Louisiana, about concerns. One of the big concerns has been the withdrawal of water around,

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particularly around as we've seemed to see, these districts, water districts. And they're still concerned about some areas that are being pulled down pretty hard.

Okay.

So talk just a minute or two about the Red River Watershed Management Institute formed in about 2000. Our goals and objectives include developing forces that work with watersheds and flood plain issues. We have about six events and courses out there today. Help to coordinate State and Federal funded watershed projects, focus on research efforts and finding solutions to watershed related problems. We are, the Institute is a really applied institute. We do research but we try to come up with projects that we can get some solutions to. And also to work with industry partners to join in the development approaches that will help us economically and also to preserve the natural resources.

In fact, this ground water monitoring project began about two and a half, three years ago with the students involved in our classes, our hydrogeology classes, go out to the wells. In this case we're actually contracting a driller to

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come up with these monitoring wells. Phase 1, was five monitoring wells. We now have about a year and a half of data on that.

Next slide.

This is a log. We log all these wells and we drill every one of them down into the midway shale. That way we know where we're at in the column. So we have all of the Wilcox. This is a lot better to correlate when you know exactly where you're at. This is a well right here, actually up at one of the parks, at Walter B. Jacobs Parish Park.

Next slide.

That well is actually being continuously monitored, one of the five. It's more expensive to do this. We'd like to do them all, but this is being monitored. It's also at an outreach site there for students coming out particularly and the public in general looking at and visiting the park.

These five wells, as you can see, four of them were put right on the border down here almost down to Desoto Parish. The main reason we put these together and this occurred before the Haynesville Shale play, was to, we were concerned

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about a lot of high institute development going on and beginning to happen just south of the city. And, so we put the monitoring wells out to do that.

Woody Wilson, who is now the Parish Commissioner, Caddo Parish Commissioner, who's head of Public Works, and we worked together putting these together. We put one background

well, that's the one you saw earlier, up at Walter B. Jacobs Park.
Next slide.
This is the data from these wells. The wells are for about a year and a half. This is water level on these wells.
Notice Walter B. Jacobs seems to be the most stable. It's actually, in the last few months, going back up. And one of the ones that's probably the most erratic is this Mayo Road well. It turns out that some of the oil and gas wells, or the Haynesville wells have been drilled near some of these wells. Right here or actually we were hoping to find a subdivision development next to one of our wells and that's exactly what happened here. So the water level has jumped up and down tremendously here.

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This one here on the south camp, we were thinking was going down because of the completion, because of the frac water being drawn from the formation. And today I still don't know because the companies have pulled so much off of that it may be an indication that it is being (indiscernible) because of that. But the other thing to consider here is you've heard at other meetings, these shallow aquifers are quite erratic. They have a lot of seasonality in them, as opposed to, let's say the Sparta, which you don't see any significant movement now except down.
Next slide.
Just to show you where those wells are again, all along the Parish line right here.
Next one.
This is water quality data from all five of the wells. The wells are manually, water levels are taken every month, water quality has done a report. And we can see by looking at some of these trends, something that stands out a little bit here is the total dissolved solids. This is the shallowest well we have at Walter B. Jacobs. It's only about 99 feet from

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the surface down to the zone that we've been screened in. We're just starting to pull all this data together and see if we can start to see some trends.
Now, keep in mind we want to include these wells in those 1200 wells with the intensive monitoring going on over the next two years also. But keep in mind that we're looking at, you know, a few chemicals here. What we can afford to do. It's going to be 26 with that study with the Louisiana Geological Survey.
Next one.
That's what it looks like when you put them all on the same scale. The levels, multiple levels in the aquifer. And again, these are a little bit more smoothed out when you put them all together over time.

Next slide.
The Watershed Institute again was formed around 2000, 2001. Just recently we had some help to finish up a field station out here at the park, right on the Oxbow Lake. It's almost 600 acres out here. Really a unique park. There's none quite like it anywhere in the United States that has this large of an area of an Oxbow

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Lake.
Next slide.
Not adjacent to the campus, this is one of our sampling sites; obviously, when it's flooding and that's a real challenge to put equipment out in a flood zone. A lot of people don't even try to do that. We are.
Next slide.
Ground water, Carrizo-Wilcox, other potential, besides ground water, is the Red River Alluvial Aquifer as I mentioned earlier. It's not in competition with public use because it's a non-potable source.
Next slide.
A few years ago we worked together with Halliburton to come out and drill a well, a large diameter monitoring well all the way through the Wilcox corrette torrent. Our students were involved in all phases of this. And here, probably for the first time ever, is a very high tech oil and gas log which is known as a magnetic resonance imaging log, just kind of like you have in the hospital, except we're looking out to the formation and the hospital is looking into you. But here's the Wilcox and here's that Alluvial

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Aquifer.
What you can tell from this slide real quick without knowing anything else is higher porosity is to the right. And quite obviously, the Alluvial Aquifer is so different, in fact, here we had one sand that was a foot and a half, fairly good sand, in the Wilcox, and that was it. That's the only aquifer sand we had.
Next slide.
Our monitoring well is a six-inch diameter well with equipment to monitor the level.
Next slide.
This is the Alluvial Aquifer, it's located adjacent to the Red River and it's not over the whole Parish, but it's a large water supply sitting there, 1600 gallons per minute. And I know of operators who have been using this, advised them to use it three or four years ago before the Haynesville came into play. And it's a great source of water for fracing.
Next slide.
This is a cross section of that. Really thick, coarse and permeable sands. This is a U.S. Geological Survey again in '96, massive sands in that Alluvial Aquifer.

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Another good thing that has come out of this is the press has done, I think, in reporting of this issue, better than anything I've seen anywhere else in the country. It's -- I'll go ahead and mention, Vickie Welborn has done a fantastic job over the last couple of, three years dealing with this water issue. She always gets it right. There are no mistakes or errors. They put in a cross section, you can see, that's very similar to what we have seen just before. The public is getting great information about the water resources in the area.

Next slide.

Office of Conservation, like everybody else, was overwhelmed at first with this explosion in the Haynesville Shale, but they started coming out with some good recommendations. One of them was use this Red River Alluvial Aquifer and the Red River on a volunteer basis. That started the, kind of the tide turning for the companies using more surface water.

We could see in a situation like this, of course, the big gas operators and the oil and gas companies could be seen as the 800-pound Gorilla coming into Northwest Louisiana. So I

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guess because it's set in the situation here, where they can just come in, because they have the right to take water from below their well, but instead --

Next slide.

-- we need to work with alternatives. And that's what's been happening here for the last year and a half, almost two years now. Keep in mind again, it's less than a million, about 800,000 gallons to drill a well, up to seven million gallons to frac that well.

Next slide.

Our surface water sources, the Red River which now we have a permit process we talked about. Toledo Bend has been a source for quite a while in the Sabine River. Jim Pratt with the Sabine River Authority has a very simple form that the operators can fill out and get the water pretty cheap and draw water right out of those sources. Again, the cost is transferring the water to the well site.

We established the Water Resources Committee, as I mentioned, in 2003. Look at the membership here. The leaders of the Parishes. The Parish Administrators of Bossier, Caddo,

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Desoto and Webster in it, the City of Shreveport, Metropolitan Planning Commission, LSUS, Sabine River Authority. We had to start out with the local Mayor there. The Red River Valley Authority is involved in it now, and the Red River Waterway Commission, plus we have an oil and gas company that's still involved in our meetings, dedicated to ensuring the supply of good quality water,

surface and ground water for north Louisiana, for industry, for the public and for the environment.
This area of these four sections plus the Sabine River Authority is a pretty large area. It's been amazing to have these meetings, to see people come in the door, literally leave their politics behind, roll up their sleeves and work and deal with these issues for the public. I've just been floored by how well we're represented at the Parish level in these Parishes. People are trying to do the best they can for the public. I've seen it firsthand for about seven years now.
Next.
This is hard to read, I just want to show you a recent meeting just to show you some of the topics. We invited Sparta representatives over. I'm an ex-officio member of the Sparta now.

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I appreciate that opportunity. We had Robert Reynolds come down and talked about the great job they're doing on the Sparta up in Arkansas. We had some flooding issues. We set up this committee to deal with water, surface and ground water. The Commission, of course, is only for ground water at this point in time. Hopefully down the road that will be merged. It's one resource. We should look at it that way.
We have other things like the giant salvinia. Y'all had it in south Louisiana for a while, it's hit really hard here in north Louisiana.
Next.
The Land Rig, which is a publication, it has about 10,000 subscribers, you pay to get that. Top financiers in the world, oil and gas companies called and asked about this issue and actually put in a lot about our committee here as it's dealing with the water issues up here. So we're getting worldwide recognition literally for what we're going on up here.
Next slide.
So going to alternative water sources has been a serious issue up here.

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This is what's hit. Get rich quick, don't sell the farm, just sell the pond water. In almost desperation the companies have started buying water from ponds from people and this has brought on some other issues that the Commission has had to work with and one of those, the next slide will show it. Oh, that's one other thing.
This is a totally new deal now. Leasing water from ponds. It's amazing.
Go ahead.
The issue here is you have runoff into a pond, the landowner can use that water, the landowner can drill a domestic well and put water in that pond for his domestic use. There have been some instances where some people have come by and literally bought the water but have, knowing the fact that actually the water is coming from

ground water filling that pond. That's been pretty much jumped on by the Office of Conservation.
Next slide.
In reality if they do that it's a commercial well. Sixty days pre-notice, for one thing. Has to go through, has to go through the Office of Conservation to be approved, 60 days

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pre-notice. It's an industrial well. Most of the, most of this activity, I think, is not near as bad as when it started out a few months back.
This is a fairly complex slide but just real quickly, not using ground water, but look at the other options we have. At first, a large sustainable river is the best but if it's rainfall it's bringing that to play here.
Next.
So we started looking at how can we help get the companies on to water at the surface. Sabine River is already worked out. A little bit different story on the Red River. I spent about six months trying to find out what it was going to take for companies to draw water out of the Red River and quite honestly, the Corp, like everybody else, didn't have a procedure. It was again, just an explosion, if you will.
So after about six months, next slide, and especially working with the executive director of the Red River Waterway Commission, Ken Guidry we were able to pull the Corp over here to Shreveport out at LSUS, we brought along some operators, some levee people, we had determined pretty much everything that was needed, the Corp

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said we needed, they needed a Section 10 permit. And the idea here was to educate the Corp on what oil and gas is about, and educate the oil and gas operators, and I see many of them out here on that committee, what the Corp gets to deal with. They've got laws and regulations they have to follow just like the State does.
So their first meeting was to educate and try to come up with some kind of a protocol so this could be taken pretty quickly. If we didn't find some sources there would be more ground water used.
Next slide.
At the first meeting we requested that field people or their departmental representatives come to the meeting, not the people higher up the line. We wanted the people that were working in the field and that's exactly what happened. Incredible meetings that we've had. Very productive meetings, I think that everybody involved will say. The Fish and Wildlife is involved, National Fish and Wildlife, the U.S. Corp of Engineers.
Next slide.
First thing we had to do, realize that

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we had different terminology. Started from square one. If you think any of the public have an issue with these different proteges, so does the technical experts in these various fields. Some people work with acre-feet, the lakes, for instance, the Corp and lakes and rivers. A barrel, 42 gallons, oil and gas industry. And then gallons, gallons per minute and flowing.

So we had to work all this out and one of the things that the Corp wanted to know right away is how much is it going to impact the Corp, being able to operate the locks and dams, be able to keep navigation going and also no damage to the levees, especially during high flood events. As that worked out, one of the company's water people actually calculated this up and looked at worst case scenarios and literally there's so much water in the Red River you won't even notice it. And it's also coming through the area continuously.

Just to throw this out in a worst case scenario, seven million gallons of water for a frac job, 30,000 wells, you're looking at 210 billion gallons which is a lot of water. Probably more than that in the long run but over ten years, maybe 20 years.

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Next slide.

As it turned out Chesapeake got a permit, we called another meeting because no permits had come out they were working on, and before we called the meeting the first permit was issued to Chesapeake. So we had that first permit to work with.

Go ahead.

Some things that the Corp, as I mentioned before, right here, those three things are what the Corp is most interested in. The Fish and Wildlife is involved, too. We have three threatened/endangered species along the Red River corridor.

They started to move pretty freely and then it looked like they were being slowed down for a little bit, maybe because of some issues with the Fish and Wildlife. So we, at the next meeting we did invite the Fish and Wildlife, National Fish and Wildlife, the U.S. Fish and Wildlife to come and visit. I think they were a little hesitant to go and meet the industry. All adults at these meetings. We sit down and work with each other and solve problems.

Next slide.

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This is what the pumps look like. You've probably seen them in the area now pumping water out of the rivers, some ponds.

Next one, please.

Again, the other thing is here, it got a good press because we invited the press to come in at the second and third meeting so that you could see exactly what was going on, the public

could see how it was going and they did a really good job of informing the public of how this is working.

In the midst of that, though, I went to a water meeting down at Logansport and there were still some issues and concerns down there. I did make the statement we were working on these issues and I think, I think a lot of people understand this is starting to turn around in a positive direction.

Next one. Just go on to the next slide.

This is the people involved at the last meeting. We were up to about 30 people. The idea was to keep the meeting very, relatively small where we could all work. Every, I hate to say it like this, but every Tom, Dick and Harry wanted to

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get in this meeting after a while, including, we invited Swepco.

Next slide.

This is, I filed a FOIA request, Freedom of Information Act, to find out just how many permits we have on the riverfront. As of three or four days ago we have 30 water withdrawal sites now that are permitted. There are a couple of companies, three or four companies mentioned, many of these are environmental companies that also serve more than one operator. So there's numerous operators here.

Next slide.

The City of Shreveport has helped out. They put a bulk station on the south side of town and they sell surface water from basically Cross Lake. They also have about 13 million gallons of water, treated water from a sewage treatment plant that can be used if the industry wants to use that water.

Next slide.

So our sources of ground water, surface water, recycling, you have to get enough water coming back out of these wells to do recycling, but in some areas of the country that's going to

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be required. It's going to have to happen. And treated wastewater, I mentioned the City of Shreveport and International Paper Company has actually worked with a company called EXCO who have already fraced two wells using this treated wastewater and they were excellent wells. The water was going to be going out to the river from the treatment area. This water now is conceivably going to fracing wells. Excellent idea.

A slide again, the idea here, as we see the industry needs over here but we also have ecological needs, the public and supply needs, over here too and the next slide shows that we, we've got to find, and I think we are getting towards a balance between these two and it's not just oil and gas here, it's all industry.

Next slide.

The Office of Conservation has done a good job coming out with releases about what can be done and how we can save water, giving the public what we're talking about here about the fracing and not to be using ground water, if at all possible, and not to be using ground water to put into the ponds to be sold for fracing.

Next.

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This is actually going to be covered in a little bit, I just wanted to show you real quickly, they've started putting the WH-1, which all oil and gas operators have to file, it's literally like a legal document of that well and on the back side now the operators are giving the surface water used and the ground water used, total water used also.

Next slide.

A concern for many people has been spills, potential spills. The risks, when we come to fracing wells, we're dealing with an issue of geologic risk, I think that's very minimal in this area, particularly this basin. There's an engineering risk, integrity of the pipe, this is new pipe being used, these are large companies doing it the right way. They don't want to have their wells mess up either.

And also spills. This is something that's been a real concern for some people. The companies have put internal policies in play that are very strict on having spills on the surface because we do have our aquifer literally at the surface of the ground here. Petrohawk in particular has an excellent program put in place

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here. They have a zero spill policy on their locations.

Next slide.

Before I go to the summary, I just got some data here that actually gives, there's 30 sites of water being withdrawn. We have an operator here that has this water broken out and this is Chesapeake's. Right now they're at 97.4 percent surface water, 2.6 percent ground water. EnCana is up in the 90s, another big operator, and Petrohawk is at 100 percent surface water.

It's amazing how the industry has come around. I think it's a model for the rest of the country. What we're doing here is being looked at all over the country, and even worldwide. The summary, as you can see up here, some interesting things coming out of this. The operators literally working with regulators in a good fashion, operators working with operators to try to, in the case of water, to try to do the right thing.

The Office of Conservation and the Department of Natural Resources coming out with this WH-1 form and also the reuse of water is

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important. There's still some water being, going through some of the local districts but literally all of them are going out as surface water only, they're not pulling it out of the ground water.

This is a model that we're developing here of everything that's happened over the last several years. At the center of this we need to have, I believe, a watershed type institute involved in it to work with it all, but remember all those little clouds and balloons I showed you before trying to put them together? Again, it's just like sausage, you don't want to see it, you like to eat it, but the next slide should show you where we're at. It's pretty complicated but this is what we're dealing with when we start dealing with surface and ground water issues between industry, the public, everybody involved on that.

Next slide.

I've been showing this slide, I've been asked to give these talks outside of Louisiana. In fact, the largest, the largest association of landmen in Houston asked me to come down last fall to give this talk. They'd asked me for the local chapter the year before. I just gave two talks for the American Waterworks Association, they're

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publishing an article on this, the southwest division is Oklahoma, Arkansas and Louisiana. All of them have Shale plays, but in order to get this, which I believe everybody wants to see that happen, we've got to solve this next slide. And I think we're doing it.

We've literally had some water wars up here but I think we're on the positive side of this and moving forward and you have to be able to thank a lot of people. I thank Commissioner Jim Welsh and also Scott Angelle for the activity they're doing now, coming around and having these water meetings. It's going to be a while today, folks. I've seen them go to 4:30 and Secretary Angelle comes to these meetings to work and solve problems and we really appreciate him coming here to do that. Thank you very much.

SECRETARY ANGELLE: Thank you, Mr. Hanson, very comprehensive, I appreciate your, again, your passion and your commitment in managing the water resources of this state.

I'd like now to go to Item No. 4 and ask the district manager of the Office of Conservation of Northwest Louisiana, the Shreveport office, Mr. Jim Broussard to make a

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presentation on what Mr. Broussard and his staff, what they will particularly do to protect ground water issues when permitting oil and gas wells. Thank you very much, Jim.

And let me say that so much of the drilling activity in Louisiana is in Northwest Louisiana. In fact, ten percent of the nation's drilling rigs right now are working in six

Parishes in Northwest Louisiana. That's a phenomenal observation and every one of those wells has to be permitted by the Office of Conservation up in the Shreveport District, and when we're living in a time of trying to do more with less, your office, sir, has been a magnificent example of folks working around the clock to try to meet the demands of the economy here. So again, I want to publicly acknowledge your help and I appreciate your help.

MR. BROUSSARD: Good afternoon, Commissioners, my name is Jim Broussard and I'm with the local oil and gas conservation office. The Shreveport Office of Conservation covers the 13 northwest Parishes and as you know the majority of the oil and gas drilling activity in the state has been in this region, specifically Caddo,

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Desoto and Red River Parishes and to a lesser extent, Bossier, Bienville and Sabine Parishes.

The local conservation office is essentially an engineering field office staffed with three petroleum engineers and 12 field personnel. We directly interact with the industry in the field at the well sites during the drilling, completion and production of oil and gas wells. If I may this morning, I'd like to review oil and gas well construction basics that are required by the Office of Conservation and how those basic requirements relate to the protection of freshwater sands.

You may have heard of Statewide Order 29-B. This regulation contains most of the requirements which impact drilling and completion operations. Basic rules outlined in 29-B have existed in some form since the 1940s.

Office of Conservation regulations specifically address the casing design of the proposed oil and gas wells. Casing type or usage, casing setting depths, casing cement and casing test pressure are all regulated by this office. In many instances, field operations surrounding the casing-pressure test are witnessed by

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personnel from this office.

On a closely related note, this office also concerns itself with the protection of freshwater sands at the time of abandonment of existing oil and gas wells. Conservation rules dictate how wells are to be plugged by specifying the number, thickness and location of cement plugs to be placed in the old completed wellbore. In some situations, casing above the cement plug is pressure tested or the cement plug is verified by tagging with work pipe.

Basic well construction and well plugging requirements of this office have long emphasized the protection of freshwater sands and the proper isolation of hydrocarbon bearing zones.

Slide three is a list of casing types found in an oil and gas well. Conductor pipe

prevents the erosion of unconsolidated surface sediments, protects the drilling rig foundation and can offer structural support for the wellhead and other casing strengths. Conductor pipe can be driven or run, set and cemented like regular casing. In Northwest Louisiana conductor pipe is usually 16 inch or 20 inch in diameter and set between 40 feet and 120 feet.

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Surface casing is used to support shallow, unconsolidated deposits and to protect freshwater sands. Surface casing can range from five-eighths to 13 and three-eighths inches in diameter and for a Haynesville Shale well it's usually ten and three-quarter inch OD.

Intermediate pipe, usually seven or seven and five-eighths inch OD is used to isolate lost circulation zones and unstable sections of the borehole, and in the case of Haynesville Shale wells to protect against abnormally pressured formations which are encountered within the lower Bossier interval.

Lastly, four and a half, five or five and a half inch conduction casing is installed to provide segregation of the hydrocarbon bearing intervals occurring within a wellbore and to provide a conduit for these intervals back to ground level.

The upper left portion of this slide depicts the typical construction of a Haynesville gas well in cross sections. As alluded to in the previous slide on casing types, an oil and gas well is constructed as a series of boreholes of descending diameter. In the example shown, the

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surface holes are drilled to 1860 feet and then ten and three-quarter casing was set on bottom and cemented back to ground level. The base of the underground sources of drinking water in local Parishes can vary from less than 100 feet to more than 700 feet. Elsewhere in Northwest Louisiana USDW may occur as deeply as 1600 feet.

In every case when an oil and gas well is permitted by this office the base of USDW and the minimum surface casing setting depth have been reviewed by a licensed petroleum engineer.

Another point that can be made by this slide is that freshwater zones are separated by at least three casing strengths and nearly two miles of overburden when fracture stimulation of the Haynesville Shale is performed in a well.

This next sketch is a simplistic three-dimensional depiction of the concentric taping strands that form a well. The conductor pipe is not shown on this sketch.

The next three slides cite specific verbiage from Statewide Order 29-B regarding surface casing and detail Table 1 from our regulation. As can be seen from the table, a Haynesville Shale well being deeper than

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9,000 feet is required to set a minimum of 1800 feet of surface casing which in this area will isolate all freshwater sands.

The Office of Conservation can require deeper casing setting depths. For instance, the least amount of surface casing permissible within the Shreveport district is 200 feet. In many areas of Claiborne Parish a minimum of 800 feet of surface casing is required regardless of well total depth in consideration of the Sparta water sample.

This slide highlights our cement volume requirements. In all cases in Northwest Louisiana cement is circulated to surface on the surface casing strength. That is, the cement slurry caught between the casing and the borehole, extends from the bottom or the shoe of the casing all the way back up to ground level thus isolating the freshwater sands from the wellbore to be drilled below.

Okay. Slide eight. Okay.

This next slide again shows Table 1, but this time with casing pressure test requirements outlined. Before drilling operations can be continued, the surface casing must hold the

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required test pressure for at least 30 minutes. I should also note that a second pressure test of the surface casing is required after the intermediate hole is drilled.

These next two slides site specific verbiage from Statewide Order 29-B concerning intermediate and production casings and detail Table 2 from our regulation. In most cases the volume of cement placed around these casings strength types is based on isolation of the hydrocarbon bearing formations exposed by the borehole.

This slide is also Table 2 but emphasizing the pressure test requirements of intermediate and production casings.

Shown on this slide is Conservation's casing affidavit, a form completed for every casing string installed in an oil and gas well. This form documents details on casing type, size and depth, cement volumes and slurry types and pressure tests. It is signed by the operators onsite representative and conservation field personnel.

In summary, basic well construction requirements providing for the production of

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freshwater sources have existed within the Office of Conservation for decades. Statewide Order 29-B and the minimum requirements of Table 1 and Table 2 have successfully provided for the protection of freshwater sources during the drilling and completion of oil and gas wells and when hydraulic fracture stimulation techniques are performed on the Haynesville Shale.

Additionally, fracture stimulation, shallow for Hosston and Cotton Valley formations in this region, have been performed for many years with no adverse effect to freshwater sands penetrated by the wellbore.

In conclusion, the well construction basics outlined in our regulations have resulted in protection of freshwater sands and the proper isolation of hydrocarbon bearing intervals.

SECRETARY ANGELLE: Mr. Broussard, you made a comment with regards to a licensed petroleum engineer being required to review and determine, I'm assuming review the application and then determine what would be the minimum casing that would be required. Would you be kind enough to go through that one more time? I have a question, I just want to make sure I understood.

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MR. BROUSSARD: When a permit to drill application is received from an oil and gas operator, it's processed through the local office. Our procedure for evaluating that application is done by a licensed petroleum engineer. Part of that evaluation is to look at the USDW, Underground Sources of Drinking Water, something I refer to as freshwater sands but I use those terms synonymously, we compare that to the minimum requirement surface setting depths and insure that surface casing is protecting freshwater sands.

SECRETARY ANGELLE: And that, is that a requirement in your office or is that by rule or some memorandum that it has to be done by a licensed engineer.

MR. BROUSSARD: Well, typically the district manager is a licensed engineer, I am, Jackie is, Bob Gray in the office is also licensed. So we leave those duties, which are very important duties, to those licensed engineers. And I'm speaking from a Shreveport prospective, not the other district offices.

SECRETARY ANGELLE: This is the only one that matters, right, the Shreveport one.

MR. BROUSSARD: Right now that's true.

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SECRETARY ANGELLE: Who cares about Lafayette. The Commissioner would like to address that.

COMMISSIONER WELSH: I want to, we don't have anyone here from Conservation's Injection Well Division but I'd just like to say that the same standards for cement and casing pressure, those same requirements apply to the saltwater disposal wells that we permit. So if you think about it, a saltwater disposal well is pretty much an oil well in reverse. An oil well or a gas well takes oil and gas out of the ground, saltwater disposal well puts saltwater back in the ground. Same freshwater, the underground sources of drinking water, if the well is not constructed properly it would be, could be contaminated. So it's very important for both producing wells and

disposal wells to protect the underground sources of drinking water.
SECRETARY ANGELLE: Thank you, sir. Any other questions of the Commission or Mr. Broussard? Very good. Thank you, Mr. Broussard, keep up the good work. Appreciate it.
(Audience applauds.)

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Okay. Item No. 5 is the update of the Commission from Mr. Gary Snellgrove on some of the things that that organization has been working on.
MR. SNELLGROVE: Thank you, Secretary and good afternoon Commission members. And members of the public, thank you for joining us today.
Slide, please.
These are some topics that we're going to go over here to cover, to update the Commission members and the public with what we've been doing since we last met and over the last year, year and a half since the Commission's been meeting and we've been moving forward with the ground water program.
First and foremost, the topic that we want to talk about is just how we have evolved over time with this program. Here, you know, not too long past, we were granted, through the legislative process, the ability to enforce our rules and regs through the office of the, Office of Conservation due to the Commissioner's ability to assess a civil penalty and issue compliance orders to violators of the regulations. The year later, last year in the session was --

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Change slides.
-- was an act that was passed that is transferring the water well registration and some of the activities or most of the activities in the water resources program that was managed at DOTD to the Department of Natural Resources, Office of Conservation, and this slide here just illustrates some of the highlights there. Part of the act required that the agencies, the DOTD, DNR and the Office of Conservation merged or signed a memorandum of understanding. That was to be in effect by January 1, 2010. Then it was signed on December 30th, of 2009 and became effective January 1, 2010.
Some of the action items there that's going to take place in this merger will be staffing. We're going to, we're in the process now of staffing up with two additional members to take on the responsibilities that DOTD has traditionally taken care of in the State of Louisiana. We're going to hopefully have that done by March 1 or sometime shortly thereafter where we will have at least one, possibly two members of the staff available, trained and ready to go to take on those responsibilities.

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Those responsibilities will include the traditional role that DOTD has played in water well registration statewide for all waters wells that are drilled as well as environmental monitoring wells and also update and management of the database system that they've maintained over time. And in that regard, we're, you know, what we're going to do and we've already begun the process of merging the two databases into one; one centralized, one uniform database for all wells registered in Louisiana. We are actively doing that now, as I stated, with our information technology group in coordination with DOTD's information technology folks.
In addition to that, of course, finally we'll be, once the staff, once we have adequate staff and they're trained then were going to bring the files over, the paper files and locate them in the Department of Natural Resources building to be made available for public viewing and for the staff to utilize them in their evaluation process.
Item No. 4 here, notification to DOTD district managers that's taking place. I've personally contacted and made phone conversations with most of those district engineers that are

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involved in this process. I've gotten some really good feedback from them and we shared some information and so they've given me their confidence that they're going to continue to do and provide the services that are required in water well registration and inspection. As each, each water well that's drilled in Louisiana is currently required to be inspected by DOTD to further document primarily that the well has been constructed properly but also to identify the lat and longs for us too, for us as DNR staff to utilize in our reviews and evaluations of new water wells that are being drilled.
And also, in looking forward in the future, we're going to, once staffed up and once we get in motion we definitely want to review the current regulations that water well drillers are operating under and work with the water well drillers and other stakeholders in the State to get ways that we can make that process a little more efficient, perhaps improve it, update it and get that process rolling.
SECRETARY ANGELLE: Mr. Snellgrove.
MR. SNELLGROVE: Yes, sir.
SECRETARY ANGELLE: This whole idea

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goes back to, I think, some of the issues that either Mr. Coleman or Mr. Mays perhaps, or maybe even Mayor Hollingsworth put on the table at one of our, perhaps our initial meeting in, when we reorganized and I guess that would probably be maybe September of 2008, I'm thinking perhaps August. By trying to have one system of registration and one system of management and, of

course, the law needed to be changed to do that and obviously this happened. And I know it's in its early infancy stages but I'm asking this question from a standpoint of management of the ground water resources, the sustainability of the resources, having the information to be able to give to the Commission and give to the Ground Water Commission the vital statistics, are you beginning to see, and even if it's in the infancy stages, some benefit of having this managed and put together in one area of state government?

MR. SNELLGROVE: Well, yes, sir, and you're correct in back, in the fall of 2008, these, these suggestions, recommendations were forthcoming and they were taken with serious consideration and, of course, followed through. We do certainly believe that improvements to the

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State, a statewide database system will be valuable to, not only to DNR in our evaluation but also to the public and also not to forget our other agencies that are interested in this information, DEQ and DHH. So merging this all into one and having one location to go to to get that information on water wells and environmental monitoring wells that have been drilled in the State, will have its values.

SECRETARY ANGELLE: And I just want to also, for the record, say that this could have very easily been transferred from DNR to DOTD. The surviving agency on this issue is not because somebody was doing a better job than somebody else. Secretary Ankner and myself went through what we believed to be the best thing for the State and he graciously agreed that he thought it would be here but that is absolutely no reflection on any poor performance on the part of the DOTD to do what they were doing, it's just simply a matter we've come to a time in the State where we cannot afford to be operating in two silos trying to manage the same resource.

Imagine if we, in Louisiana, if you went to DNR to get, the operator was regulated by

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DNR but the driller was regulated by DOTD and it wouldn't work in oil and gas production and so on. I'm very pleased, I'd ask that y'all continue to follow through on this and, you know, meet the timelines. I heard what you said about March 1st or soon thereafter, perhaps we could strike the soon thereafter and keep pushing forward for March 1st.

MR. SNELLGROVE: Yes, sir. That's certainly the objective. So with that being said, we have two presenters here today to discuss and provide information of this process, but also another process that's taken place in the development of the Statewide water management plan. I'll back up on this. This is an idea, this will give you a look of what Sunrise, our database at DNR, what you can view from the

outside in sorting and filtering information.
I discussed that earlier about the information technology effort to consolidate and merge the database together. You will be afforded, through the Sunrise system, a multitude of opportunities to sort and filter this data like you haven't had before with this particular system. It will be a lot more opportunities.

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Next, please.
And so the, back to the statewide water management plan. You know, in the State of Louisiana currently we have two, two, two separate contracts that are working in concert with each other. One being the Department of Transportation's state reservoir priority and development program contract that they're, that's been in effect now for at least a year and Mr. Bolourchi will provide the details of that. But this information that's going to come out of this study at DOTD will help, certainly help and will provide an additional knowledge base for the, and add to the, to the effort that DNR has recently awarded a contract for statewide ground water management program, management plan to carry forward into that scope of services.
And Dr. Mohan will be here to provide information on the details of his proposal, of their proposal, his company's proposal to move forward there. So what we're going to have here is two contracts that will feed hopefully off each other, a wealth of information will be provided from the DOTD contract as the other contract begins and at some point the DOTD contract will

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continue and certainly they can build off of the information that's provided off of the DNR contract. So without any other delay, I would like to go ahead and announce Mr. Bolourchi.
SECRETARY ANGELLE: If I could, Mr., just to jump in, for Commission members, you recall that as we've been grinding through the process, it was to acquire some funding to set out and to produce a statewide ground water management program at the 35,000 foot level, the document that we would use over time to govern how we would best have a sustainability of the resources by an aquifer, by geographic area in the State.
One of the things that you all recall that we looked at as well is using surface water resources as a recommended solution to some of our ground water problems. And certainly DOTD has some capacity in that area so you'll hear from Bo on what DOTD is doing in that area, and then you'll also hear from Dr. Mohan on who's representing the contractor that we picked after a competitive process to develop the statewide ground water management program.
Those two things will feed into one another and I will also be announcing to you that

each one of you will get an opportunity to work with one of our contractors who is going to be specifically reaching out to members of the Commission and to stakeholders on what you believe ought to be in a final ground water management plan. What is your expectations, what do you know, what you can contribute. Obviously this type of forum doesn't give you that opportunity. So we were able to contract someone to visit personally with you, visit personally with identified stakeholders and as we go through the next several, seven to eight months we'd have your input, we'd have stakeholder input with people who know how to take that information from you and present it to the professional engineering staff that has, or engineering organization that has been awarded the contract, working simultaneously with DOTD in their management of the surface water, all leading perhaps to a time when the State, when we'll have a comprehensive program and then introduce legislative changes that we need to govern to manage those resources in kind of a robust, comprehensive way. So as you hear the next two presenters I wanted you to have that background. Mickey?

MR. MAYS: Can I back up just a minute and ask Gary if, appreciate the work that he has done on establishing this database but the question I would have is, Gary, can you do a grouping of say all the wells in the Sparta as we got one the other day that was for Lincoln Parish, but obviously what happens in Claiborne Parish, Jackson Parish and Bienville affects all of us parties. But my question would be, can you do a Sparta grouping and send out well notices to every Parish that's in the Sparta when a well application comes in.

SECRETARY ANGELLE: I would say that that's just a technology issue and how we build this system into, you know, how that application is put into one of the fields rather than just have a field for the Parish, perhaps have a field for the aquifer as well. So, you know, that's going to take some resources from the Office of the Secretary making sure that the -- technology, you know. Gary would be, would say, yes, and I'm willing and I want to do it but it's going to take some technology support from my office so I would answer that and say that's something we can do and let's just kind of get together on that.

MR. SNELLGROVE: All right.

SECRETARY ANGELLE: That's a good suggestion. I mean, we ought to be able to manage that information, not just bypass it.

MR. BOLOURCHI: Thank you, Mr. Chairman. Good afternoon, ladies and gentlemen, as the site states, this is going to be basically an outline of the State Reservoir

Priority and Development Program. Since we're talking with gas and oil in here, I just want to make sure that this is the water. This is H2O reservoir, not gas or oil.

I want to cover real briefly, this is going to be really just an outline, the study that we have done in the past year. It's very voluminous, there's a lot the information we have brought together from all the available sources. So today I'm just going to give you an outline.

That outline includes the program overview, goals and objectives, I would provide you with the scope of work and also the deliverables which include basin characterization reports, that's about nine water basins that we brought all the available information from each basin in one report. Application process

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guidelines to help the applicants, how to complete, not only just complete, what information is needed before they put in an application, and this is basically for the reservoirs that are going to be funded, will be funded by the State funds, the State budget.

We will also discuss briefly the reviewers guidelines for those of us that will be reviewing applications using standardized procedures, and finally a statewide prospective on Louisiana water resources. Again, we've briefed you on Phase 2, so today basically will give you an outline of Phase 1 that is primarily completed, we just are working on the reports to make sure we have got it right before we publish the Phase 1.

This study was authorized by House Bill 2 of 2007, which became Act 28 authorized DOTD to study and produce a reservoir priority and development program, for short, RPDP. An RFP for this program was issued April 4th, 2008 and Montgomery Watson Consulting Firm was awarded the contract October 1st for the duration of two years.

Program was envisioned to be similar to ongoing port priority, statewide flood control and

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highway priority programs, programs that traditionally have been going on at DOTD for over 20 years. It's a priority listing of, in this case, reservoirs. It is not a way for us, for DOTD or anyone else to put dots on a map and say, well, this is what we need to reservoir. That is not the purpose of the study.

The purpose of the study is to get all the applications coming in, using a standardized procedure, having a committee of the involved State agency and action, perhaps a U.S.G.S. and other Federal agencies like Fish and Wildlife, to review and allow us to score and put these reservoirs, proposed reservoirs in a priority listing that can be submitted to the State legislature for funding.

So the program has established

procedures for submitting application for the project, evaluating the project and providing a priority list as I mentioned a minute ago. The program would also provide information about the statewide water resources including environmental and other socioeconomic issues.

What's the goals and objectives. The goals and objectives are to develop a process for

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evaluating and prioritizing the State funded reservoir for water supply, flood control, environmental enhancement, socioeconomic developments, recreation and other purposes. It focuses on long-term water supply needs and issues and provides a practical tool for applicants, that's the applicants who put the application in for the development of reservoir, agencies and the State decision makers to facilitate funding of such reservoirs, provide some sound, scientific and economic criteria for evaluating project utilizing best available practices from not only Louisiana, but other states.

Other goals and objectives are to develop a priority system to encourage development of project with best solutions in line with State priorities, provide a high level, easily understood summary of a statewide water resource issues as a basis for evaluating proposed projects and to promote awareness of water resources needs throughout the State. Also it is a goal to provide guidance on long-term water resources management strategies.

This scope of work included a number of tasks including basin characterization. There's

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about nine basins that we have collected all the available data and put it under one, in one report for each basin. Water resources needs assessment. That's basically water resources concerns, issues, navigation, flood control, environmental protection and enhancement, recreational needs and obviously ground and water, ground and surface water quantities and qualities.

Reservoir project evaluation, scoring and prioritization process. These are the, includes in the scope of work.

Project application guidelines. That every applicant can be given that report and they can follow through without wondering what that application should include.

Project reviewer guidelines. That was also with the report, the guidelines for the reviewers. There are various Federal, State and Federal agencies that will be reviewing an application and there will be a guideline form that they all can use if they so choose.

The Statewide water resources prospective. We have brought all the information that we could get our hands on in one report called the Statewide prospective. And also ground

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and surface water modeling, if that becomes necessary.
This is a listing of the agencies that were involved and they continue being involved in this process. Namely LGS, Louisiana Geological Survey; Louisiana Department of Culture, Recreation and Tourism; Division of Historic Preservation; Louisiana Department of Health and Hospitals (DHH); Office of Public Health; Louisiana Department of Wildlife and Fisheries, in fact that's the gentleman sitting to my right, he was involved personally. Louisiana Department of Agriculture and Forestry; U.S. Army Corp of Engineers; U.S. Geological Survey; Department of Environmental Quality, Mr. Paul Miller and his team; Louisiana Department of Economic Development; Louisiana Department of Natural Resources; U.S. Department of Agriculture; NRCS, as well as, U.S Fish and Wildlife. These agencies, they're all involved with the Corp of Engineers issuing a permit.
Basin characterization objectives include information for applicants, resource for the State, consistent source of data for review of applications, identity issues unique to each basin

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and needs assessment which could include concerns and issues, ground water and surface water navigation, environmental protection and recreation, etc..
Mr. Chairman, I've called on Mr. Bill McHie of Montgomery Watson to please come forward and continue the presentation.
SECRETARY ANGELLE: Thank you, sir.
MR. McHIE: Thank you, Bo. My name is Bill McHie, I am the project manager for MWH working with Bo on this project. So we decided to kind of tag team on this and Bo was given the overall authorization and objectives and what I'm going to do is talk a little bit more about details about what's been accomplished, what's been done, these documents that have been prepared Bo has kind of talked about and then more about the Phase 2, what do we see in the next phase of the program.
These basin characterization reports is the first thing that we did. It's very important because it does provide that sound basis of information for everyone. A lot of times people are trying to propose a reservoir and there's information from so many different agencies, DEQ,

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DNR, DOTD, U.S.G.S., so we didn't, we didn't rehash and regurgitate different information, what we tried to do is put it all in one place and use U.S.G.S., the Corp of Engineers, all that type of information, provide references to that information, web sites and links to databases but all in one place and for each basin. So what's represented on the slide here are the sections of

these basin reports that are done. For example, here's the Ouachita just to cover in that report. Obviously the surface and ground water but other things that are relevant to a reservoir possibly being proposed in an area, the environmental concerns with the flooding and recreation and navigation, things that Bo was talking about earlier. So these are the sections.

Most important is the last one, that summary of the needs are needs, issues, concerns of looking at that particular basin. What are the real critical things, just like we're talking about today on the Red River basin. We know the whole fracing operation has a need for water for that. That's one of the key concerns, issues in the Red River, that's a good example.

One of the things I wanted to -- well,

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this will also, as Bo had mentioned, this will be used by applicants because all of this information is kind of, what am I going to get into when I'm proposing something in this area. What are the areas of concern for these agencies. And that's where that input from all of those agencies are so helpful because we put in here, you know, what are the impaired waters, what are the areas where there are wetlands. So in one place you can see all of that for each basin.

I think it's a very valuable tool, not just for this program, but hopefully it'll be used in the future for other things. It's putting together things in one place that have been very, you know, spread out in the past, and it's a consistent approach to that information, too, for each basin. So we think that's going to be a very valuable tool.

And then talking about the application process and the guidance manuals and things. We developed a two-phase approach to the applications and I think it will be clear as I describe each of these why we've done that.

The first phase is a shorter, simpler one. A lot of agencies or people that are trying

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to propose a project, don't have the resources to even do those engineering studies and all the information that would be needed in a Phase 2 application. So the Phase 1 is a very short, initial application, it's initial information, it provides input -- it allows us to send that application, the idea of a project to different State and Federal agencies so they are aware of it and they can give their initial input to whether they think it's a feasible project or, you know, whether there's that fatal flaw or not. That's one of the important things to look at. And, therefore, DOTD will be able to provide guidance back to the applicants, does this make sense, is there something else that would enhance it, would make it better. So in short, this first one is to allow agencies or groups that want to do a

reservoir to be able to get seed money because this application will be used to go to the legislature to get seed money to do the Phase 2 and also to help identify any fatal flaws before using resources in time to put in a full application.

So the Phase 2 is what you would normally expect, that's going to be all the

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engineering studies, the evaluations, the alternative sites and things and that would be, you know, the full application and that is an application for design and construction funds. And that, so there are procedures for how to evaluate those, what information is required as we've talked about and the evaluation and scoring will be done by an advisory committee and will come up with a prioritized list. I think what's important is this committee doesn't say, we recommend this project or we recommend that, it says, based on our evaluation criteria that's open to everyone, and it's well established in these documents, here is the list, the prioritized list of the projects. One, two, three, however many are sold.

So there are separate documents, though, this is the applicant guidance document, which, as I mentioned, we'd talk about, what are those procedures, what are the instructions, what type of information needs to be submitted. And we provided some sample costs and benefit calculations, that's always a difficult part about these, how do you do the cost and how do you compare them, and we've relied on some of the Corp

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of Engineer's standards and some other examples we found from other states to try and come up with a simplified procedure but one that's standardized. That's what's important. And some reference tables, you know, how things will relate and it goes back to the cost of information and, of course, the forms themselves.

So this is a document anyone that's interested in proposing a project, you'll be able to hand this to them, here's all that you need to know and the schedule, the time frame to be able to propose a project.

And then on the other hand a separate document though for the reviewers which has some background information so that they are aware of what the development of the program is about and what's trying to be accomplished, what is some guidance on scoring and evaluating. So I know this is a public document but, you know, we thought to give them a little bit more guidance on how to evaluate this proposal, what is the thinking about what's important and there are some numbers in the actual criteria of scoring of course the public prioritization. What are the permitting requirements, of course, that could be

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a consideration as to comparing one project against another, is one easier to permit than the other. That might have some impact on where it should rank.

Then we have a reservoir feasibility evaluation model which is a simple spreadsheet but allows you to take the location and say, is it even feasible to put a reservoir to hold water at this location based on upstream and downstream flows and things. So it's a very basic, yes, no, fits in. And that's one of these we developed I think will be very useful. And then, of course, some review worksheets so that the people reviewing it can mark off and document the work that they've done.

And the last document Bo related to the prospective report on the water resources. So the basin reports are done on each individual basin although it's consistent among basins. Then we thought what's really important, though, is to take a statewide look at what are those issues because there are some things that are common in different parts of the state and, of course, they overarch across different basins. So an example of that is, for example, there is a ground water

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concern or where the water demand is changing or water quality issues. So those are the types of things that will be in there on the Statewide instead of each individual basin.

And then we also like to provide some input into strategies on water management. For example, just what was presented this morning about this regional group getting together as opposed to the State, you know, maybe having an agency, just this regional planning and management, just like we've talked about. Those are the types of things we're talking about and as Bo mentioned, we're still going through the versions of that so we don't have something to present but hopefully it is an idea of the types of things that will be in that document.

So the status of Phase 1, we've been talking about Phase 1, this whole presentation has been about what's been done in Phase 1. The work is finished other than the final review and the final checking of what's in the final report, for example. We expect that will be done this month or close to that. And the deliverables, as we mentioned, the executive summary of these documents. I did bring a copy, of course, they're

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not for handing out because we haven't finished them, but I wanted to make sure you knew we're not just talking about it but this is an executive summary report (indicating), this is an example of one of the basin reports (indicating). So it's not meant to be a very deep, technical, it's a very -- someone could read this very quickly but it'll show you where that other information is.

It's very graphical, too, a lot of tables, graphs, information so you get a picture, that was the whole idea. So that's an example of one of the basin reports. And then the applicant guidance, a stack looks about like this (indicating).

Remember, there are forms and examples in the back so don't be scared by the thickness of it but the actual procedures are about that much of it (indicating). And then the reviewers guidance of the document. So these are the documents that are getting ready to be completed and will be finalized this month.

And then Phase 2, so what's left under the contract. First thing is to try an implementation of the program and I want to pilot test this process, find a sample project and develop something, we've got a lot of workshops, a

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lot of people who are involved in this and until you really go through it you don't know, you know, where the problems are or what can be done better. So we want to pilot test that and get some input from other people, stakeholders, people who have been working on reservoir projects in the past, for example, or who will be proposing on these, get that opinion right up front. Then there's just some general public information about the program so people are aware of it and what the process might entail and it's going to take some workshops. It's, it's a lot of thoughts about how to do this but until you really sit down and explain it and go through it, just reading it isn't the same thing as going through an example. So that's what we see at the implementation of the whole process. And then in addition to that, there are some technical studies, some things that didn't get done in the first phase and may be important either to the applicants or to reviewers that are trying to determine whether a project is a good project or not. Such as estimated sustainable yields or stream flood characteristics and some ground and surface water models, as Bo mentioned, that was in the scope of where

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necessary or as necessary.

Most important, I think, for Phase 2 is we're awaiting funding which is in the funding proposed for this year, and also, of course, the coordination with the ground water management plan which is coming up next. So we recognize that will be part of the Phase 2.

SECRETARY ANGELLE: Jackie?

MR. LOEWER: I have a question, it may not be directed to you necessarily but you've been engaged obviously that made a request or that someone has requested but maybe to you, Bo, on these applications or review or something, what if without this someone wanted to build a reservoir last week or last year, what process would they use, what process would they use to build a reservoir and how is it different or are you

drawing on that and adding onto it or is this something completely new that's never been done before?

MR. BOLOURCHI: Are we talking about the State funded reservoir or the private reservoir?

MR. LOEWER: Either. Whatever it is where we're engaged.

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MR. BOLOURCHI: Okay. That really, that process will start in the local community. The local community will contact their local legislative delegation, the Mayor, the police jury, whatever, and if they agree, then one of the legislators would prepare a bill and run it through the State legislators and if it passes and goes to the governor's office and gets solved, with a certain amount of money specified. (Indiscernible). So that's an authorization, that doesn't mean it's funded. Then they have to go to the Bond Commission and they would vote on hundreds of projects. There's only so much bond that can be sold.

MR. LOEWER: Right. I understand that process but how does this plug into that?

MR. McHIE: Let me, if I may, one thing that, we didn't change any of the permitting that would be required for the existing, we've incorporate that into this program, into the process. So there's no change to any requirements that you would have to do other than the requirements that we put on to now evaluate it and prioritize it to send it to the legislature. There is some, we tried to build on what's already

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been done. There may be some additional information required but not in terms of the permitting and --

SECRETARY ANGELLE: Let me just jump in, Jackie, to try to address that. Think of it, I believe, as hereto before, you're from a region and you wanted a reservoir, you came forth with a local concept to do something and yet across the State someone was bringing a similar idea in that region and yet in another part of the state those things were, monies were being requested for, taxpayer money to do that. And as I appreciate it that was purely a non-scientific process, okay?

And what this will do will be to document that the legislature will have to bet those requests to make certain that, number one, they're part of a comprehensive plan, they solve water, you know, what I saw some of the considerations, ground water solutions, economic development opportunities, environmental things, I'm just going on my memory there. So it's going to be, you know, like all of us when we have to make decisions in, you know, either our business or our family is, what's important, why it's important and what is the, and what I like that Bo

said so much is that they're going to put it there so that folks can understand what we believe to be the most important thing and start designing their so-called reservoir opportunities to fit what we believe at the State level.

Now, I'm excited and I'm going to do everything I can to influence, and I say that in a positive way, to make sure that ground water solutions are one of the most highest ranked priorities to fund reservoir opportunities and, of course, whether or not we'll be successful, obviously all of us on this committee are going to do what we can to do that. So I know that's a long answer.

MR. LOEWER: So standardize what everybody saying.

SECRETARY ANGELLE: I could have just said we could standardize it.

MR. McHIE: Mr. Chairman, I just have one clarification because you did ask about, what if you don't want state funding. This is only if you're requesting state funds.

MR. OWEN: Well, I think part of the confusion arises certainly in my mind, is to the emphasis on reservoir construction, and there is

no implication here, I take it, that better surface water management invariably involves the construction of a reservoir today. It is true that in characterizing these basins that we can make better use of our surface water reserves or capacities in some cases without the construction of a reservoir itself.

SECRETARY ANGELLE: That's right, that's absolutely right. I think that is a great point and it's not just about going to build more reservoirs as much as it is bringing about something that we have not been forced to do in the State and that is to manage our surface water. You know, what we, I guess everybody certainly understands that, you know, our history in the State is spending money to get rid of water and to protect ourself from water, you know, when you think of, you know, levee districts and those kind of things. So it is, you know, we spend a lot of money on drainage as everybody knows and I'm stating the obvious, but we haven't treated water as an asset, we've treated it, in a lot of ways, as a problem, we need to get rid of it. And now we are perhaps moving into another era so I just wanted to say I think, Gene, that's a great

observation.

MR. BOLOURCHI: Mr. Chairman?

SECRETARY ANGELLE: Yes, sir.

MR. BOLOURCHI: I want to respond to Gene's very point, he brought it up. This, we, we, the DOTD State Agency, is not going to make any decision whether or not a reservoir should be built or should not be built. That's the

legislature's decision. All we're trying to do is put all the available information forward so that the scarce dollars the State has would not be wasted working on the preliminary design, preliminary planning and then goes into permit, permit is not going to be provided. That money would be wasted.

We want to make sure we look at all the facts including the availability of the resources. That's where the scoring is coming in and this is not made of one individual, it's going to be a committee looking at all the facts and scoring. We, as a state agency, we're not going to deny or reject an application, we're going to put it in a priority listing and the legislators will be reviewing that and making decision. That's how it's done with the port priority program, that's

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how it's done with the State with flood control for many years, has been very successful. We want to make sure that state funds are not wasted and, which would put all of us in a position we don't want to be in.

MR. OWEN: It's really a common feasibility stage (indiscernible), is really what it is.

MR. McHIE: Then one other answer to Mr. Owen, because in the cost benefit analysis you are comparing this proposed project with what are the other alternatives. So that's part of the analysis that has to be provided and what is the cost to doing nothing. And that's typical for a lot of federal programs.

SECRETARY ANGELLE: Mayor Hollingsworth?

MR. HOLLINGSWORTH: Mr. Secretary, I want to commend the group for coming up with a plan, trying to arrive at a conclusion and how we can make it a one-stop situation where people can apply for this. I think that's very commendable. I was a little concerned initially when we started that we weren't dealing with the existing lakes and the information that's available there to be

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helpful to us. As you know, we've been involved in a process with Lincoln and Union Parishes to try to use Lake D'Arbonne as a freshwater source and there's been some conflicting information out there. And I think if you had information that would validate some of our ability to draw a certain amount of water out of the lake it would make our job a little easier to go through that process. So I'm pleased to see that we're also going to address existing lakes because we have a number of them in the State that could be utilized.

MR. BOLOURCHI: Twenty to be exact, Mayor.

MR. HOLLINGSWORTH: Sir?

MR. BOLOURCHI: Twenty reservoirs.

SECRETARY ANGELLE: Mr. Coleman?

MR. COLEMAN: Yes, I would just kind of like to put an Amen on what he said. We do, it is appreciated because I think we are beginning to see some light at the end of the tunnel and the other thing that I wanted to ask is, is that, in other words, this is just going to give our legislators better information to make more intelligent and well-informed decisions that they

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might not have had earlier.
SECRETARY ANGELLE: Just like we in the Water Resources Commission are pushing the staff to provide the kind of data that we need to be able to advise decision makers. So I'm very pleased, I want to compliment DOTD for their leadership on this deal and I know the last 18 months we've gone through a lot of slides and a lot of PowerPoints and today is no exception. But if you think of the fact that we got, and we'll hear from the other contractor here shortly, the train has left the station. Our job is to make sure that we keep it on the right track and we arrive at a place that we can all be very proud of, but I would say, go back 24, 36 and 48 months, it wasn't about leaving the station, I don't even believe we had a train. So...
MR. COLEMAN: We didn't have a station.
SECRETARY ANGELLE: Right. So again, you know, I'm reminded that Rome wasn't built overnight and we won't solve this problem overnight but I'm very pleased that, you know, everybody is starting to pull in the same direction. So thank you very much, Bo, I appreciate that presentation.

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MR. LOEWER: Mr. Chairman?
SECRETARY ANGELLE: Yes, sir.
MR. LOEWER: I wanted to ask Mr. McHie, the reports, you showed one, are they all available now or is that the February timeline?
MR. McHIE: The February -- yeah, the end of February. The DOTD is still --
MR. LOEWER: So those will be available to the rest of the Commission members, Bo, and the public?
MR. BOLOURCHI: We provide to whoever, obviously this Commission and member of the publics will be glad to provide. Also we're going to put on the web site, and, Mr. Secretary, we will be glad to provide that on DNR water resources web site as well. I appreciate your comments.
SECRETARY ANGELLE: That's good. And we can go ahead, Gary, and make sure we got a link of that information on the ground water resources portion of the web site and I would strongly urge when you're going through, you know, if you're funding and going to the next task, that you also do what we're doing on this other one is you, if, Bo, if we can work with you all to require that

they reach out to Commission members, you know, there are stakeholders out there that get paid and are going to be available Monday through Friday for you to interact with, the Commission members, with the exception of myself and Commissioner Welsh and perhaps a couple other, Bo and Kyle and Paul, are all volunteering. We get paid to do this and we're going to be available during business hours. Some of these other guys, you know, if you can get enrolled or hold conference calls and make sure that you are pulling on the advice that they have on how we might make it a little bit better and, Glenn, I think you as well, you got a State check as well.

So anyway, if a, you understand that this is important, I do not, with the failure, complete 100 percent failure, if we get to a point and I have a Commission member that comes to me and says, this is great report, and I'm seeing it for the first time and I didn't get a chance to input, you know, what I believe is right and these people were chosen by the organization, in some places appointed by the governor and I just want you all to take advantage but we've got to give them an opportunity to do that.

So let's go on and move on to the next item and, Gary, I don't know if you want to do an introduction to the next item. I'm sorry, Mayor Hollingsworth?

MR. HOLLINGSWORTH: I just wanted to ask one other question. As a part of this process will you be doing anything to prioritize critical areas and needs as far as reservoir locations, possible locations are concerned, giving any thought to that in planning for the future?

MR. McHIE: That's a good question but the answer is no. We're prioritizing projects that are opposed, we're not doing a Statewide master plan that would say, here are good places to put reservoirs. I think that's --

SECRETARY ANGELLE: Bo, but one of the criteria I saw there was as you kind of evaluate, you're going to evaluate what a particular project brings to an area --

MR. McHIE: Oh, yes.

SECRETARY ANGELLE: -- from a critical area of ground water concern.

MR. McHIE: Oh, yes, and when three or four proposed projects come we're going to look at them and evaluate them and rank them but, I think

as I understood the question, the purpose is not to say, here is a good place for a reservoir.

SECRETARY ANGELLE: No, but --

MR. McHIE: But it will come out of the information.

SECRETARY ANGELLE: Well, that may not, I think there's a little twist on words. If a area of ground water concern is a high ranking

priority, then building a reservoir in that area would obviously take care of the problem.
MR. HOLLINGSWORTH: I guess one of the other points or thoughts was if you allow a reservoir in one area that may preclude the best use for that basin, those kind of things need to be taken into consideration.
MR. McHIE: That is part of the evaluation process is looking at what other options and yes.
SECRETARY ANGELLE: Yes, sir, Mr. Coleman?
MR. COLEMAN: I noticed you had an illustration here on the Ouachita River Valley Association, and I know that the Corp of Engineers out of Vicksburg has been wanting to do a study. Would that be something that y'all would

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participate in or would be a compliment to what y'all do or something y'all would work together on?
Are you familiar with that request that the Mississippi River Valley has requested about the need to do a study in that area and the Sparta Commission has endorsed that? It looked like it might be helpful information.
SECRETARY ANGELLE: Yeah, was that, we heard from the Corp in Ruston when we met, right? Wasn't there a Corp presentation, is that the study you're talking about?
MR. COLEMAN: I'm not sure.
SECRETARY ANGELLE: Yeah. We probably need to back up in a second on that and maybe visit and see if we're certainly leveraging, all those good points.
MR. HOLLINGSWORTH: Thank you.
SECRETARY ANGELLE: Okay. Mr. Snellgrove?
MR. SNELLGROVE: Thank you. Yeah, this leads right into the DNR contract that I mentioned earlier for the statewide ground water management plan. This timeline right here shows you where we are in the process and we're very pleased to

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report that we are now at the phase where we've received our request for a contract, signature from the contractor, Ecology and Environment, and that will be, more than likely, hand delivered today to the Office of Contractors Union and the Department of, well, and the DOA administration. And we anticipate about a three week turnover on that.
So as February concludes, the reports from the study that you just heard of, with the priorities, will be concluding and ours will be beginning. So we anticipate March 1st as a start date. And here's an example of -- well, this is the contract, the request for contract, as I mentioned earlier, that has been responded to by the contractor. And this leads us to Dr. Mohan.
DR. MOHAN: Good afternoon, Chairman,

Commissioners, ladies and gentlemen, my name is Mohan Menon, I work for Ecology and Environment. I'm going to talk very briefly about the scope of services and what we are going to provide in the next 12 months for DNR and our stakeholders.

Next.

This is the outline of my talk, some introduction about the project, introduction on

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our firm and team, and objectives and goals. We will briefly visit the technical approach, of course, both project schedule and project organization.

Next, please.

The E & E, Ecology and Environment was founded in 1970 and since 1979 it's been in operation in Louisiana. We have 25 global locations as well as 23 national locations in the United States. We have over 1,000 personnel with different expertise and 75 professional disciplines. Our company has got a policy that is single (indiscernible), which helps us to reduce the cost of doing business and we network between our professional expertise so that we can get the best out of all of our people in our organization and that's going to help this project to come to fruition.

Next, please.

Little introduction and background about this project. In the title, "Statewide Ground Water Management Plan", that was funded by Department of Health and Hospitals. In 2002 there was a document produced titled, Assistance in Developing the Statewide Water Management Plan,

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which actually promulgated Act 49 of 2003 legislative session which addressed surface and ground water management issues and conservation issues. And also Act 49 mandated development of a program with some of the very important elements; such as, current and projected demand, water use conservation program, alternatives to ground water use, incentives for conservation, alternative technologies, and education and awareness.

In fact, this project is going to address all these elements in detail like the Chairman talked to you a little bit about, a 35,000 level and we will provide you with some recommendations so that you can make sound business decision.

E & E's team is Ecology and Environment, of course, and we have Louisiana Geological Survey with us, and a Houston based Texas company, INTERA is also part of our team. We have, like I said before, we have lot of experience in Louisiana, we have almost worked with all Parishes in the State. We have a successful template of water resource planning, nationally and internationally. And as you all know Louisiana Geological Survey has been find a

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premier institution of the State. They have done a multitude of research projects and studies all over the State dealing with different aquifers and they have access to data that we need for this project.

INTERA has been selected because they have been recently associated with the Texas water plan and various other ground water plans and especially a person called Barney, Barney Austin. He will be one of our technical advisors for this project. So the whole of this team is bringing local knowledge of Louisiana, we are bringing national and international expertise to the table, and also we have a lot of experience in the water planning programs, so to speak, out-of-the-box innovative thinking we expect and we wholeheartedly integrate multi-disciplinary approach to this program.

Next slide, please.

Objectives and goals. Basically this plan is actually about judicious and sustainable use of water sources in Louisiana. Like my former speakers, you know, talked here, until now we did not feel a necessity for doing that. After the (indiscernible), the Haynesville Shale, the demand

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for water for radius aspects is a paradigm shift and we need to really think about this and come up with a plan. So that is why it's a judicious and sustainable plan.

What we are going to do is we are going to update the baseline conditions of the resources and the needs, then come up with some alternatives which are cost effective, alternatives of ground water and alternatives of ground water itself. Then to do that, this plan is going to address several things. We are going to review and update and modify the current system of water use reporting and monitoring, then we will develop a little more streamline, if that is necessary after our review, to the current system of permitting the process. Then, as I said before, we'll come up with some cost effective alternatives then we will look into all the aquifers that's available to us and how we can network those and cost effectively use those water sources for (indiscernible) stress savings.

I want to mention, a lot of people talked about technologies alliances and our database availability with the State and other organizations. We are looking to an existing

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system of database management and GIS platforms and see how we can efficiently integrate the available data that's available right now and the future data that's coming to us in a consistent manner so that we can increase our efficiency and accuracy.

One other important factor, especially for the coastal aquifers, we have to be mindful of

the needs of water, not really for use of government but also for the restoration and our protection measures. We have a master plan, State Master Plan for protecting and restoring the coast of Louisiana, so we are looking to, in a cursory manner and make sure that what our recommendations that we forward to you is consistent with the coastal Master Plan.

Next, please.

Technical approach. We have nine tasks to implement in a year's time.

First, we are going to review the historic and current available information followed by water use analysis. Obviously the data is going to give us the tools to do that analysis.

The review of the ground water well

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prior notification and evaluation procedures. Currently that is effective but we want to make sure that that is the most adequate procedure for what we are trying to do for the future for the short term as well as long term, and we'll come up with a feasibility and development of alternatives and prioritization for a short term which is five years and then 25 years projecting from that. We have to have a cost benefit analysis and prioritization of these alternatives. If it's not cost effective, they are not going to be able to make it.

We are looking into funding opportunities, they're existing, do we have any other ways of attracting more funds, do we know other ways of doing that which is needed to implement these recommendations.

Also tax incentives are available so we are looking to best management practices. They are available nationwide, statewide and local levels. Those practices will be recommended to you and we can maximize the benefits of that.

Definitely we will have a public hearing task. We will have four public hearings getting input from the stakeholders and accepting

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their comments and incorporating that into our report preparation. So those are the nine tasks that I want to accomplish.

Next, please.

Task one, review of existing data. I'm only going to talk about very important points here. We will be looking into the existing source of data, both source as well as the use. We'll be depending on U.S.G.S., other institutions and universities for that. We will be coordinating with DOTD to get the latest information that they are compiling right now. Then this information will be packaged into different synoptic views by regions or water sources. We need that for further tasks as to three and four.

When I say, will consider impacts of subsidence, it's not for the entire state. Some

of the places we have had subsided space we've had sea level rise. We have seen saltwater intrusions along the coastline. And definitely we may have some changes in the climates, droughts, high precipitation times, and we want to see how those things are going to affect ground water table. Those considerations will be given in our primary process.

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And definitely waters, they don't recognize political boundaries of the Sparta ground water. There are a lot of, lot of work, of new ideas have been experimented in our neighboring states. Probably we will look through this project as a whole system approach so that we don't, we are not constrained by anything else. We will look into our neighboring states, we will look into the opportunities of cooperation between our state and the neighboring states for prevention of the ground water (indiscernible). So it's very important that we look at it as a whole system and not just as a political boundary of Louisiana.

Next, please.

After collecting that information and putting it into a usable format for different tasks, we'll use it for water resources use analysis. And one of the most important things here is actually to look at the population growth and the trends, the movement, where the projected water demands is going to be, where we have the most stressed conditions right now, where it's going to be in the future. During this stage we can also identify some data gaps in terms of

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monitoring some vital statistics as the Chairman pointed out sometime ago, and we'll make recommendations to how the Parishes, local entities and the State can modify or reform some of these monitoring, at first, to collect all the adequate, vital statistics for our monitoring and in the future some adaptive management.

Next please.

Three, review of ground water well prior notification procedure. There are three stages for this which is the receipt of the application, review and evaluation phases. We will be concentrating on streamlining these processes, make sure that all adequate information is there for the State to make a decision (indiscernible), it is in a form by which it can be inserted into on-line without much delay and, you know, as I said before, which would help us increase efficiency and accuracy for data base evaluation.

Next please.

Four, feasibility study. This task actually looks at feasibility of alternatives, to come up with some prioritized measures of products or alternatives to our ground water,

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cost-effective alternatives. So we are going to use the currently availability, ground water availability models. Then we'll create appropriate tools such as maps, areas of water decline, saltwater intrusion areas, alternative sources, like the former presenter talked about (indiscernible). Probably in this, by doing this task we can also prioritize some of these locations of storage depending upon where we need the alternative downwater use.

Also we will look at this plan and go through this plan keeping in mind that the sustainability and water quality objectives. It is important to have some reduction strategies, water use reduction strategies, water and wastewater recycling and then putting back in the system. And also if you are using ground water from one area, what other mitigation measures that we can implement so that we can put that water source back into that. These recommendations based on this approach will be based on like I said, areas of greatest stress, water use trends in proposed service areas, demographic projections, saltwater intrusion, of course, unit cost for water treatment, preservation of the

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aquifers, and most importantly education and awareness.

Five year and 25 years short and long term alternatives. While we are doing this we may come across the inadequacies of downwater available models. We don't know that right now. We will be able to give you a recommendation whether we need to have more reliable, more accurate ground water availability models but we will use the existing ones and go along with it.

Also when you do the cost-benefit analysis for all the alternatives identified which is going to be consistent with our DED, Department of Economic Development methodology, which shows, is a requirement for the project, we will strictly adhere to that requirement and make sure that (indiscernible).

And water quality monitoring program, ground water level monitoring program, I know we have that in place right now, but we will definitely look into it and try to address it if it is not adequate.

Now, financial feasibility analysis. By any means I am not a financial expert. I have a couple of great experts in my team which are

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going to do this. But I'm going to talk a little bit about it briefly.

We are going to do this financial feasibility, whether it is feasible or not. That makes sense. We will calculate cost/benefit ratios. Then we'll do a prioritization of these implementable elements for short term and long term. When you do the financial feasibility

analysis we make sure that it calculates complete life cycle cost for each alternative, that includes, initial capital costs, O & M, and replacement costs.

And also, you know, when you do general cost illustration projects we look at different alternatives and we select one of those alternatives based on radiant aspects. And one such condition is that, you know, how this area is going to behave without this project. So with project/without project (indiscernible). Similarly, with alternative/without alternative how will it be impacted, in terms of benefits as well as cost. So those elements will be tucked into that process.

In the right hand side you can see a flow diagram which describes the basic elements of

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this analysis. Plus we will be looking at demand, demand forecasting, that will give us an estimated gap between future demand and supply from existing sources. Which further help us to come up with some understanding of supply gap. And then we will do the financial/economic feasibility analysis.

I will talk a little bit about what is uncertainty analysis, which is the sensitivity and risk analysis, which is part of this financial analysis. And then some other factors such as reliability, quality of ground water and then we'll have it set alternatives cost effective (grand scope) for short term and long term.

Next one.

We'll be doing the Task 6, which we will be talking in a short while, which is the funding sources, the information from the task will be used to compare against the available cost effective alternatives and see how we can prioritize them. Some of the financial terms like financial internal rate of return and weighted average cost of capital, these terms are part of this financial analysis which I am not an expert to talk about.

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The financial analysis also will have inflation adjusted terms in (indiscernible) with the standard operating procedures which consists of the DED methodology.

Next please.

Uncertainty analysis. To begin with we will have the base case assumptions. So the base case assumptions (the likely values) the revenues and the costs for one or two or maybe an alternative (indiscernible). And then the sensitivity and risk analysis are used to understand (indiscernible) sometimes (indiscernible) from ground water source. Sometimes the cost of them can change over time. So we want to make sure that our analysis captures all this. And that that making sure process is done by conducting sensitivity and risk analysis.

Next, please.
Task five, which is lower portion of this right hand side which is cost-benefit analysis and prioritization. As I said before, differing ground water, input/output, different cost for each alternative. Then we have a term called Average Incremental Cost that's calculated the benefit-cost ratio, which will in fact give us

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the supply curves of the alternatives. For short term and long term different alternatives will be considered in isolation or maybe as glued together to, to, to give us what we need in terms of supply.
So that's how we are going to develop the short and long term alternatives list, prioritized it through the feasibility study on it. Possibility ratio and other factors. Which I talked about a little bit before. Which is quality of the ground water, durability.
Next, please.
Funding opportunities. That's six, we have existing Federal, State and local funding and are they available. These funding sources are usually used for elements such as water treatment, transmission, distribution and storage for surface water, reclaimed water processing and reuse.
Next please.
There are funds available for water conservation areas, such as Build America Bonds, WRDA (indiscernible) in 1992, Environmental Infrastructure. And there are some other available sources of funding too. So we'll explore all of those and make sure that it is

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applicable to our Louisiana conditions and definitely make recommendations including those available funding opportunities.
Next.
Now, internationally, nationally and locally we have many programs like Water Independence Now (WIN) program. In Australia they have a State Ground Water Policy. In Texas some stringent district rules and permitting programs, ground water replenishment programs. Once we adopt these kinds of concepts and tailer them to our needs, probably we can extract more funding opportunities for the State.
Next please.
Tax incentives. Tax incentives are available for best management practices. If we adopt best management practices we can get tax incentives. So that can be used for implementing our project measures. Sometimes some of the incentives are designed to encourage private sector participation. Like I said, conservation and water reuse will be tax incentives. There are popular other nationwide programs available. We will explore into those programs and adapt them for our needs here. But however, having said

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that, the focus would be given for these incentives, you know, in terms of efficiency are my main concerns as well as financial concerns and considerations. Whatever we do, we are going to target the intense water use sectors, the areas that are stressed the most and then (indiscernible).

I talked a little bit about public hearing before. Public hearings that are planned and part of this project. We will try to do presentations based on science and technology and trying to convey that message to a different cross-section of our society, our stakeholders. The major goals are introducing the projects and processes, the different elements, build that precious relationship between what we are trying to say here from this side to that side. Identify issues, stakeholders concerns and set up the dialogue between (indiscernible) communities. Kind of doing it make sure that everybody's opinion, comments are taken care of.

We learn a lot from these kind of public hearings. We have done that before. It is such a useful technique to understand each other and make our project better.

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Of course, all these findings and accommodations will be put into a draft as well as final format. A draft will be circulated among you or the State board list of (indiscernible). Those will be incorporated into it. Public comments will be taken and received and considered and incorporated into a report. A stand alone executive summary will be prepared and submitted. And the final report will be prepared and submitted as per the standards implemented by (indiscernible).

The schedule actually is for 12 months. We are planning to begin this project the first of March and will be completing all the nine task and submittal of the final report by February of 2011. As you can see all these tasks are almost independent of each other, flows one after the other, except for six. We need to do that a little early to help out task four, which is feasibility study and recommendations for short and long term analysis.

And each task is (indiscernible), they have (indiscernible) at the end of each task. And we intend to work very closely with our partners, with DNR. It is not like we disappear today and

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after six or eight months we come up with a report. We intend to have constant dialogue with them, constant (indiscernible) and that is how it is going to be. So we have interactions. We want to make this project a workable project. Thanks.

That's why we put together this great team; Ecology and Environment, Louisiana Geological Survey, INTERA, we have a highly

educated qualified experienced hydrogeologists, geologist, economist, state public program and public outreach personnel, of course, GIS Specialists and other technology stuff. We have 79 disciplines, 1000 people as staff resources. We'll use them on an as need basis and make sure that you get a good product and we hope to exceed your expectation.

SECRETARY ANGELLE: Thank you, appreciate it. Any questions? Mayor?

MR. HOLLINGSWORTH: I gather we're going to have an enormous amount of information and data to work with (indiscernible) of information management. Is there any plan to, again, doing something about the problem of developing water sources and resources for aquifers that are in decline? And I know you've

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got to have a lot of this information to begin that process but your does not include anything about actually helping this problem right now other than having the data; is that correct? Did I misunderstand?

SECRETARY ANGELLE: Yeah, well, let me try. I would think that certainly any information that's available in the early stages that could be useful rather than waiting to turn over to a final report that could help us, then that information would be forthcoming to the Commission and to the Commissioner, obviously to take action as opposed to waiting nine months if there's a low hanging fruit that we can pick.

MR. OWEN: I have a similar question, Mr. Chairman. In outlining -- well, first of all, let me just establish a basis. There is no ground water management problem. It's a series of hundreds of individual problems. It's the problem for the Mayor at the Sparta Aquifer, it's the problem in Baton Rouge with the Southern Hills Aquifer, it's the, there are specific problems in the approaches in ground water management are specific approaches. And I'm interested, when you were talking about valuating in particular,

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feasibility evaluation alternative, I was having a hard time grasping what alternatives you may be referring to because if you're referring to approaches to suggesting a specific approach to a specific problem, that's exactly what we were interested in. But I'm, I think that unless, unless the result of your study is going to be suggesting a frame work such approaches and suggesting legal frame works to implement those approaches, this is going to be a little wide of the mark in what we intended going into this.

DR. MOHAN: You are right, sir. Our approaches are going to be based on specialty problems and still it's going to be from a 35,000 level outlook. Like I said, we'll be using the data to come to that understanding where exactly we have problems. We know that right now but we

have to pinpoint it. Declining (indiscernible), too many water wells and aquifers, recharge problems, replenishing problems. So once we identify that, we can study some alternatives like using surface water or maybe transporting some of the water from other neighboring aquifers which are not being used as much, maybe a combination of both. So once you accept that kind of a

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combination, then you wonder how feasible it's going to be cost wise. That's why we are talking about Financial Analysis of all those alternatives in terms of practical implementation.

So it's based on real-time problems, specific problems and alternatives can be reserved or as a group of alternatives together.

SECRETARY ANGELLE: Okay. Obviously this is the beginning of putting the meat on the bone that we've all been trying to work towards. I want to specifically acknowledge Rick Holton for your leadership, sir, on this whole matter starting back three or four years ago. The epicenter of ground water concern in this State has been Lincoln Parish, so to my friend from Lincoln Parish, you continue aggressive leadership, asking the right questions, demanding more state government. I think it's what got us here. I don't think there's any question about that. You've done it very professionally, I appreciate it.

This study cannot be paid for if it were not for our legislators who absolutely worked for things to happen and I know we introduced them but, again, I want to acknowledge Representative

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Carmody, Representative Little, Representative Burford, Representative Smith, Representative Morris, Senator Cheek and Senator Shaw all who came here, among other duties that they have, to say now is the time for us to move forward.

So obviously this is big, this is the next evolution, God speed in making it happen and I'm willing, if you all want, to take a 15 minute break or do you want to continue to plow through?

MR. MENON: Thank you.

SECRETARY ANGELLE: Go ahead and recess.

(The proceedings were at ease.)

SECRETARY ANGELLE: If I can get the Commission members here we'll go ahead and get started. If we could, we are going to go ahead and call the meeting back to order.

Okay. Item No. 5-C, item No. 5-C is the Katrina and Rita water well damage assessment and we'll go through, Mr. Snellgrove; is that correct?

MR. SNELLGROVE: Yes, sir.

SECRETARY ANGELLE: All right. And we have, through the rest of the items on five, plowing forward. Thank you, Mr. Snellgrove.

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MR. SNELLGROVE: So last time we met we discussed the GEC contract, the GEC contract that concluded with a report that identified damage to water wells due to Hurricanes Katrina and Rita south of I-10 along the coastal Louisiana areas and with that information, the report identified and prioritized the wells that were shown to have sustained some level of damage and they ranked them as far as high, low and medium priority. And we approached, with that information we approached Mr. Paul Rainwater with the Louisiana Recovery Authority and in doing so we've had encouraging discussions with Mr. Rainwater and now his successor, about funding, the possibility of funding an approach so that we can go in and address these damaged water well locations. So the latest that's been reported back to us is that it appears that this is an eligible expense that we could tap into from the Louisiana Recovery Authority and they are currently now seeking unallocated funding resources for that.

Next, please.

SECRETARY ANGELLE: How many wells were inspected?

MR. SNELLGROVE: You know, I don't have

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that.

SECRETARY ANGELLE: How many were high to moderate risk, do you know, remember? Was it like 20 that were high risk?

MR. SNELLGROVE: 20 high risk, somewhere around there and --

SECRETARY ANGELLE: Oh, to the left, okay. In other words, what you meant to say is shut up and read. I understand. Okay. So I saw the e-mail, we're going to continue to pursue, I want to make sure the Commission understands and take away here, we're going to continue to pursue some LRA eligible funding, I know it's kind of fast, the first two or three casts, now we've got to see if we can nail this down so we can go back and P&A those wells that are risks to the aquifer, right?

MR. SNELLGROVE: Correct, that's correct.

SECRETARY ANGELLE: So hopefully we will get an e-mail before too long and be able to announce to the Commission members that that's done and we'll move forward. All right. Next item.

MR. SNELLGROVE: Okay. Also one item

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of interest that Mr. Hanson had discussed earlier was, of course, the implementation of the fraced water supply and drilling rigs supply of water well reporting requirements now that this slide here represents. This is the form, Mr. Hanson's presentation also went into a little detail on this so I won't go into great detail on this particular aspect of it, but it is required and it

was required as of October 1 of 2009.
Next, please.
This requires operators to report the water sources and the volumes that they use. It was issued, of course, on September 15, 2009 and it was made effective or enforceable October 1, 2009. It will provide to us a valuable management tool in reviewing, in assessing the water resources as they're used for this Haynesville Shale play, and of course it will provide invaluable statistics.
Next, please.
This graph here depicts the information that we have derived from compliance with that requirement for reporting.
SECRETARY ANGELLE: I would like everybody to pay particular attention to this.

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This is the first time in the history of Louisiana the State of Louisiana can put this kind of data up on a graph.
MR. SNELLGROVE: And what this, this is reporting for 59 of approximately 300 wells, gas wells that have, have been issued fracing permits. Now, I guess I should back up somewhat. Every frac job that is in the State of Louisiana, not just the Haynesville Shale, every frac stimulation job is required to be permitted by the Office of Conservation. And in doing so, once the permit has been issued and at the completion of that work permit's activity, the operator is then required to report that information, a work history report, which I show in the previous slide, back to the Office of Conservation to show what activities were done in regard to that permit. And this is where we're capturing this water, water use data. So what you're seeing here is the first of the statistics that we were able to put together for this meeting that shows where the water resources are being drawn from. So of note here, frac water for fracing purposes, as you can see, surface water is the predominant resource that's being utilized at the rig locations. Also note that for

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a drilling rig, the actual drilling of the well itself, the gas well, that ground water is the predominant water use, but note on the pie graph that as a total volume of water used, surface water volume is by far, you know, the greatest at 71 percent and, of course, the rest of the percentages there lay out.
So that was the main issue and the main point that I wanted to make, 59 wells recorded to date out of 300 permits that have been issued, they recognize that there will be a lag time, you know, this has all begun as of October 1st, 2009. Some of these jobs, of the 300 that I'm referring to, may have been issued here in the last month, perhaps even in December and it may not have concluded yet. So operators are required to report this information 20 days, 30 days after the

completion in order to get this report in. So as we get more of this information in, we're tracking it, we have an Excel spreadsheet, I believe we can improve on that data, you know, the way that we manage that data in and into the office but needless to say, we are, at the moment, getting this information, putting it into the spreadsheet and crunching the numbers and we'll continue to

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report this.

SECRETARY ANGELLE: Okay. So from the order being effective on October the 1st to January 22nd there were 300 work permits that were issued by the Office of Conservation to authorize a fracing process. Of those 300 you have received information back on 59 WH-1s, and you indicated there will be some lag time, so this will be a report that we can expect to see every meeting, correct?

MR. SNELLGROVE: Yes, sir.

SECRETARY ANGELLE: And I heard Mr. Hanson read an e-mail or some information that talked about some companies at 75 and some at 80 and some at 95 and 100, this is, this goes back to October 1st, so we would expect based on those names that we heard today, we'd expect those numbers to climb, okay? We'd expect those frac surface water numbers to climb because obviously back on October the 1st perhaps not all of those companies were using at the 85, 92, 100 percent that we heard today. If they continue to do what they're doing now, recognizing that those companies that I heard today represent a significant amount. For the Commission members,

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there are six energy companies that represent 72 percent of the Haynesville Shale activities, okay? So, and I heard some of those six companies today. So if they are doing what they are saying they're doing and they are reporting it on the form, then we should begin to see over time that 71 be, you know, grow to 80 or whatever the number is as time marches on.

MR. SNELLGROVE: I got the same information, feedback as you did, yes, sir, I would expect that the volume of fraced water, surface water for fracing purposes should increase.

SECRETARY ANGELLE: Okay. Are we going to be able to soon, before too long, throw up on the board, not from Mr. Hanson reading the e-mail that he's getting from the company, but will we be able to show in three months what we're getting from each company and this is aggregate, but to show what each company is doing from a percentage wise?

MR. SNELLGROVE: We can certainly do that. It would be helpful if we could actually get this information out of, a little bit more efficiently out of the district offices into Baton

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Rouge and be able to work with that within the Oracle database versus, you know, getting paper copies and transferring that information into an Excel spreadsheet.

SECRETARY ANGELLE: Tell me what resources you need so we can help but I think it's very important for the Commission. Again, we got six companies, 72 percent, I'm pleased to hear companies come up here and say the great things they're doing with their water, I trust, we need to verify and it's time to start issuing a report card to the public.

MR. SNELLGROVE: Yes, sir. We'll do it.

SECRETARY ANGELLE: All right. Thank you.

MR. SNELLGROVE: Okay. Next slide, please.

Yes, and previously to implementation of the WH-1, actually I think it was on October the, now that I see it, not previously but right about that same time period we were also receiving complaints of, and I believe Mr. Hanson touched in on this also, domestic water well owners offering their water or selling their water to engineers

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for frac water purposes. So what we did back at that time period was we issued this information here that Mr. Hanson reported correctly, that should this occur, then the domestic water well owner, you know, is required to report this information to our agency and give us prior, 60-day prior notification before so that we can evaluate that location before he is to engage in that activity.

Of course, if he's already doing it then and we find that through the complaint, then we'll ask him to hold, get us the information that we need and then we'll evaluate the location and make a decision at that point whether or not that well can be used for those purposes.

Next, please.

MR. HOLLINGSWORTH: Can I ask a question?

MR. SNELLGROVE: Secretary.

MR. HOLLINGSWORTH: Do we have any kind of validation process for reporting what water is used on these wells?

SECRETARY ANGELLE: I think that's the next step. Obviously we're putting this in a form of an affidavit type deal. I doubt that this

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water is being metered, it's probably way too much volume to meter. I think it's a, you know, flow volume per second calculation type stuff, but we'll continue to drill down on that so that the information can be, you know, I'm assuming personally one of the things that we would do is we would go out and we would audit and again, some enforcement action there but that's certainly

another step.
MR. HOLLINGSWORTH: Okay. Because from looking at it and it looks mighty good.
SECRETARY ANGELLE: Right.
MR. HOLLINGSWORTH: Real good.
SECRETARY ANGELLE: Right.
MR. HOLLINGSWORTH: Unless every well was drilled next to a body of water.
SECRETARY ANGELLE: I know the companies, I know the companies have, you know, I've met with the companies and I know the companies have made significant investments to where we were a year ago on this process, and I believe by those numbers but we have a duty and responsibility obviously to investigate.
MR. SNELLGROVE: Okay. This next slide is going to give you an update to the Statewide

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water well notification audit and enforcement actions that the agencies engaged in starting back in January of 2009. We created a schedule as you see here. I need to note that, please recognize that on your handouts, it's going to report that to date 25 Parishes were audited but in actuality that number is 21. So to date 21 Parishes have been audited, all through the Carrizo-Wilcox, the Chicot and the Sparta as this slide depicts.
And moving forward in the schedule, we've got in January, of course, we're in February now so we need to catch up, we need to go ahead and take care of the Baton Rouge area, and then in February more of the forward Parishes and move forward to St. Tammany in March. We do believe that by mid February we should be through the January list and by the end of February caught up with the rest of February or all of February and should be caught back up for March.
Next one.
And this is a breakdown of the actual enforcement actions that were taken by Parish and it's pretty self-explanatory there but the numbers are, you know, varying depending on the location or the Parish in the State and this activity in

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regard to both the drilling industry as well as agricultural or irrigation on what we're finding. But these are the, this is the data that, these are the number of actions that we've taken.
Recognize that these are just, these actions singularly may represent more than just one state non-compliant water well. These actions are taken to the water well owner and the water well owner may have multiple wells that were not reported to DNR but were reported by the water well driller and to the DOTD or the database.
MR. COLEMAN: The fact the wells that say (indiscernible) drilled in the same place, for example, or actions you're taking, whatever, is that public record somewhere what those actions taken are?
MR. SNELLGROVE: Sure. Each -- what

those actions are, are, by the statutory mandates that were provided, you know, or authorizing the Commissioner to take enforcement actions, his actions are taken in the form of either a notice of violation or a compliance order. So those are written, you know, actions that are sent out to the water well owners and they are definitely a matter of public record.

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MR. COLEMAN: In other words, we would hope that most of those would be compliance rather than non-compliance.

MR. SNELLGROVE: Yes, sir, you would, that's the game is to get those that are not currently in compliance today with -- and what we've found is actually that, you know, this serves two purposes. One, it notifies the water well owners that they have a violation out there and it gives them the opportunity to resolve that problem but it also educates them at the same time as to our existence and what it is that we do and how we do it so that in the future they can avoid, you know, getting that notice again. And I would also state, as I have with each one of these visits, that, you know, we're going to continue to do this and unfortunately we're going to continue to have enforcement actions that we're going to have to take. However; to make a point clear that should a water well owner have a situation where they know they haven't provided the information required in the notification process to our agency, if they do so before they get caught in the audit we will not, you know, penalize them for that.

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I mean, what we want is to get the well information in, evaluate it and the issue resolved. If we can do that without issuing a compliance order or notice of violation, that's where we want to be.

SECRETARY ANGELLE: But having, having the drillers regulated in the same shop as the owners and kind of being able to manage that a little bit better, we would assume that while we're trying to take care of some backlog for registered items, we're assuming that, you know, some cowboys may try to go and not do it the right way but for the most part we should be starting to narrow the opportunity for non-compliant folks, right?

MR. SNELLGROVE: That's absolutely correct and especially with the oil and gas industry. And what we have found that, you know, very early in the process, before we even started the Statewide audit we went in and focused in on the areas of ground water that were of concern, there were three areas of ground water, that was our first areas of the state that we focused in on non-compliance water well registration, you know, not only because of the fact that they, they

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needed to report the water that they used to us, but because they were indeed, you know, the areas of ground water concern in this water aquifer. So that was the primary focus in the beginning. And in doing so, there were several operators, oil and gas operators that were located in those areas of ground water concern that received those initial notices and the next thing you know we're getting, we're getting paper coming in from all directions from those operators.

So that reiterates my point that these are, you know, they're notices of violation, they're compliance orders, they're enforcement actions but they're also, you know, educational tools that's beneficial to moving forward.

SECRETARY ANGELLE: I think, Mickey, what we did, based on your recommendation, we sent an e-mail out, as you recall, to every oil and gas operator in the State saying, you know, this is the law of the land, you, some of you obviously are not aware of it but, you know, now we're enforcing this and that kind of helped start putting people into the shoot to be processed.

MR. COLEMAN: Can I ask one more question? Is there some place where when these

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wells are permitted and drilled, whatever, that there's some effort made to make sure that if they're no longer used that they are capped and properly, what's the right word, plugged and abandoned, taken out of service?

MR. SNELLGROVE: That's a good question. The DOTD water well regulations require, and I hope I answer this correctly, I might be off, but at a point where a well is going to be plugged and abandoned, the State will be notified of that, as the driller that's doing that activity must be licensed and he must report that activity to the State and that will be then inputted into the, into a database.

While there is no requirement out there that says you have to do that to my knowledge. There isn't. There's not an end game to the life of a well, of a water well. I think it's the water well owner's discretion when they decide they want to P&A it and just P&A it, but when they do they have to, that information is reported, reported and recorded.

MR. COLEMAN: (Indiscernible) contamination of an abandoned well.

MR. SNELLGROVE: Well, now abandoned

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would be assuming that we don't have an active water well on it. And that certainly is something that's an issue.

SECRETARY ANGELLE: Let's look at that and let's look at some best management practices throughout the nation between now and the next meeting on that, would the DOTD, being already in on that, you know, and that's going to take change

in a law probably, okay, and, which, you know, that comes with the economic impact. So let's just kind of give the Commission members that information.

MR. SNELLGROVE: Yes, sir. Okay.

Moving on to some of the most recent efforts that we've put forth out on the public outreach and education aspect of the program. We met with, successfully the NRCS folks, Natural Resources Conservation Services, I believe it is, back in Alexandria, I think it was sometime last fall, if not sometime earlier. I think it was in October. We met with these folks, with their engineers from their various districts and provided to them information about what it is that we do and how we go about doing that and we educated them, brought them up to a level of

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knowledge of our requirements.

In doing so, they're actively involved with a program where agricultural interest, irrigation wells, water well owners, what have you, can request funding through their, through their federal program.

Part of their federal program requires that all state, federal and local requirements are met before they issue the funds. So this has been very beneficial in us being able to educate through the NRCS, the agricultural community about what it is we do. And when we left this meeting, it wasn't but, I don't know if it wasn't maybe within 24 to 48 hours that we started receiving the phone calls and it's been very, very effective and we certainly appreciate all the efforts that the folks at the NRCS have done to maintain this level of compliance.

And what we've done on this is, you know, recognize that some of these, what we're working on right now is the backlog, and so what we're hoping here is is that moving forward, before the NRCS gets to a point where the well has already been installed, they'll stop, meet with the water well owner, and inform them of our

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requirements and they'll come through to DNR and do what they need to do to notify us and allow us to evaluate, get them in compliance and then notify back the NRCS process control.

The LSU Ag Center staff education effort that we've set, we've already initiated that process, I've spoken to their staff and I've been provided an itinerary, if you will, of events that they're going to be participating in over the next six months, eight months, and we're going to partner with them and attend at least, you know, some of these events and get the message out even further, deeper into the agricultural community for those who are not say seeking funding that would get the information through the NRCS.

This was part of our overall effort to dig down into the grassroots of this problem

because that irrigation wells are one of the major categories that we weren't getting water well notifications for. So it's an outreach and it's an educational effort to train the trainer, if you will, with the Ag Center folks so that they can help us get the message out and at least notify these folks, the water well owners who they can come to to get them involved.

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And then thirdly, here very recently the Louisiana Ground Water Association, which represents water well drillers in the State, held some seminars, held a two-day seminar. Mr. Jeff Jones and myself went on two separate days and provided detailed information about who we are, what we do and most importantly, as they had questions, what was going to happen with the memorandum of understanding on the water well drillers, DOTD regulations, and so we answered all the questions that they had for us on those two events. We got a lot of positive feedback.

I think we reached out, between Jeff and I, I know my, the numbers I was told was 130 or so that was in attendance when I went, and Jeff went, I think he had similar numbers, maybe up to 150. So we were able to reach, very effectively to these water well drillers at this event.

Next, please.

Oh, and, of course, we touched on this last time and we're going to improve on this process, but I believe Mr. Coleman and some of his (indiscernible) interests, you know, approached the Secretary and the Secretary came to me and said, hey, we need to get something out here to do

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an e-mail distribution process. Immediately, you know, thereafter went to our IT group, which they put together this program now that we've got this e-mail distribution process whereby any interested party seeking information on water wells that are being submitted to the Office of Conservation for evaluation during our, you know, in compliance with our 60-day prior notification process can receive this information now via e-mail notice at the point where the paperwork comes into our office, it gets entered at that point and upon hitting the enter button you get your e-mail notice. And at that point in time where we deem the notification form both technically and administratively complete, we issue it a number, hit the enter button, then you get a second notice.

And what we're investigating now is the possibility of linking the final written documentation that concludes this process, which is the Office of Conservation's written notification or letter that responds back to the notice.

Currently that information is being provided, it's on our Sunrise, it's on our

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database, it's under an area called document images. It may not be very user friendly so I've spoken to our IT folks and I've asked that if they can help us to do so to try to have a third notice here where we, once that document is imaged, then it will automatically send out notices to those who provide e-mails for us for those particular Parishes. So I'm hopeful in that my initial conversations with the IT folks are indicating that this should be doable.

SECRETARY ANGELLE: Mr. Mays?

MR. MAYS: I'd like to thank Gary for doing a good job on this. I have a couple of questions. One thing that occurred recently on a notification that we got for drilling a well in the Sparta for fracing an existing well in Lincoln Parish, and I think Ms. Wyatt, the president of the Lincoln Parish Police Jury, will talk at the public comment part in opposition to that. But if the, if we can get a time frame where we can, we didn't have a chance to pass a resolution because of the time difference. So, I guess if there was a time frame between A and B in some manner that we would be able to respond to that from a public standpoint.

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SECRETARY ANGELLE: This first e-mail you see, the first e-mail that the Parishes get is, is synonymous with the receipt of the application which by law is 60 days prior to our requirement, do you see that permit; is that right?

MR. SNELLGROVE: That's the requirement that we, their anticipated date of completing the well should be 60 days after the date that we've actually received it.

SECRETARY ANGELLE: Let me ask it another way. By the time you get, you send out the first e-mail and the time that you actually process what it is you have to process and you're ready to send out the second e-mail, can you give us a general, is that 21 days or 30 days?

MR. SNELLGROVE: Well, it certainly will vary from case to case but for the most part, it's, you know, it could be as quick as a half a day or it could take a couple of weeks, up to 30 days. If we need additional information then the process may last, you know, a couple of months.

SECRETARY ANGELLE: All right. So depending upon the complexity of the situation and

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your ability to process and the timeline, we're under no requirement to use those 60 days, the companies are under, the applicants are under, by requirement of the law and rule, to give it to us, to give us that time, but through efficiency if we can turn it over, you know, within a couple of days, then so be it. So we might want to look at, Mickey, what I'm hearing is a, you know, some time

period.
Now, I'm certainly willing to say, you know, putting it out there, but I'm going to have to have some reason here, you know, different Parishes are going to receive this information and process it differently and, you know, whether it's a, whether it's a, I don't want to slow down economic development but at the same time I want to give folks who want to weigh in an opportunity to weigh in. So let me kind of figure that out.
MR. MAYS: Okay. Well, I mean, obviously, you know, you've heard Mr. Hanson talking with the Sparta situation there and for a well to be drilled there in the Sparta for a fracing, we would be opposed to it but we'd obviously would like an opportunity to at least express our opposition.

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SECRETARY ANGELLE: Now, what I'm perhaps thinking is that we could maybe have a rule that in the area of ground water concern --
MR. MAYS: Right.
SECRETARY ANGELLE: -- that there must be at least a blank day, time period between issuance, to receive an issuance. So that would take care of those areas that we extraordinarily are interested in in providing that feedback. We'll work on that and I appreciate the comment.
MR. OWEN: Mr. Chairman?
SECRETARY ANGELLE: Yeah, yeah, go ahead, Mr. Owen.
MR. OWEN: I'd also like to join Mr. Mays in complimenting the department on the effectiveness of this e-mail notification. At an earlier meeting, though, of this committee, we had raised an issue as to whether or not one of the criterion that should be considered, a criterion that should be considered is the feasible availability of surface water in lieu of the application for the well for ground water.
There is nowhere on the application or the e-mail that we received that that is shown as to be not available or not feasibly available.

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And I wondered if that refinement could be indicated on the e-mail to show that this is now currently being considered.
SECRETARY ANGELLE: Well, I would say that I think we could certainly ask the question under current, under current statutory authority. We can certainly ask the question in the evaluation, has surface water alternatives been used. I don't believe that the department has the authority to turn down someone who is making a request for drilling a water well and having to answer that answer as no as a requirement.
So I'm not saying it's not good public policy to look at that but I don't think that those authorities exist now to require somebody to look at surface water alternatives and if the answer is, is no, say, well, you know, until we

get that from you, we're not going to issue you a permit. But I hear what you're saying, and it's those kind of, you know, details that we need to start grinding through.
I personally think it's a good idea to ask the question so that we can, again, bring you data that says, you know, 100 percent of the people, 75 percent of them answered this way or

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that way but to require it, I don't think, I don't think the statutory authority (indiscernible).
MR. OWEN: Well, if we had some basis, Mr. Chairman, perhaps we could get the staff to suggest to require that because I think in ground water conservation ultimately that the feasible availability of surface water has to be considered.
SECRETARY ANGELLE: I agree, I agree. So let's look, gentlemen, between now and the next meeting, statutory authority, changing forms asking that question and we'll kind of go through it. And I want to comment, Gene, this whole e-mail process was your idea so, you know, it's a start.
MR. COLEMAN: I'm getting some e-mails and I appreciate it.
SECRETARY ANGELLE: You're the star committee member of the quarter.
Okay. Good job. Are we ready to go to Item 6; is that right, Mr. Snellgrove? Are you done with Item 5?
MR. SNELLGROVE: I'm done.
SECRETARY ANGELLE: All right. Item No. 6, Louisiana Rural Water Association, Mr. Pat

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Credeur, a great partner for us, Pat's done a great job and give him an opportunity to address us.
MR. CREDEUR: Thank you, Mr. Commissioner and Commissioners. I was asked to talk to you guys briefly about what Louisiana Rural Water does. We, first off, go to the next slide, we were established in 1978 with the National Rural Water Association. We have a, offices out in Kinder, Louisiana, we assist all water and wastewater systems in the State of Louisiana.
You can go to the next one.
We first got our funding from the United States Department of Agriculture and National Rural Water Association as well as the EPA. We train all water and wastewater operators in the State of Louisiana as well as doing onsite training and technical assistance.
Go on.
I've done decided I'm not going to be up here very long, guys, because you've been up here long. Most of you know --
SECRETARY ANGELLE: You're getting more popular by the minute.

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MR. CREDEUR: Most of you guys know about Louisiana Rural Water anyway.
Go ahead.
Some of the subjects that we teach all the operators out there is the safety, safe drinking water program, enforcement bacteriological sampling, operator certification programs, water leak detection, wastewater plant operations and so on and so forth.
Go ahead.
Our trainings are done along with the Louisiana Department of Health and Environmental Protection Agency. We do these training sessions geographically across the State of Louisiana to make sure all of these operators can come to our training sessions and they don't have to travel maybe 50 or 75 miles.
Go ahead.
We have an annual conference that, for the last ten years, we've putting on in Alexandria, Louisiana at the Riverfront Center. You can see that we have anywhere from 120 to 130 exhibitors and we pull in about 1500 water and wastewater operators as well as Mayors and councilmen and decision makers.

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Next.
The exhibitors come from all over the state and the United States. We have chemical companies, tank building companies, pumps and motor businesses that come in and show their wares and we also have these same people talk to the operators to teach them new industry. At our conference as well we do kind of what we call Oscar night, so to speak. We acknowledge all the water and wastewater operators in the State of Louisiana for their operation of the water or wastewater facility. As well we acknowledge and we thank State and Federal agencies as well.
Next.
Again, as I said, we're funded by the EPA. The EPA training program, I have a specialist that takes this and takes all the programs, all the trainings that we do and sets it geographically within the state. We also have a source water protection program that helps delineate areas around a well site and as well in a Parish-wide area as well.
Next.
State programs were funded by the Department of Health with the very small water

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system training program and the Louisiana Compliance Initiative Program. Those two programs, the VSWS program helps us train the smaller waters systems with the population of 3500 and below and again we go to them. The Louisiana Compliance Program, we've been having that program, it's going to be a process but we've been having the program for about 15 years now. This

program has circuit riders that travel throughout the State working with water utilities that have been out of compliance. And what we do is we try to teach them how to stay in compliance with the safe drinking water program and we do that along with Glenn Cambre's staff as well.

On the Rural Water Energy Conservation Program, that program is funded out of the general fund but it's managed from the Department of Environmental Quality. The money we get there, we do water leak detection, infiltration surveys, that's blowing smoke in the sewer lines. We also have sewer camera work that we actually put cameras in the sewer lines to look for large breaks. We pull water meters from these utilities and we test them for their accuracy to make sure that the meters are working correctly and they're

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collecting the amount of money they're supposed to be collecting and/or their customers aren't getting overcharged for it.

This program has six employees. We still have a waiting list for about 6- or 700 utilities in the State that we constantly work on and this program helps these utilities in the State probably save close to $5 million a year. That's helping them not having to call a contractor to come in and do this work because we do it for nothing.

Next.

Some of the things that we do on onsite technical assistance is water and wastewater onsite assistance, smoke testing, leak detection, sewer video camera work, we also do rate structures for these water utilities. We try to bring them into the 21st Century. Believe it or not, some of the utilities in the State of Louisiana are still selling water for $10 a month for an unlimited amount of water, so we're trying to get them into the 21st Century. And we also teach them hydroflushing. A lot of times if you see a lot of discolored water coming out of your tap, it's probably because they do not have a good

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flushing program.

Next.

We also try to help out the utilities that are having problems with, electrical problems with pumps, motors, so on and so forth.

Go ahead.

That is your meeting. I want to talk, I was fixing to say, I know I don't have a meeting next. I knew that. I also want to say one thing.

After the four storms, our State Association took the initiative along with the Department of Health and DEQ, to go out there and work with all the water and wastewater utilities that had been damaged by Katrina, Rita, Gustov and Ike. We have worked with over 1300 water systems within those four storms, and that means getting other state associations from out of state coming

in here, bringing in personnel, bringing in generators as we were hauling our generators around to keep these communities up and running again.

We started a sister association called LaWARN, and that stands for Louisiana Water and Wastewater Agency Response Network. It's a utilities assisting utilities aspect during a

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natural or man-made disaster. We have a 140 utilities that belong to LaWARN and work closely along with U.S. EPA, the Department of Health and DEQ as well.

We put out a quarterly magazine, if any one of you guys on the Commission would like to have one, you don't get one now, if you'll call my office, I will be glad to put you on that mailing list and get you one and be glad to help you out in any kind of way I can. Any questions?

MR. HOLLINGSWORTH: Thank you.

MR. CREDEUR: Thank you very much. If no one understood me, I know Scott Angelle did.

SECRETARY ANGELLE: I got you. Great job, Mr. Credeur, appreciate all the good work y'all are doing in your department there. Okay.

We're going to go on and, to Item 7 is to announce the next meeting date, April the 7th which will be in Baton Rouge and you really need to be in Baton Rouge as we are going to be in the legislative session and I will be having to stay close by. That was also subject to some late cancellation but for now we'll go ahead and notice March 7th.

Item No. 8 is the public comments. Do

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we have the cards so I can read them into the record?

I said March, I'm sorry, April 7th.

PUBLIC COMMENTS:

SECRETARY ANGELLE: We're going to certainly give everybody an opportunity to speak, we have been at it for now four hours. I think it will be appropriate to give everyone five minutes, an opportunity to present. We have one, two, three, four, five, five folks have turned in cards and I have one that someone had to leave early and asked me to enter into the record which I'll do at the end. I obviously don't want to have to be up here. I'm sorry? I'm sorry?

MR. SNELLGROVE: Also the union county rep would like to speak also.

SECRETARY ANGELLE: Sure, okay. You got a card filled out? Obviously, I don't want to be up here saying, your time is up. We're going to be as gracious as we possibly can and we're all going to try to respect one another.

So the first person I have is Ms. Alice

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Stewart. Ms. Alice, if you would, please, come up to the microphone here and thank you for being here.

MS. STEWART: I'm Alice Stewart, I serve on the Sparta Commission.

SECRETARY ANGELLE: If you would, ma'am, just turn on the microphone and pull it up a little closer so we can record you.

MS. STEWART: I want to thank you all for all for the hard work that everyone has been doing I'm quite impressed(indiscernible). Louisiana is moving forward in so many different ways. And we appreciate your taking the time and trouble, I am and others here I'm sure, to hold meetings throughout the State and hear comments from the people. You don't have to. And that leads to my request, that in recommending a State Ground Water Management Plan, you provide for effective local input into ground water use decisions.

Mr. Mohan's extensive report, which I appreciated, on the development of the Statewide plan had maybe two words I was looking for related to local input and these were management practices. And I'm hoping that a lot of thought

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will be given to that. The Temporary Ground Water Law Act 446 of 2001 specified no specific number of districts and required the State to seek consultation of local people. Then the stakeholder task force had to study the Fistomeyer consultants report, assistance in developing the Statewide Water Management Plan and heard testimony, and at one point this task force supported the Fistomeyer recommendations on essentially a state and local co-management plan.

And that's similar to the cap of what's already in Louisiana, the relationship between the State and the Capital Area Ground Water Conservation District which the Sparta Commission has sought to follow that model.

And what happened was, some representatives of some of the sectors in the State wanted more thought be given to this. A lot of thought and not to rush into any one management structure. So what's seems to have happened is that none of the recommendations for effective local input found their way into current law.

Act 49 of 2003 states, the Commission may direct the Commissioner to designate up to five regional bodies composed of local

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stakeholders. Such bodies may gather data and provide local input to the Commissioner -- Commission and the Commissioner.

In other words, no more than five regional bodies, if formed, may give input to the State. That's it. So I'm just asking that a lot of us, a lot of thought be given to local input as this plan is being shaped and hope that a lot of

stakeholders will be consulted about this.
And second, I wanted to comment on the permitting of wells. The permitting of large volumes of water to be taken from our declining Sparta Aquifer for salt only leaching has disturbed many of us who are trying to restore our aquifer as our duty to generations to come. And just to keep the current overdraw rate from increasing, we're already overdrawing constantly, to keep that rate from increasing, some of us are suggesting that in the freshwater Sparta, and not those just little blocks that are defined currently as areas of concern, but in the freshwater Sparta there should be no permitting of new wells or new use of existing wells until a ground water impact study has been conducted which study determines that no surface water alternative

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is feasible.
If no surface water alternative is feasible, I think anyway the user should pay a fee to offset the cost to others who will have to serve and develop surface water alternatives. This recognizes that whether or not in or near a primary recharge area and whether or not neighboring wells are immediately affected, all activity within the Sparta affects freshwater availability throughout the Sparta and it recognizes that water taken from a declining aquifer cost money to someone and withdrawers should pay.
Thank you.
SECRETARY ANGELLE: Thank you very much. Thank you, Ms. Alice. Okay. The next one is Mr. John Nelson with the Desoto Parish Waterworks District Number 1. Thank you, John, good to see you.
MR. NELSON: Good to see you, Chairman Angelle. Thank you, Committee members, for coming up to north Louisiana to meet up here. I would invite you to drive through Desoto Parish instead of going through I-49, just come through Mansfield and look at the amount of truck traffic and water

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related traffic we have in Desoto Parish. It is a problem, not only for water, but for traffic and infrastructure as well.
I wanted to bring up the issue of the definition of surface water. I believe that we heard from representatives of the industry today that they're using very little ground water in their frac. I believe there is a definition of surface water and ground water that we need to look at a little bit closer. My job as administrator of Waterworks in District 1, I'm on the ground and sometime drive upwards of over 200 miles a day and never leave the Parish of Desoto. I see the wells that are still in existence that are filling up huge ponds. I see the pumps that are sticking into creeks and bayous that are taking water that's not permitted into

these areas, and we certainly have reported some of this and I know some action has been taking place on it but, gentlemen, it is still happening in Desoto Parish and probably in some related areas too.

We are still receiving the permits application from the Department of Natural Resources and I appreciate those permits coming

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in, but by and large, most of them are still coming in as frac water permitted wells. As a matter of fact, if you looked closely at the two examples that we saw on the screen today, both examples of water well permits that we saw were for frac water supply. And I understand that just because it says frac water supply, they don't necessary use them for frac water supply, but it leads me to question why would they permit it for frac water supply if they did not have some intention of using it for that.

And then I would ask, has a permit ever been denied, has a water well permit ever been denied in the State of Louisiana? That, I don't know. That would be, but anyway, we're going to, we're going to continue to remain vigilant in this task that we face ourselves with, protecting the ground water, not only in Desoto Parish but also all over the State.

Of the, on the pie chart, I thought that was a really, really good information but based on an average usage of seven million gallons for fracing of a well, there was only 18 wells that were portrayed on that chart up there and yet 20 percent of those, by that chart, were using

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ground water for fracing. I think that number is still a little bit high and I know those numbers, there's a lag time in getting all of that information in there, so I know there's some things that have to be done there, but I think that is very, very good information, I'm looking forward to it.

The last thing I would have is we're auditing a lot of things, we're auditing permits. Until we get to the root cause, until we are actually auditing the drillers themselves to be sure that every hole that's put in the ground is permitted, I don't believe we're going to have an accurate picture of what we have going on in Louisiana.

One of the greatest businesses you can get into in Northwest Louisiana right now is water well drilling. You'll see, and they've got some really, really nice rigs out there and you don't buy that kind of rig just by drilling an occasional well. And so I know there's some statutory limitations on that but I believe that some efforts need to be made at the State level where we can actually audit the well drillers to then make sure that those holes in the ground are

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being properly permitted and everything.
And again, thank you for your work on this, Commission. I know these meetings are long because people like me get up here and just tend to talk, go on forever but I do appreciate all the work that you gentlemen are putting into it and we look forward to meeting with you again.
Thank you.
SECRETARY ANGELLE: Thank you. And, John, I appreciate from time to time the opportunity to visit with you in bringing up some of those good ideas.
Just real quick, I personally would respectfully disagree about the seven million gallons every, and I certainly have a tremendous respect for Mr. Hanson, he knows that. All the literature that I've read, it's more along the three million gallons, and if you take 59 wells and you round them up to 60 times three million, that's 180 million gallons and I think it was about 176 million. So we got some tweaking to do, we got some, and I think it goes to Mayor Hollingsworth's question of, you know, how much water are we really using and the process of giving fines.

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And also I know you and I had a conversation with regard to why are they permitting wells and, with obviously the cost of money and time to permit those and then not using them based on their assertions that they're using 90 and 95 percent surface water, why are we still having, you know, wells permitted. That's a great question and I was glad you put it to me.
I went back and checked and the permitting of the wells, I suspected, is not the absolute indication that it's absolutely being drilled, as I appreciate it, it's kind of an insurance policy, if you would, in the event that surface water is not available. I'm trying to capture that data to show, in a more real-time basis, if those wells are actually being drilled but, again, that takes closing the loop so keep on doing what you're doing, keep on pushing us and holding us accountable. You're on the ground, you've got some, you know, obviously some great advice and we appreciate that.
Thank you very much.
Mr. Phillip Lane.
MR. LANE: I'd like to reiterate some comments that the people have made before me and

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I'd like to thank you for holding this meeting up in Shreveport to give us an opportunity to comment and make our thoughts known. I'd like to further, some of the same things that have been addressed earlier I'm probably going to go over, but I'd like to maybe bring a little different viewpoint to it.
Mr. Nelson pointed out about 18 wells

that the water reported represented by the 18 wells and probably, Mr. Angelle, you're probably right if the fracing used to be done the way it was when they first started and that was doing around four to five fracs per horizontal strip. They're now doing anywhere from ten to 14 and when you go up on the number of fracs, obviously you need more water. The seven million is more in line and if you look at that, that comes out to about 21 wells using ground water and surface water.

And then that brings up another point on the subject. The, in talking with an operator, they have no way of knowing if a person who is supplying water from a pond that they may have, if they're actually replenishing that water with a well. So I suggest that your data is a little bit

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contaminated.

In fact, I think you've got probably less surface water percentage than you think about at this time and can account for. Somewhere on that form, I realize that this is not a, something that you can police or whatever but if you can ask the operators, a drilling operator, if he has knowledge if the source is being replenished from wells, if he's getting water from a pond, is it strictly pond water and not being replenished, you know. Otherwise you're never going to get any good data and you probably won't get any good data even if the question was open.

But, and I'm also a representative from Caddo Parish on the Sparta Aquifer and in the last two meetings that I've attended, there were four permits that were, that I became aware of and each well produced water at the rate of 480,000 gallons per minute -- I mean, per day -- and that is being used to leach salt mines over around Arcadia. And at the same meeting that I was at, a gentleman from a private company that produced, was in the woodworking, producing wood products, they were talking about they had taken their own resources and they were taking and saving about 800,000

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gallons a year by not pulling water from the aquifer. Actually, I guess, reconditioning the water too so it could be used in their plant from a pond that they had.

And it seems counterproductive in an aquifer that is an area of concern, in my opinion, is the critical, quotation goes with it, that area of concern. If you end up pulling out, you know, let's see, it would be two million gallons a day for those four permits and this company, you know, is proud to be saving 800,000 gallons a year from the Sparta and then there are other private entities in the area that are trying to conserve and not draw water from the aquifer.

But to just arbitrarily permit wells of that magnitude, what kind of impact studies or what kind of consideration goes into permitting

something that draws that much water a day, 480,000 gallons. You know, I mean, there over in Monroe they were very, very happy if they were able to use wastewater in that plant, that packaging plant. And that was going to save them like six million gallons a day or something like that, in that neighborhood and that was going to help reduce the amount of water drawn from the

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aquifer.

Also the Sparta has got saltwater encroachment, you know, it's coming in from the east. So the Sparta has got serious problems and it seems counterproductive to take and permit wells of that magnitude, you know, and just, without especially having feedback from the people that are living in that area.

That's all I have to say.

SECRETARY ANGELLE: Thank you, Mr. Lane. Would the staff go ahead and provide to Mr. Lane the decision making process that was used in the subject that he referenced? Thank you very much. Okay.

Ms. Johnson with the Union County Water Conservation Board. Good to see you, neighbor.

MS. JOHNSON: Good to see you. Thank you, Secretary Angelle. Hi, Bo Bolourchi and Mr. Welsh, Gene Coleman.

First of all, thank you very much on behalf of the Union County Water Conservation Board and Sparta Aquifer in south Arkansas, north Louisiana for your financial support, for our monitoring network. We are continuing to strengthen the partnerships between north

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Louisiana and south Arkansas to monitor the Sparta recovery and it is recovering, although there are only a couple of real-time monitoring wells in north Louisiana. The one in Junction City has since shown a 18.3 foot rise since 2004. That's closest to the major cone of depression where we released some pressure on the Sparta. The one at Spencer, Louisiana which is purposely placed at the outer edge of our monitoring area and closer to that cone of depression that's moving kind of eastward, or north, northwestern, I guess, in northeast Louisiana, shows only a five-foot rise, but it was falling at a pretty rapid rate prior to this project and now it's our project. So thank you very much for that.

Thank you, too for your support, Chairman Coleman, for our $300,000 federal appropriation request. We did receive that and so with it we'll be able to monitor the Sparta's recovery for another couple of years. Congressman Alexander signed on with Congressman Ross from the Fourth District in support of that appropriation. It is very unusual to get an earmark that a lot of people like and people like this earmark.

With some of that money we hope to

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establish two new facilities, an educational display well at the Arkansas Museum of Natural Resources in Smackover, Arkansas, and we hope, with the help of Ruston and the people at Louisiana Tech and U.S.G.S. Louisiana, we hope to do the same thing on Louisiana Tech's campus thus incorporating, if you will, a real-time well in Lincoln Parish and expanding our Louisiana network into Lincoln Parish.
Last but not least, please come visit us. We will feed you well, roll out the red carpet, the Jon boat, the pirogue, whatever it takes, please come see us. And, Mr. Coleman, I think others who have been there will tell you that we will show you a good time and show you our water facilities and introduce you to the industry that has converted from ground to surface water.
Last but not least, we're having a Super Bowl party Sunday at my house and we are cheering for the Saints.
Thank you.
SECRETARY ANGELLE: Thank you so much. Appreciate the great work that you are doing and the partnership that you've developed with our folks of north Louisiana.

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Ms. Teresa Wyatt, Lincoln Parish Police Jury. Welcome, Ms. Wyatt, good to see you, ma'am.
MS. WYATT: Thank you. Good afternoon. Thank you for allowing me the opportunity to address the Ground Water Resource Commission. Special thanks to Mr. Mays and Mayor Hollingsworth for that passionate support for the preservation of ground water. We appreciate you.
On February 9th, which is the next scheduled meeting date for the Lincoln Parish Police Jury, I will be submitting a resolution asking that members of the jury object to permitting the new taking of large volumes of water such as for saltwater dome leaches unless an impact ground water study shows that a surface water alternative is not available.
The jury will be reminded that as public servants we are compelled to protect the quality and the quantity of water for those citizens that we serve.
Thank you.
SECRETARY ANGELLE: Thank you very much.
Jodee, with the Louisiana Oil and Gas Association, Bruyninckx. Can I buy a vowel?

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MS. BRUYNINCKX: Yeah.
SECRETARY ANGELLE: Good to see you, thank you for being here.
MS. BRUYNINCKX: My name is Jodee Bruyninckx, with Louisiana Oil and Gas Association, the office here in Shreveport. I promise to be brief. We did submit a letter to be included on part of the record. I think that all

of you Commissioners should have a copy of that in your folders. Thank y'all so much for having this meeting up here and giving north Louisiana and Shreveport, the heart of the Haynesville Shale, the opportunity for the community to come and hear what's going on and to be able to express our views to you. I can't tell you how much we appreciate that. Again, I said I'll be brief.

I just want to let you know, we have an E&P group up here that comprises operators that hold over 80 percent of the lease acreage here in the Haynesville. This E&P group meets monthly, usually here in Shreveport, sometimes in Baton Rouge, to talk about all aspects of the drilling process and what's going on here in the community. It's one of the largest things that we've talked about and continue to discuss is the issue that

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you're here discussing today and that's water resources.

It's obviously a number one concern from everyone here. No matter what we bring to the table, if there's not freshwater resources then the community can't have economic development and we certainly do understand that. We had the opportunity to work with the State, to work with local municipalities such as the Parish and city government and to work with other water resources groups like Gary Hanson at the Red River Water Management Institute and then his Ground Water Resources Committee in Northwest Louisiana.

In doing that, we've been able to make a very robust and diverse water sourcing portfolio. Gary talked a lot about it and you've heard Mr. Snellgrove talk about the different options that we've been using. But again, we continue to use water surface, surface water sources always remaining vigilant to ensure that the water is coming, that it's truly surface water. It is not something that's being pumped out of the ground and into ponds. That remains a big concern for us.

Through Gary Hanson and the group that

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he discussed earlier, we've been able to work with the Corp of Engineers and the U.S. Fish and Wildlife Service to obtain some Red River water permits to take water out of the Red River. It's a viable source, we're able to use it for fracing, it's replenishing and it's not a potable water source. So we're pleased to be able to do that.

In addition to working with the Office of Conservation and under their direction, have been using the Red River Alluvial Aquifer which is also not a drinking water source, but it's plentiful. We've also been able to do, under the new Office of Conservation rules, water recycling. We're able to take the water that we pump down into the well that comes back, we're able to source that all together as one and recycle it for use in another well. It's a procedure that's used

in other states that we're very proud to be able to use here now.

We also have companies that are partnering with other industries. For example, International Paper here has a partnership with one of our companies and wants to have partnerships with more of our companies to use their water, their produced water that they

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generally dispose of that we can have as frac water sourcing, and so it's a win-win situation for both industries.

We do so out of an obligation of good stewardship, not because a state entity has come down and through their regulations have said that you are not allowed to use ground water sources, but because, again, we voluntarily want to be good stewards in this community.

I will point out that to my knowledge there's no other industry that so readily and in the spirit of cooperation have voluntary become as aquifer independent as our companies have done. And we want you to know that it's important to us, your input is important to us, LOGA stands here as a resource for all of our industry and we are committed to remain good stewards of our most precious natural resource here.

Thank you.

SECRETARY ANGELLE: Thank you very much, appreciate it. Okay.

I have a package that was submitted by Mr. William Dubose with United Neighbors for Oil and Gas Rights and C. C. Canady, the president of United Neighbors for Oil and Gas Rights. I'm

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going to go ahead and give this to the staff to submit this into the record and then get a copy of this presentation mailed out to the members as well.

I don't have any other cards up here. Did I miss anybody? Okay. That concludes.

I'll entertain a motion to adjourn. Motion by Mayor Hollingsworth and a second by Mr. Welsh. With no objection, we are adjourned.

(The proceedings were concluded and adjourned at 3:15 p.m.)

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C E R T I F I C A T E

STATE OF LOUISIANA :

PARISH OF CADDO :

I, Christen Sutherland, Certified Court Reporter, do hereby certify that the said witness came before me at the time and place set forth herein, and after being first duly sworn, was examined and testified as shown; that the deposition was reported by me and thereafter transcribed by the use of computer-aided transcription and is a true and correct record of the testimony given by the witness to the best of my ability.

I further certify that I am not of counsel nor related to nor employed by any of the parties to this cause or in any wise interested in the event thereof.

SUBSCRIBED AND SWORN TO this the 22nd day of February, 2010.

CHRISTEN SUTHERLAND, CCR
REGISTERED PROFESSIONAL REPORTER
NOTARY PUBLIC ID# 67848
Louisiana CCR No. 22009