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STATE OF LOUISIANA
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

WATER RESOURCES COMMISSION
NINTH REGULAR MEETING
THURSDAY, DECEMBER 8, 2016
BATON ROUGE, LOUISIANA
11:00 A.M.

LASALLE BUILDING - 1ST FLOOR
LABELLE ROOM
617 NORTH THIRD STREET
BATON ROUGE, LOUISIANA 70802

REPORTED BY:
LAURA QUINETTE, CCR, RPR
BATON ROUGE COURT REPORTERS, LLC

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APPEARANCES

COMMISSION MEMBERS IN ATTENDANCE:

KYLE F. BALKUM
LOUISIANA WILDLIFE & FISHERIES

HONORABLE GLENN BRASSEAU
MAYOR OF CARENCRO, LOUISIANA MUNICIPAL
ASSOCIATION

SENATOR NORBERT "NORBY" CHABERT

DAVID D. CULPEPPER
GEOSCIENTISTS WITH EXPERTISE IN GROUNDWATER
RESOURCE MANAGEMENT

MARK S. DAVIS
TULANE INSTITUTE ON WATER RESOURCES LAW
AND POLICY

ANTHONY DUPLICHIN
CAPITAL AREA GROUNDWATER CONSERVATION
DISTRICT

JOHAN FORSMAN
LOUISIANA DEPARTMENT OF HEALTH &
HOSPITALS-OFFICE OF PUBLIC HEALTH

PAUL D. FREY
LOUISIANA LANDOWNERS ASSOCIATION

KAREN GAUTREAU
THE NATURE CONSERVANCY OF LOUISIANA

LINDSAY K. GOUEDY
SPARTA GROUNDWATER COMMISSION

CHRISTOPHER P. KNOTTS, PE, FASCE
LOUISIANA DEPARTMENT OF TRANSPORTATION AND
DEVELOPMENT

BENJAMIN MALBROUGH
LOUISIANA RESIDENTIAL CONSUMERS

BRADLEY E. SPICER
LOUISIANA DEPARTMENT OF AGRICULTURE AND
FORESTRY

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COMISSION MEMBERS IN ATTENDANCE (CONTINUED):
ELLIOTT B. VEGA
DEPARTMENT OF ENVIRONMENTAL QUALITY
LINDA G. ZAUNBRECHER
LOUISIANA FARM BUREAU FEDERATION

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1 (Meeting is called to order at 11:04 a.m.)

2 MR. SPICER: I would like to call the
3 Louisiana Water Resource Commission to order. Matt,
4 could you do the roll call?

5 MR. REONAS: Yes, sir. Mr. Balkum?

6 MR. BALKUM: Present.

7 MR. REONAS: Mr. Bishop?

8 Mr. Brasseaux?

9 MR. BRASSEAUX: Here.

10 MR. REONAS: Mr. Chabert?

11 MR. CHABERT: Here.

12 MR. REONAS: Mr. Cormier?

13 Mr. Cramond? Mr. Culpepper? I know he's here.

14 Mr. Davis?

15 MR. DAVIS: Here.

16 MR. REONAS: Mr. Duplechin?

17 MR. DUPLECHIN: Here.

18 MR. REONAS: Mr. Forsman?

19 MR. FORSMAN: Here.

20 MR. REONAS: Mr. Frey?

21 MR. FREY: Here.

22 MR. REONAS: Ms. Gautreaux?

23 MS. GAUTREAU: Here.

24 MR. REONAS: Ms. Gonzales?

25 Ms. Gouedy?

1 MS. GOUEDY: Here.

2 MR. REONAS: Mr. Graves? Mr. Gray?
3 Mr. Guidry? Mr. Harris? Mr. Ieyoub? Mr. Knotts?

4 MR. KNOTTS: Here.

5 MR. REONAS: Mr. Malbrough?

6 MR. MALBROUGH: Here.

7 MR. REONAS: Ms. McConnell?

8 Mr. Pratt? Mr. Spicer?

9 MR. SPICER: Here.

10 MR. REONAS: Mr. Sutcliffe? Mr. Vega?

11 MR. VEGA: Here.

12 MR. REONAS: Ms. Zaunbrecher?

13 MS. ZAUNBRECHER: Here.

14 MR. REONAS: Mr. Zaunbrecher?

15 Mr. Chairman, we have 14, so that is a quorum. And I
16 know Mr. Culpepper is -- oh, there he is right there.
17 So we have 15, so that is a quorum and we can proceed
18 with any action items as needed.

19 MR. SPICER: Thank you. I might
20 mention that Secretary Harris couldn't make it today,
21 so I'm filling in as Vice Chair for the Commission.
22 All of you received the copies of the previous
23 meeting, the December 8th meeting [sic]. You've
24 reviewed them and I would like a motion to approve
25 those?

1 MS. GAUTREAU: Approve.

2 MR. SPICER: Ms. Gautreaux.

3 MR. KNOTTS: Second.

4 MR. SPICER: And Chris Knotts, second.

5 Any discussion? Those in favor?

6 (AYE, in unison.)

7 MR. SPICER: Minutes are approved.

8 The next item on the agenda is David Borrok with the
9 University of Louisiana at Lafayette who is going to
10 address the group regarding stress analysis of
11 Louisiana's water supply and implications for water
12 management.

13 I might mention to the audience, if you
14 want to make any comments, we will have time before
15 we adjourn and you can do that. Please fill out a
16 card available at the entrance of the room.

17 MR. BORROK: Can you hear me if I
18 stand here like this?

19 MR. SPICER: Yeah.

20 MR. BORROK: So I appreciate being
21 invited to be able to come back and tell you a little
22 bit more about a project I think I spoke to the
23 Commission about at a high level when we started this
24 a couple of years ago. Since that time, we have a
25 few new results and some things I wanted to share

1 with you that we've been doing. I'll talk a little
2 bit about a large scale analysis of water budgeting
3 and stress in the State and then talk a little bit
4 more specifically about the southwest part of
5 Louisiana and some of the things we've been doing
6 there.

7 I do want to start by saying there are a
8 large group of people who have been helping on this
9 project, PIs from various places, including some from
10 McNeese State University. And so I just want to make
11 sure everyone realizes that this isn't all me here,
12 particularly if there is something wrong, you know,
13 with one of the -- so the motivation for the work
14 that we got funded through the National Science
15 Foundation was that in the last probably 10 to
16 15 years it's come to light that despite abundant
17 rainfall in the southeast part of the United States,
18 particularly the coastal zones, the Gulf Coast and
19 the Atlantic Coastal areas, there's an overuse of
20 groundwater even though there's a lot of rainfall
21 and, particularly, surface water, even to the extent
22 that we have a lot of floods and all of this. In
23 fact, you can see on the diagrams there, the bottom
24 one, we have the most annual precipitation in this
25 area of anywhere in the United States. But, at the

1 same time, the upper diagram indicates that we've
2 lost more groundwater than even some areas of the
3 southwest part of the United States, which is
4 typically the areas we worry about water resources.
5 And this is in the last ten years.

6 So although we have the surface water, we
7 aren't using it to the extent that we're using
8 groundwater. And the opportunity then exists to look
9 at ways to manage surface water where we may offset
10 some of this groundwater use. So that's a certain
11 motivation and the opportunity we pitched to the
12 National Science Foundation in order to receive this
13 funding.

14 The approach that I want to talk about now
15 involves water budgeting. A lot of people have done
16 this in various fashions and I'm not going to get
17 into the details. More or less there's no right way
18 or wrong way to do this, but what you can see in the
19 diagram are the water supply side of the water budget
20 and the water demand or the water withdrawal side of
21 that budget. I might just try to pick this up a
22 little bit.

23 So on the water supply side, we have
24 surface water and there's different ways of
25 estimating how much surface water is available. And

1 the estimate of groundwater availability is basically
2 how much it gets recharged on an annual basis. So if
3 we take more than we replenish, then we'd say it's
4 excess that you're taking.

5 Water withdrawal, of course -- we have
6 estimates going back in time every five years with
7 water withdrawal, surface water and groundwater
8 separated by sector, which a lot of you already know.
9 So these are the bases for the kinds of information
10 we can get.

11 We can develop this into a water supply
12 stress index. And in its simplest form, it's simply
13 water withdrawal, both surface and groundwater, or
14 water demand you could call it, divided by the amount
15 of water available. So it's a simple ratio. If the
16 ratio were to be one, you would have used all the
17 water available. If the ratio is below, there's very
18 little stress. If the ratio is over one, you would
19 be basically using more groundwater than is available
20 to you for recharge. So that's how the ratio works.

21 We went ahead and added a component into
22 that equation to satisfy environmental flow because
23 typically you can't use all the water that's there
24 for extremes or surface water volume would dry up and
25 you'd have no riparian habitats, et cetera,

1 et cetera. So you have to account for the water
2 that's necessary to satisfy the ecosystems. In this
3 case, it's a fraction of the available water, and
4 typically you can set it at something like .5. You
5 can do the research and actually figure out what it
6 needs to be, which is something we're working on
7 currently, but that's sort of river specific,
8 location specific.

9 That's just a dummy variable. We could say
10 50 percent of the available surface water we need for
11 the environment. And, again, I'm not here to tell
12 you about the procedures for how to do these sorts of
13 things. I'll give you a couple of quick examples
14 just to show you why I think it's important to, I
15 guess, get to the levels of what I would call
16 management scale for these things.

17 Typically, when you do these sorts of
18 budgets, you're doing it on a large scale, maybe a
19 parish scale or larger watershed scale and what we
20 might call an uptake scale that combines multiple
21 parishes perhaps. And then most of the large scale
22 work that's been done and published is even a larger
23 scale, regional scales. So what we've done in this
24 case is gone down to a smaller watershed scale where
25 a parish might be divided into perhaps 20 or 25

1 smaller watersheds, and we call that the management
2 scale. So there's different ways you can just
3 aggregate things.

4 In this particular example we would have
5 surface water used for irrigation on a parish scale
6 distributed here and that's what's available to us or
7 estimates that are available and then we can use
8 various techniques, like, for example, taking into
9 consideration the area of cropped land within each of
10 the parishes distributing the water demand throughout
11 that. So there's various ways you can do this, and
12 this is an example of what you get when you go down
13 to that sort of a level.

14 Another example is industry from the parish
15 scale to small watershed scale. Another example
16 here, power plants and power plant water use. In
17 this case, they're pinpoints, so instead of looking
18 at the parish scale distributing all the water
19 throughout the parish or watersheds, you can look at
20 it in that catchment where they actually exist.

21 For groundwater we did something a little
22 bit different for that aggregation and
23 disaggregation. You work again on the parish scale
24 for the amount of water demand, so we have available
25 to us the well registration database. So we know

1 about all of the wells that use water in the State,
2 or most of the wells anyway, and so we also know the
3 sectors for those wells and we can disaggregate the
4 water demands on a parish to the available wells
5 within each of those parishes.

6 We can even weight it by casing size and
7 some other things if we wanted to do that. And if we
8 do those things, you get a distribution like you see
9 here. Ultimately, we could build it back up to the
10 small watersheds, but it's nice because we have that
11 sort of an individual well scale.

12 Now, the flip side of this, the other side
13 of I guess the denominator of the water stress index
14 is the availability, and there's different places to
15 get water availability information. One of the ones
16 that we used is the National Hydrography Dataset,
17 which has 25-year averages from the State, both
18 annual and monthly. And we can also get groundwater
19 recharge. We can do it ourselves. In this case, we
20 just took it from a previous public report for the
21 State. So this tells us our water availability.
22 Then, we put all these things together and we can
23 look at what is the stress on the individual
24 watersheds throughout the state of Louisiana.

25 So this is one of those first diagrams

1 indicating where the most stress is within both
2 surface water and groundwater combined in the State.
3 You can see typically the white areas here that are
4 below .06, there really is no stress or limited
5 stress. In all the white areas really low stress and
6 the blue areas really very low stress as well. It's
7 only when you start to get into the warmer shades of
8 colors do you get really higher amounts of stress.

9 So, in general, I think probably it looks
10 like the State is in pretty good shape compared to
11 somewhere like Texas or the Las Vegas area or
12 something like that. But there are some areas where
13 you have more stress than others where you might want
14 to be concerned about. And that's one reason and the
15 title of this talk I said "Implications for Water
16 Management." And the implications are it's good to
17 see on a small scale where you have stress and where
18 you don't have stress and where you might be able to
19 do things to alleviate that sort of stress.

20 I will mention some of the red colors along
21 the Mississippi here deal with industry. And one of
22 the things we haven't done in this particular
23 analysis yet is we didn't consider consumptive use
24 versus flow-through. So a lot of these industries
25 will use water that will flow back through to the

1 rivers and that wasn't included in this particular
2 analysis. So some of these red areas in here may not
3 actually be red ultimately when we do consider that.

4 Now, that's interesting, but when you do
5 this on a surface water versus groundwater scale,
6 things change rather dramatically. And what we do
7 here is basically in the water stress equation either
8 you only look at the surface water availability
9 versus surface water demand or you only look at
10 groundwater availability versus groundwater demand.

11 So on the left it's surface water and, again, things
12 are in relatively good shape, but on the right is
13 groundwater. So anything you're seeing there in red,
14 budget-wise, is an overdraft. And so on an annual
15 basis, those areas -- and certainly I would say there
16 could be some outliers there that may not be real,
17 but the big chunks of things that you see here are.
18 We're overdrafting a lot of our aquifer systems,
19 particularly in the southwest part of the State.

20 You can also do things where you say, okay,
21 well, now that we have this water stress analysis we
22 can aggregate a backup and look at individual aquifer
23 systems. We can do something like this where we
24 evaluate the stress in those aquifers. So on
25 average, the Chicot aquifer, the Mississippi River

1 and the Alluvial aquifer have the highest stressors
2 of aquifer systems, which is probably not news to
3 everybody. They're the most highly used aquifer
4 systems as well.

5 This is another aspect of it and one that's
6 in the next year and we plan to get into it a little
7 bit further. And, I guess, one of the points is the
8 small scale is very important from a spacial nature,
9 but we also need to have a scale on the time scale,
10 on a smaller scale because there are seasonal
11 deficits and seasonal stressors with water as well.
12 So this diagram, although complicated -- I'll walk
13 you through it -- attempts to delineate some of that
14 seasonal stress.

15 So what we have here is an analysis just in
16 Acadia Parish right here as just an example. This is
17 the average stream flows of all of the streams and
18 the individual watersheds. There's probably about
19 25. There could be 30 watersheds. And the
20 variability of that stream flow is indicated by these
21 arrow bars right here. So you get a lot more
22 variability clearly in the winter months and then
23 sort of base-flow conditions in the summer and you
24 get less variability, which one might expect. So
25 this is basically indicating seasonal variability of

1 flow within a larger area that if you averaged it, it
2 wouldn't capture all of those differences.

3 And then moving down here what we did in
4 the middle panel and the bottom panel is look at two
5 different scenarios of water used. In this case,
6 there's a lot of irrigation in Acadia Parish, and so
7 we were able to ask farmers when do you use the
8 water, which months do you use the water and assign
9 the water demand during those months as opposed to
10 averaging it out through a year. And what you see
11 here with all of these thin-traces -- thin-trace
12 lines here are the calculated water stress on this
13 access and a function of months on this access for
14 each of the individual watersheds.

15 So you have some of the little watersheds
16 that -- you know, they all are dynamic. They're all
17 moving. There's a function of the months, but some
18 of them have very high water stress and some of them
19 have very low water stress. So even within the
20 individual parish, it's important to understand this
21 variability and so we can tease that out a little
22 bit.

23 I'm not going to go into the second
24 scenario. It's another scenario of irrigations. So
25 the take-home point here is spatial and flow

1 variability in the stress analysis is going to be
2 really important.

3 All right. Another thing one could do, and
4 we've attempted this a little bit and there are some
5 drawbacks to it, and it's mostly data. It's a
6 data-driven thing. If we had enough data, we could
7 do these things, is that we can integrate water
8 quality into the stress analysis. So demand sectors
9 for example -- a good example would be the irrigation
10 crop sectors might not be able to have water of a
11 certain quality. In this case, maybe it's limiting a
12 certain amount and crops won't grow. And so if you
13 have water in certain areas of a certain salinity
14 above the threshold range, that would mean that water
15 isn't usable for its particular user type in this
16 particular area.

17 So we can try to quantify that by using an
18 approach like this where we have the chemical data
19 available to us and we create a ratio function, if
20 you will, of the sum of the number of measurements of
21 some sort of water quality parameter X that's over a
22 threshold value and then divide that by a total
23 number of measurements of that water quality
24 parameter. X, in this case, could be salinity and
25 you can measure salinity in a variety of ways,

1 different parameters, and the threshold would be
2 where it's unacceptable. Above those limits would be
3 unacceptable. And then we can plug this into our
4 water stress calculation, basically taking the
5 unacceptable water out from surface water and
6 groundwater individually.

7 And here's an example of how that works.
8 So in this case, we thought let's look at the X being
9 chloride, a proxy for salinity in this case. We look
10 at a threshold for chloride of about 500 milligrams
11 per liter, similar to 1300 Micro Siemens per
12 centimeter or 800 milligrams per liter depending on
13 how you want to look at salinity. We can see for
14 surface water all of these individual dots are
15 measurements of chloride over the last 50 years or
16 so. And surface water, all of these dots are
17 measurements of chloride in the last 50 years or so
18 in groundwater. And we can get our function of
19 chloride here above a certain threshold, say 500, and
20 you see where we have values that are too high for
21 use for a certain sector. In this case, the red and
22 the orange ones are -- you're getting more stress in
23 these areas. And they're along the coast, as you
24 might imagine, because we have more saltwater nearer
25 the coast and that adds to the stress of the water

1 systems in those areas.

2 We can add that approach to our existing
3 water stress analysis, and this is before adding the
4 water quality with the chloride threshold that we
5 did, after we did it, and the difference. So you can
6 see the additional stress. It can actually factor in
7 water quality along the southern part of the State in
8 this area. So that's another thing you can do. And
9 I'm not going to get into a lengthy discussion about
10 what you can and can't do with this approach. It's
11 data driven, but if there's not enough data and
12 enough spatial resolution, it starts to fall apart.
13 So you have to take some of that into consideration.

14 But the nice thing about this approach and
15 the framework and the reason I wanted to present this
16 today is it can be used in a variety of ways. And so
17 if you have all of the information and it's up and
18 running, we can do things like statistical analysis
19 or probability analysis. We could even look at --
20 ask the question, for example, what is the
21 probability of having stress over a certain amount in
22 any given year. So it's almost like a climate
23 analysis or something like that.

24 And it turns out that based on the demands
25 and the available water in various watersheds,

1 there's different probabilities that those can get
2 stressed in different years. So under the same
3 drought condition one watershed may be more stressed
4 than another. We can examine various climate
5 scenarios, and we've been doing some of that, and
6 various water demand scenarios. So we've been doing
7 some of that as well.

8 We do have a manuscript that just got
9 accepted for publication. I can send you the
10 accepted manuscript if anyone is interested in
11 learning more about the framework. And it will also
12 be publically available shortly.

13 Other things, just to finish up here, this
14 is kind of getting back to the area where we started.
15 We've sort of expanded the framework for the analysis
16 for the State. But this is the Chicot aquifer area
17 that many of you are familiar with. I just wanted to
18 share with you a couple of things that we've been
19 working on here. Here we've been able to get a
20 little bit more specific. We've been able to ask the
21 question about what opportunities actually exist for
22 surface water to replace groundwater in some of these
23 areas.

24 So we've done things statistically like
25 looking at usable surface water resources in the area

1 and figuring out where groundwater wells are in
2 relationship to those usable sources, what
3 percentages of wells and their -- how much water they
4 take from the groundwater with an aquifer could be
5 replaced by that surface water source given various
6 infrastructure or an attempt to do so.

7 So we can ask those questions, but another
8 thing I think is nice and we've learned a lot from --
9 I have to say sometimes if you don't know the answer,
10 it's better to ask the people who are actually using
11 the water sometimes. And, in this case, we did try
12 to do that. So we went out to some of the areas that
13 have high rice farming, agricultural. Vermillion
14 Parish, Jefferson Parish and Acadia Parish and our
15 social scientists for the project interviewed 68
16 farmers in these areas. These were all onsite
17 interviews. And so the important part about this is
18 we can ask the farmer about why they use surface
19 water versus groundwater, what are the factors
20 involved and we can sort of match that up with
21 quantitative analysis like we did in the stress
22 analysis and say are these things jibing with each
23 other, where are the opportunities for changes. Some
24 of them -- and maybe perhaps it's obvious to you,
25 maybe not. They weren't necessarily to me -- but

1 what I found is that in the end is that one of the
2 big take-home points is that the reliability of that
3 surface water is really a big factor.

4 So it's really the seasonal deficits that
5 drive the fact that people need to use groundwater
6 more than surface water and perhaps a little bit of
7 the fact that once you've already got the groundwater
8 well, it's pretty easy to pump for it. So that extra
9 mile to go and get that surface water is not
10 necessary. So reliability is a factor, but then when
11 you look at it on a farm-to-farm basis, with the
12 exception of a couple of farms, there's almost no
13 investment in any sort of infrastructure to come back
14 to the reliability issue.

15 So there's no temporary storage facilities
16 for water on a local scale or a larger scale and so
17 reliability is a problem, but there's nothing
18 permanently done about that sort of a problem. So no
19 one is really interested in doing that. One reason
20 is, of course, you perhaps have to take valuable land
21 out of production to make an area to store water with
22 enough water to solve that surface problem. So these
23 are some of the issues that we ran into.

24 I'm going to skip some of this in the
25 interest of time. But we have talked about solutions

1 into some of the next steps that we've been doing,
2 talking with farmers, other groups about essential
3 solutions and just sort of brainstorming these and
4 looking at, in this case, opportunities for building
5 surface water storage capacity on some of these farms
6 and finding areas where it can benefit the farmers
7 and also perhaps other areas where it could also
8 mitigate flooding and things of that nature. So it's
9 an integrative approach.

10 I'm going to skip to the last one just in
11 the interest of time. I'll just say in this last
12 slide here, we've even had a lot of students come out
13 and work, which I think is really fun. This is the
14 architecture and design students who worked on
15 various water sustainability problems on an
16 individual farm basis and came up with very
17 interesting thoughts about things like adding
18 riparian habitats, farming areas, hunting areas,
19 tourism, things of that nature integrated into these
20 sorts of approaches.

21 Then I'll just leave you with that. I
22 thank you for your time and will be happy to answer
23 questions if we have time. Thank you.

24 MR. BALKUM: I appreciate that
25 presentation. Very good. I was wondering more about

1 your environmental flows and if you factored that
2 into some of your projections. Sometimes it's
3 difficult for us to determine. I'm wondering if
4 you've looked at assumptions like our neighboring
5 state of Texas uses.

6 MR. BORROK: It's in infancy. So I
7 probably don't know as much about it as you do.
8 You've looked into it in a lot of detail. One of the
9 things that we've done -- well, I guess, where we
10 started is with salinity. And we did that largely
11 because we could look at things like the vegetation
12 in coastal marshes and so we have some indices or
13 things of that nature. And we can do some hydrologic
14 modeling where we can say, for example, the Chicot
15 River if we pull out 20 percent of this water for
16 agriculture that we hadn't been pulling out
17 previously for whatever purposes, what will happen to
18 the salinity using the hydrological model, and how
19 much further will that salinity potentially travel up
20 the coast and affect these marshlands.

21 So it's kind of a vegetative approach as
22 opposed to some of the other approaches we've looked
23 into, fish populations and all those other things,
24 but that was our first pass.

25 MR. BALKUM: We certainly appreciate

1 your analysis on stress. That's certainly key. It
2 seems like when the water demands in the summer
3 months or streams are running rather slow that we
4 keep in mind the fish and water population. Thank
5 you again for the presentation.

6 MR. BORROK: You're welcome. Thank.
7 you.

8 MR. SPICER: Any other questions?
9 Mark?

10 MR. DAVIS: It was very interesting as
11 always. Two quick questions. First of all, in the
12 groundwater model, have you modeled saltwater
13 intrusion in the Gulf and then groundwater quality --

14 THE COURT REPORTER: I'm sorry. I
15 can't hear you.

16 MR. BORROK: I think I can answer.
17 His question was about whether we were modeling for
18 saltwater intrusion of the groundwater and the short
19 answer is, no, not really. It's not a -- we don't
20 have a groundwater model like a regular hydrologic
21 model. This is more of a budgeting framework
22 analysis and so we haven't done that. The water
23 quality aspect of it asks a little bit of where those
24 lines or boundaries are, of course, but it isn't
25 going to be able to predict into the future. It

1 would be more of a scenario analysis or something
2 like that.

3 MR. DAVIS: I'd like to follow-up with
4 you on that. Other work that we're doing, and seeing
5 some models develop, I think we do benefit from it to
6 be informed. And the other question I have, in
7 looking at the environmental flows, are you
8 considering the anticipated needs, for example, in
9 the Coastal Master Plan, which is largely a plumbing
10 plan, for water to go places it doesn't presently
11 currently go?

12 MR. BORROK: Well, the short answer,
13 again, is not really. But at the same time, we
14 have -- actually, we even have proposals out to look
15 at that exact thing and sort of match up the Coastal
16 Master Plan and water needs with what's happening in
17 the upper catchments eating those coastal things. So
18 there's multiple feedback there that could perhaps be
19 better constrained. One, the boundary condition for
20 how much water is coming down into the coastal zone,
21 which will change dramatically based on the needs of
22 those other catchments in those communities, but also
23 what happens in the coastal zone will determine how
24 much salinity will come back northward perhaps and
25 impact farming and things of that nature. So those

1 are problems that we're working on, but we have
2 barely scratched the surface.

3 MR. DAVIS: You're not alone. Thank
4 you.

5 MR. SPICER: Any more questions?
6 Thank you, David. Next on the program is Chris
7 Knotts to discuss the review and update on the Red
8 River Compact.

9 MR. KNOTTS: Good morning. At the
10 last meeting I had mentioned the Red River Compact
11 and I'm not sure if everyone is aware it exists, but
12 I just wanted to give a little history on it, what it
13 does and to make everybody aware of that. The Red
14 River Compact Commission was authorized by Congress
15 in 1955 with a four-state interstate federal compact.
16 It took a little while to get going, but the first
17 meeting was held in New Orleans in March of 1956.
18 The Compact was signed by member states to resolve
19 and prevent disputes over waters of the Red River
20 Basin that are shared between Arkansas, Louisiana,
21 Oklahoma and Texas.

22 The document, at that time, specified
23 certain flows through certain streams at a minimum
24 and had procedures if those minimum flows went below
25 those minimums. And through the history of the

1 Compact, we've exercised some of those procedures
2 that we are currently doing through today.

3 The Signatory States acting through their
4 duly authorized commissioners, after years of
5 negotiations -- it started in 1955, and you'll see it
6 took a while to negotiate those agreements, but they
7 agreed to an equitable apportionment of the waters of
8 the Red River and its tributaries.

9 So there are commissioners in each state,
10 two from each state recommended that Congress -- the
11 Compact be adopted by the respective State
12 Legislatures and approved by Congress. Two
13 commissioners in Louisiana by statute are the DOTD
14 chief engineer or the designee serving as the chief
15 designee. And, just recently, longtime Commissioner
16 Mr. Arthur Theis asked to be replaced. Mr. Theis
17 signed the commissioned document in 1978 and served
18 until early this year. So people valued his input.

19 But it was adopted in May 1978 and signed
20 at the Denison Dam, which is I believe a dam on the
21 Texas-Oklahoma border. It was ratified by the states
22 after that. So it started in 1955 and initially
23 ratified in Louisiana in 1978. I could not find
24 Arkansas, but we believe that was also done in 1979.
25 So roughly 23, 24 years later that came to fruition,

1 consented to by Act of Congress.

2 And it's to promote interstate comity and
3 remove causes of controversy between the affected
4 states by governing the use, control and distribution
5 of the interstate water of the Red River and its
6 tributaries. Like I said, there were minimum
7 standards set up for distribution of all the streams
8 that cross interstate boundaries, even cross some of
9 the regions that I'll get to in a second.

10 It promotes an active program for the
11 control and alleviation of natural deterioration and
12 pollution of the Red River Basin. So it provides the
13 means for an active program for the conservation of
14 water, protection of lives and property from floods,
15 improvement of water quality, development of
16 navigation and regulation of flows in the Red River
17 Basin and provides a basis for the state or joint
18 state planning and action by ascertaining and
19 identifying each state's share in the interstate
20 water and apportionment.

21 So the Red River Basin is there, obviously,
22 in four states. We have different Reaches. It's
23 hard to say -- if you look at the state boundaries,
24 Reach I goes a little bit through New Mexico and
25 Texas and Oklahoma. Reach II has Oklahoma, Texas,

1 Arkansas. Reach III has Arkansas, Texas, Louisiana
2 and Reach IV is just us. So in a little more detail,
3 Reach III is broken out into sub-basins for
4 management. Reach II, Reach III, and that's one of
5 the first ones we entered into, and Reach IV is just
6 us. So we're the only entity that is only a
7 receiving entity, not one that has to fulfill all the
8 requirements downstream.

9 Some of the issues we're having right now
10 are rivers and streams coming out of Arkansas, the
11 Boeuf. The Interstate Compact says it's supposed to
12 be 40 cubic feet per second. If you look at the
13 years, there are years -- many days that the river
14 did not meet that minimum standard. And then below
15 that you'll see the days that the USGS gauges that
16 the stream had zero flow. There are many different
17 causes and inputs as to why you have zero flow. It
18 could be from lack of rainfall. In many cases, it's
19 irrigation for agricultural purposes, but the Compact
20 had the minimum standard -- minimum flow rate, excuse
21 me.

22 Bayou Bartholomew had many days below the
23 Compact. It did not have zero flows except in 2015
24 and that was a low rainfall event period. That one
25 had 80 CFS and Bayou Macon has 40 CFS, no zero flows,

1 many, but less days of low Compact standard.

2 All of those streams come out of Arkansas.
3 The issue we're having right now is per the Compact
4 when the flows in those streams get to twice the
5 minimal flow standards, the upstream state is
6 supposed to take measures to demonstrate to the
7 downstream state what flow they're getting into the
8 basin. That hasn't happened with Arkansas. We're
9 working through that right now with the Compact
10 through various efforts, but I don't know exactly
11 where that will end up. We're trying to avoid suing
12 the state of Arkansas, but it's been discussed.

13 And if you look at various climate models,
14 withdrawals in upper basins are supposed to increase
15 in the Mississippi Alluvial Valley by 180 percent.
16 Arkansas has heavy agricultural. Without some other
17 measures, we see this problem getting nothing but
18 worse.

19 So with that, a quick overview of the Red
20 River Compact Basin and the Red River Compact
21 Commission and its purposes: We meet once year. The
22 meeting rotates through all four states. Next year
23 Louisiana will host the meeting in Shreveport. So if
24 anybody is interested, it would be as close as it's
25 going to get to us in 2017. I'll take any questions.

1 MR. SPICER: Any questions for Chris?

2 MR. DAVIS: What is Louisiana -- since
3 in discussions with Arkansas about, you know, getting
4 these minimum flows we're entitled to, what steps
5 have we actually taken to ensure that we are
6 preserving our right to this? I realize you
7 mentioned possible litigation. I've never seen a
8 Compact that at least didn't require it. What steps
9 are we taking?

10 MR. KNOTTS: Well, the Compact
11 requires that, like I said, when we get to twice the
12 minimum flow, the upstream state is supposed to take
13 measures to quantify what inflow they're getting. So
14 take for example -- back up real quick.

15 The Boeuf River, it says 40 CFS. Well, if
16 the receiving entity is not getting 40 CFS, the
17 Compact then says that you have to demonstrate to me
18 that I'm getting 40 percent of what you're getting.
19 That's what Arkansas hasn't done. They have not
20 taken the measures to gauge or otherwise measure the
21 input to demonstrate to us that on these periods
22 where I'm going below the Compact standard of zero
23 flow that they're getting nothing or below the
24 Compact standard.

25 So we've been working through the

1 Engineering Committee of the Red River Compact trying
2 to come up with a methodology to demonstrate what
3 their inflows are. There's the surface water.
4 There's the groundwater component to it from
5 groundwater wells adjacent to the streams pulling
6 groundwater out for agricultural purposes, which then
7 increases the outflow through the beds and the
8 streams to replenish that groundwater. And all those
9 various things are being looked at.

10 Several years ago -- this is the DOTD
11 because of the vestige of the Department of Public
12 Works years ago being folded into the Department of
13 Highway. We did not believe that it was our purview
14 to enter into legal discussions with the state of
15 Arkansas, so we got the Attorney General's office
16 involved and we now have an Assistant Attorney
17 General serving the Commission. So we're letting
18 that play out in the Engineering Committee, but we're
19 nearing the end of it.

20 MR. DAVIS: I've never seen water
21 willingly given by states to states who are
22 downstream without essentially, you know, some aspect
23 of assistance. I'm not suggesting that litigation is
24 the right way to go, but I'd also point out to the
25 Members that one of our charges here is to help the

1 state of Louisiana develop water policies and water
2 laws for sustaining that. If the Compact on the Red
3 River hinges on federal law and Louisiana, for
4 example, cannot say with its own waters that we would
5 never send them to another state --

6 THE COURT REPORTER: I can't hear you.

7 MR. DAVIS: -- but federal law,
8 particularly this Compact, allows the state of
9 Louisiana to say we will not share this water. I'm
10 not saying we need to do that. We need to know we
11 have a bigger legal toolbox for how we manage water
12 on these rivers subject to --

13 COURT REPORTER: Subject to what, sir?

14 MR. DAVIS: -- these compacts.

15 MR. KNOTTS: And to further complicate
16 the issue, the streams in Arkansas, the Corps of
17 Engineers came in after the Compact was built and
18 built some weirs for vegetation control in streams to
19 create artificial pool spaces. They did not include
20 base-flow components in those weirs. So when you get
21 into a period of lower rainfall coupled with
22 agricultural withdrawals and you go below the crest
23 of the weir, you go into a zero flow condition.

24 We believe, and we discussed it internally,
25 that if the weirs were modified to include a

1 base-flow condition, a base-flow component to that
2 design, that we could resolve this matter. There's
3 some legal oddities inside the state of Arkansas, the
4 Arkansas Natural Resource Commission and various
5 other components where we were told that while one
6 entity may want to do something they don't have the
7 legal authority in Arkansas to cover it, so our
8 Attorney General has been involved in that. You
9 probably know all of that.

10 MR. DAVIS: Thank you.

11 MR. BALKUM: Chris, I want to thank
12 you and your staff for sending periodic reports to
13 our agency and monitoring the flow conditions. And
14 you probably know this, but Bayou Bartholomew is one
15 of those few streams that occasionally does not meet
16 the minimum flow criteria, but as a state we believe
17 that it has the most fish and mussel diversity in the
18 State, so it's a very interesting stream. Thank you.

19 MR. KNOTTS: It's a complex issue.
20 We're not giving up on it, but it's not going nearly
21 as quickly as any of us have hoped. But we're not
22 getting discouraged and we'll keep trying to come to
23 some resolution on this.

24 MR. BALKUM: And if we can assist you,
25 let me know.

1 MR. SPICER: Thank you. Any other
2 questions for Chris? Thank you, Chris. Next on the
3 agenda is the report by the U.S. Geological Survey
4 Research Projects in Louisiana by John Lovelace.

5 MR. LOVELACE: Thank you. Good
6 morning, if it's still morning. I have a brief
7 overview of several studies, three studies, that the
8 USGS has undertaken in the past year -- began in the
9 past year. A couple of the studies started in
10 October of 2015 and one of them started up in October
11 of 2016. All of these studies have an overlap in
12 Louisiana. They're regional studies.

13 The first one is called the MAP program.
14 It's the Mississippi Alluvial Plain Project. It is
15 to address some concerns, particularly about
16 groundwater, but also about surface-water resources
17 in the Alluvial Plain area. The study is the result
18 of concern about significant groundwater-level
19 declines and reductions that are resulting in
20 reductions in base flow in streams within the
21 Mississippi Alluvial Plain, particularly in areas of
22 Arkansas, including the Cache River and Grand Prairie
23 and also in kind of the heartland of the Delta area
24 of the Mississippi.

25 What we found and what -- Congress has

1 funded this study. Senator Cochran is one of the
2 people involved in obtaining the funding for it,
3 appropriating the funding. What they found was that
4 water managers, planners, and stakeholders don't have
5 the basic resource information you need that's
6 necessary for effective decision-making at a regional
7 scale.

8 So the overall goals of this study are to
9 assess groundwater availability in the Mississippi
10 River Valley Alluvial and to develop decision support
11 framework for management decisions. We have three
12 specific objectives that have been broken down a
13 little bit into various sub-tasks. One -- the first
14 is just to gain some basic knowledge about the
15 system. To do that we're going to establish and
16 enact enhanced groundwater and surface-water
17 monitoring and a data plan; update water use
18 estimates and evaluate different methods to predict
19 water use; increase the resolution of simulated
20 surface-water system. We have a surface-water system
21 model; utilize multiple methods to better estimate
22 recharge in the basin; and then improve our
23 understanding of the geohydrologic framework.

24 The second objective has to do with system
25 evaluation. Once we put a lot of this basically

1 together, we can look at a system scale and determine
2 what data we know less about and what data is more
3 important and then the value of that data and use
4 that information to determine where and when to
5 collect additional information and also identify
6 potential future scenarios. One of the big concerns
7 is the impacts of drought resulting from future
8 climate change.

9 And then the third thing, which is going to
10 be of big interest to actual managers in the area, is
11 to be able to input user-defined scenarios in the
12 system. The goal here is have basically a web-based
13 tool for anyone in the public to go in there and
14 basically fool around with the model, change up
15 variables, change up information and be able to run
16 these scenarios and get actual output and then look
17 at what could happen in the future.

18 So the basis of the study, in large part
19 the basis of it, will be using information on the
20 structure from the Mississippi Embayment Regional
21 Aquifer Study (MERAS). It's basically a model --
22 originally it was a model of the Sparta aquifer, then
23 it came to include the Mississippi River Alluvial,
24 and also the one cohesive model for how the Sparta
25 and Alluvial interact. So we're going to take that

1 existing model and enhance the Mississippi River
2 Alluvial aspect of it. And basically this is showing
3 you all the different inputs of what's going on that
4 will eventually result in that web-based decision
5 work tool.

6 That top center there through monitoring
7 groundwater levels, monitoring surface water stream
8 flow, you can satellite imagery and things covered on
9 the ground, data to develop the Water Balance Model.
10 You're collecting geophysical data, better defined as
11 hydrogeology, and doing some monitoring in the
12 farmlands, particularly in the farmlands to better
13 establish how much water is being withdrawn, when and
14 where it's being withdrawn for irrigation.

15 So there's a big team of folks working on
16 this. There's a big team working on water budgets,
17 statistical analysis and modeling for hydrogeologic
18 framework and also the geophysics. If you're
19 interested in any particular aspect of this, I can
20 put you in touch with the people that are doing a lot
21 of that work. The group is from all over the U.S. A
22 lot of them are in Mississippi, in Tennessee and
23 Texas.

24 Just the work that's going on right now is
25 primarily some of the geophysical mapping. They're

1 doing river surveys, airborne surveys using
2 geophysical equipment to try to determine the extent
3 and thickness of the aquifer with a vertical and
4 spatial variability of the aquifer.

5 Now, these are typically -- in these kind
6 of alluvial environments, you have a lot of sand and
7 clay intermixed. And they'll use that information to
8 determine the best way to model the aquifer to be one
9 layer of many layers and also extract some
10 information out of the aquifers.

11 And here's just some pictures of what
12 they're doing. They're going out -- you can't really
13 see it in this picture, but they are towing some line
14 with geophysical sensors behind this boat out in the
15 river and they're trying to determine what the
16 interaction is between the river and the aquifer. In
17 some cases, the river is already sized -- the
18 riverbed is sized into the aquifer and there is a
19 direct hydraulic connection there. So when you're
20 pumping down the well -- or irrigating, heavily
21 irrigating, in some cases they're actually pumping
22 down some of these rivers and you get decreased
23 flows. They're trying to look at specific rivers and
24 determine where this could be occurring and use that
25 as part of the model.

1 They're doing the same thing on land in
2 different areas, trying to get a better handle on
3 physics, and they've been doing some airborne surveys
4 using equipment similar to this. And what they'll
5 get out of this eventually is a lot of different
6 cross-sectional data that they can put together to
7 give us a better handle on what the actual structure
8 of the aquifer is like.

9 Another thing they have been pursuing is
10 looking at water use and instrumenting farms,
11 instrumenting wells within line flowmeters. So we
12 have data on when and how much water is being used to
13 irrigate. Irrigation is big use in these areas and
14 typically we don't have -- in the past, we've relied
15 on information provided to us from farmers on how
16 much water they're using. This will give us much
17 more concrete information. And this year, they will
18 be expanding this program, Flowmeter Program, into
19 Louisiana and Mississippi. So we will be looking for
20 farmers that are interested in having flowmeters on
21 their wells.

22 They are also starting to put together some
23 initial estimates of a water budget looking to
24 evapotranspiration, runoff and recharge based on the
25 amount of water that's going into the basin that's

1 precipitation or irrigation. And they'll probably
2 come up with some primary estimates and some annual
3 water budgets. And they will be going into much more
4 detail on these, breaking them down to monthly, so
5 monthly water budgets.

6 The website has been set up for the MAP
7 program. If you need more information, I just kind
8 of hit the tip of the iceberg here. The contact is
9 Wade Kress. He's the project chief. We can quickly
10 put you in touch with any other people working on it.

11 But a second project is the Coastal
12 Lowlands Aquifer Study. This one started up in
13 October, although we've been working on work plans
14 through much of the summer and fall. It is shown in
15 the brown area here. It's a large regional aquifer
16 study wrapped around the Gulf Coast all the way down
17 to Brownsville, Texas and over to the Pensacola,
18 Florida area. And it's showing the relationship
19 between the Coastal Lowlands and the Florida Aquifer
20 there in the purple and also the Mississippi
21 Embayment and the Mississippi Alluvial Plains. You
22 can see it's part of a very large regional aquifer
23 system. The Coastal Lowlands itself is a very large
24 area and pretty much covers the southern two-thirds
25 of Louisiana.

1 This is something -- this is the USGS
2 thrust to look at these big aquifers, regional
3 aquifer systems. It's something that Congress has
4 asked us for, an updated status on the availability
5 of the U.S.'s groundwater resources and to assess how
6 those resources have changed over time and then
7 develop tools to forecast regional response.

8 Again, this is going into a groundwater
9 model. It will also incorporate groundwater and
10 surface-water interactions and impacts it. It will
11 also have a subsidence component, at least in certain
12 areas.

13 Our objectives here are to document the
14 effects of human activities on water levels,
15 groundwater storage, and discharge to streams and
16 other surface-water bodies; explore climate
17 variability impacts; and evaluate the adequacy of
18 data networks to assess impacts and deliver data
19 needed for models.

20 So this is one of many studies that's been
21 going on, these large regional studies. The areas in
22 the tan, they're the ones that have been completed.
23 The lighter green ones are ongoing relative to the
24 Coastal Lowlands. And for this, it's very similar to
25 the Mississippi Alluvial Plain Program. We're

1 looking heavily at the water budget and trying to
2 estimate current and past groundwater use, storage,
3 recharge; construct the groundwater model; estimate
4 primary aquifer properties; simulate predictions; and
5 use those predictions to evaluate an existing
6 regional groundwater monitoring network.

7 It's a five-year study. It started this
8 year. We're right now putting together the
9 hydrogeologic framework and we're relying heavily on
10 information from previous models that have been done
11 piecemeal across the area as well as additional
12 geophysical data that's available and then putting
13 together some of the model input information, water
14 use and aquifer ballistics. We have to start
15 publishing results within the next couple of years.

16 The principle modelers on this and leading
17 the project on this are Linzy Foster and Brian Clark.
18 Linzy is in Texas and Brian is in Arkansas.

19 Then the third study, the Red River Focus
20 Area Study, is part of a group of focus area studies
21 that the survey has been pursuing across the U.S.
22 This is part of the Obama Administration initiative
23 called the WaterSMART Program, which means Sustain
24 and Manage America's Resources for Tomorrow. Funding
25 was allocated by Congress to the USGS and the Bureau

1 of Reclamation. The USGS used this funding to create
2 this national water census with the goal of
3 developing new water accounting tools and assessing
4 water availability at regional and national scales.

5 Red River Basin is shown there near the
6 center. The orange areas are areas where there's
7 ongoing studies. The blue are basins where they've
8 completed the studies. And most of these studies
9 have some very similar characteristics where these
10 areas do have similar issues going on. There's
11 increasing water demands, which typically have gone
12 into interstate water conflicts and have resulted in
13 disruption of water aquatic ecosystems. There's
14 concerns about drought, flooding, groundwater
15 declines and stream flow alterations.

16 So these studies are focusing on water
17 availability, trying to determine if there is
18 adequate water to meet current needs as far as both
19 the quality and timing, both human and ecological
20 needs and then relate this water -- that there's
21 water available to meet future needs.

22 So there's a map of the Red River
23 Watershed. We divided it -- well, it's pretty much
24 divided into two distinct areas, an upper Reach,
25 which is above the Lake Texoma Dam that Mr. Knotts

1 mentioned, and then a lower Reach below that dam that
2 is more important to Louisiana.

3 There's four major elements to this study:
4 One is the compilation of water use data. The second
5 is groundwater modeling. There's surface water
6 modeling and environmental flows. All of these are
7 interconnected. The water use data is fed into the
8 surface and groundwater model and the results of
9 those models feed into the ecological flow
10 evaluation.

11 For the water use part, we are refining
12 what we typically put together for county level down
13 to HUC-8 watersheds trying to come up with better
14 methods to estimate irrigation withdrawals. We're
15 cataloging interbasin transfers within the basins to
16 try and estimate consumptive use and return flows for
17 various water use categories. And, like I said, this
18 information will lead into groundwater and surface
19 water modeling. We're going back and estimating
20 groundwater withdrawals from 1995 to 2015 from the
21 Seymour River to Red River Alluvial aquifers for a
22 groundwater model and then estimating water use from
23 1980 to 2015, surface water use, that will go into
24 the surface water model.

25 Now, the groundwater modeling effort is

1 strictly above the Denison Dam and Lake Texoma,
2 looking at particularly the Red River Alluvial and
3 Seymour aquifers. That's kind of leveraging off of
4 some other ongoing studies in Oklahoma and Texas and
5 will include surface water and groundwater
6 interaction and use that to look at future
7 hypothetical scenarios.

8 Just to map where the aquifer systems are,
9 they are along the Red River and some of the major
10 tributaries, Salt Fork and North Fork. And then the
11 surface water monitoring is actually part of a
12 nationwide effort to develop a Prescription Runoff
13 Modeling System and it's going to go into more detail
14 in this area and we'll be able to predict flows in
15 ungaged areas, which would possibly be helpful to
16 understanding some of those border state line flows
17 from Arkansas into Louisiana. And we'll be able to
18 use this information again to simulate possible
19 future scenarios such as drought and flooding and
20 then use the information with this coupled with the
21 groundwater model.

22 The project chief from this project
23 recently changed. It was Kristine Blickenstaff and
24 now it's Jennifer Wilson. They are both over in
25 Texas. They did a three-year study and we are now

1 just over a year into now. And that is it.

2 MR. SPICER: Thank you, John. Any
3 questions for John? Thank you.

4 MR. LOVELACE: You're welcome.

5 MR. SPICER: The next item on the
6 agenda is the report on some of the Bayou Lafourche
7 Projects from Ben Malbrough.

8 MR. MALBROUGH: Thank y'all for
9 giving me an opportunity to come. I want to
10 apologize in advance. I don't have any extremely
11 elaborate graphs and charts, but I just wanted to
12 come and give everybody an update on what we've been
13 doing down at the Bayou, information critical for the
14 projects for the residents we serve there.

15 My name is Ben Malbrough. I'm director of
16 the FreshWater District. This is just briefly who we
17 are, kind of the significance of Bayou Lafourche, and
18 then, ultimately, the bulk of the presentation will
19 be what we're doing and where we are planning to go
20 in the near future.

21 The FreshWater District was formed in 1950
22 by the Legislature with the main purpose to provide
23 freshwater to the water purification facilities and
24 to the residents that we serve. Back when we were
25 formed, it was just comprised of Ascension,

1 Assumption and Lafourche Parish and, back in 2013,
2 Terrebonne Parish actually voted themselves into the
3 district as well and these are the commissioners of
4 the 12 commissioners that make up the board.

5 So this is the geographic region that we
6 serve, the western portion of Ascension Parish, all
7 of Assumption, all of Lafourche and all of
8 Terrebonne. And as I said, we were formed mainly to
9 provide freshwater as a source of water to the
10 purification facilities for probable use. Of course
11 that has been expanded and I'll get into that, but it
12 is also a big economic provider to the region.

13 I've highlighted a picture of Port Fourchon
14 here, but, actually, all of the businesses in this
15 region rely solely on Bayou Lafourche for their
16 water. But I would like to highlight Port Fourchon
17 because they are singly probably our biggest
18 customer. They utilize about 70 million gallons of
19 potable water, and this is not the water that's being
20 utilized in the actual facility itself. This is
21 being loaded up in Shreveport and being taken
22 90 miles offshore to be used in exploration and
23 production. And I don't have to tell you-guys what
24 kind of role that area plays for the region.

25 Then as of the late '80s and early '90s,

1 there's been a big push to tie Bayou Lafourche back
2 into the Mississippi River not just for potable
3 water, but also to be utilized as a restoration tool
4 to combat specifically saltwater intrusion that's
5 really taking over the southern Terrebonne and
6 southern Lafourche areas.

7 So before I get into the project, I think
8 it's important for everyone who is not very familiar
9 with this to go back in time quickly -- I'll try to
10 flip through these fast -- but to understand the
11 history of northern Bayou Lafourche and how we got
12 into this situation and what we're really working to
13 convert.

14 In the late 1800s, Bayou Lafourche used to
15 naturally flow out into the Mississippi River with
16 estimates of 10 to 20 percent of the Mississippi
17 River flow coming down Bayou Lafourche. It was a
18 major commerce port for the region getting goods in
19 from the Mississippi River and over down into
20 New Orleans.

21 Obviously, with that unconstricted opening,
22 came flooding and other issues along the Bayou that
23 really shook the history later. But one of the
24 important things was in the late 1800s the railroad
25 built a bridge across Bayou Lafourche, which

1 facilitated both unrestricted flow, but also allowed
2 for navigation. And I highlighted this. You'll see
3 later on in the presentation that this railroad
4 bridge has really been a hindrance in all of our
5 operations.

6 But going forward, in the early 1900s,
7 there was enough pressure from the landowners and the
8 residents from the spring floods to dam off Bayou
9 Lafourche. So in 1904, they utilized the existing
10 port buffer at the head of Bayou Lafourche to
11 permanently dam it off. The intentions back then
12 were to build a lock structure later on, but that
13 obviously never came.

14 In 1934, obviously, there's no influx of
15 water from the Mississippi River. The train track
16 that was built in the late 1870s started to have some
17 stability issues with its expanded use. So, in 1934,
18 the railroad actually built an urban embankment
19 across Bayou Lafourche, so a levy essentially built
20 on Bayou Lafourche by one 5'x 6' box culvert to
21 alleviate back flooding into the City of
22 Donaldsonville.

23 With the formation of the FreshWater
24 District in 1950, the Department of Public Works
25 built the pump station along the river there. In

1 1955, they added two more 100-foot diameter culverts
2 through the railroad embankment. That pump station
3 is built with an approximately 500 cubic feet per
4 second capacity. And this, for all practical
5 purposes, is the configuration that the northern
6 portion of Bayou Lafourche has seen up until just
7 recently.

8 So to fast forward, I put this slide up
9 here. I won't go through all of these dates, but I
10 did highlight the important ones. My presentation
11 specifically is on some of the projects that we've
12 implemented on the Reintroduction Project, so I'll
13 focus on that.

14 As I said, in the late '80s and early '90s
15 there really became a push to tie Bayou Lafourche
16 back into the Mississippi River to utilize it as a
17 freshwater conveyance channel to get some of the
18 freshwater nutrients down to the lower Terrebonne and
19 Barataria basins of the wetlands that were really
20 starving for it.

21 This project began in the early '90s as a
22 conceptual project and it was authorized,
23 de-authorized. The State picked it up and the
24 Department of Natural Resources. So I highlighted in
25 2006 that the Department of Natural Resources

1 released what we call the Phase 2 Mississippi River
2 Reintroduction to Bayou Lafourche Project. That's
3 kind of the Holy Grail, per se, that we work every
4 day to try to implement.

5 I circled September of 2008. So Gustav
6 makes landfall and it's an extremely unfortunate
7 incident, but it was beneficial to the FreshWater
8 District in that it really brought a sense of urgency
9 to implementing some of these projects. The Bayou
10 went septic for approximately 30 days or so, so it
11 really gave the will to begin implementing some of
12 these project components that had been talked about
13 and studied for so long. So that was a major turning
14 point.

15 This is -- the project I'm talking about,
16 some of the major components in it that I highlight
17 are a pump station. So our existing capacity is
18 500 cubic feet per second. The analysis and the
19 reports and all of the work that was done determined
20 that the most feasible amount of water we could push
21 down Bayou Lafourche from the Mississippi River in
22 Donaldsonville was somewhere in the ballpark of 1,000
23 to 1,500 CFS. So, obviously, our existing pump
24 station is not adequate. So that would have to be
25 modified and/or completely built anew.

1 With a hundred or so years of neglect,
2 obviously, the channel silted some naturally and also
3 non-naturally. So the conveyance capacity of the
4 actual Bayou wasn't near what it needed to be. So
5 the project lays out approximately 30 miles of
6 channel dredging that needs to take place between
7 Donaldsonville and Thibodaux.

8 Of course, the railroad embankment, this is
9 a picture of the actual embankment. I don't have --
10 so this is the railroad up in Donaldsonville and
11 these are the existing culverts that are there. You
12 can't really see the little box culvert that was
13 originally put there, but it's somewhat irrelevant
14 because it stays filled mostly.

15 This embankment causes an operational
16 hindrance to us now at 500 cubic feet per second. So
17 certainly moving forward, expanding our pumping
18 capacity, something definitely has to be done to this
19 crossing in Donaldsonville. And then there's the
20 weir that was installed in Thibodaux in the late '60s
21 to secure the freshwater supply to the lower
22 residents and the residents of lower Lafourche Parish
23 and, ultimately, that structure will have to come out
24 as well.

25 So these are the main components. There's

1 other annular components within the project, but
2 these are the big ticket items that were laid out in
3 that 2006 report. So some of the projects have
4 already been implemented. As I said, when Gustav
5 made landfall, it really opened a lot of people's
6 eyes to the importance of getting more freshwater
7 down Bayou Lafourche.

8 In 2008, with some state surplus money,
9 CPRA was able to dredge the first six miles of Bayou
10 Lafourche from Donaldsonville down to Belle Rose and
11 this was a major milestone for us because it
12 literally opened up the floodgates for some of the
13 work that was shortly there to follow. We were able
14 to get some CDBG money from Gustav to do some pump
15 station upgrades. Some of the original pumps from
16 the 1955 station were still there. They were still
17 working, surprisingly, but certainly we were able to
18 recognize some deficiencies going in and upgrading
19 the pump station.

20 So then the projects we have underway,
21 building off of successes from that state surplus
22 money and dredging what we call Phase 1 dredging,
23 CPRA allocated 20 million dollars of their state CIAP
24 money, which is the Coastal Impact Assistance
25 Program. It's basically some oil revenue sharing

1 that brought about 500 million dollars to the State.
2 We were very fortunate enough to get an original
3 allocation of 20 million to continue the dredging
4 that was completed in 2011. And you'll see as we go
5 forward that that original grant or that original
6 allegation has grown significantly and has allowed us
7 to do some really good stuff along the Bayou.

8 So the first portion was the channel
9 dredging that we continue. From Belle Rose -- we
10 were able to get approximately 11 or 12 miles,
11 11.8 miles of channel dredging from Belle Rose down
12 to the Napoleonville. Another project that we did
13 was the Saltwater Control Structure that the Fresh
14 Water District had originally put in in 2003. And
15 Company Canal had to be moved and relocated actually
16 further north into Bayou Lafourche because we were
17 obviously seeing continued saltwater intrusion and it
18 was really threatening the water treatment plant down
19 in Lockport. So that structure was moved.

20 We have the Donaldsonville drainage
21 project. Obviously, when the City of
22 Donaldsonville's draining infrastructure was built,
23 there was little to no influx of water from the
24 Mississippi River. So any time we increased pumping
25 into the Bayou, we actually endangered back flooding

1 into the City of Donaldsonville. So we have the
2 project on the books and we've gotten funding and
3 we're going to be moving on that project this year to
4 alleviate some of the drainage issues back into
5 Donaldsonville, which will allow us to increase our
6 pumping capacity as well.

7 And then there's the railroad bridge that I
8 talked about several times. This is kind of our
9 crown jewel. This is a project -- and some of the
10 folks listed are here, Karen and Chris and Norby and
11 Milton, and y'all have been very familiar with some
12 of the stuff that we're doing along Bayou Lafourche.
13 And Chris especially, going through some of the
14 project files of things, there's pictures of him
15 working on this with a young lad.

16 It was recognized very early on that we
17 could not be successful in doing what we needed to do
18 without addressing that railroad crossing in
19 Donaldsonville. In the first mile, like I said, it
20 didn't have the capacity for us to pass our existing
21 water through it, much less expand. So we were very,
22 very fortunate in working with the railroad through
23 the CF money to secure construction dollars. And
24 that project is underway and will be completed at the
25 end of this year. It's actually going to be an

1 open-span bridge. This project, like I said, it's
2 been talked about and analyzed for over 20 years,
3 since the inception of this whole program. So this
4 is a really big milestone for us now, because as we
5 go forward, there's nothing in our way that really
6 poses a real hindrance to completely finishing out
7 the Reintroduction Project.

8 I wanted to put a little snapshot in here
9 because, like I said, it's something we're really,
10 really proud of. This is the existing -- this was
11 the embankment before we received the construction
12 dollars. I'm looking north, so on the other side is
13 the Mississippi River. This was at eight o'clock and
14 I made sure to leave the time stamps to show you how
15 impressive this was.

16 You know, this was a project that for 20
17 years it was just too hard, it was impossible, it was
18 too expensive, we can't get it done, we don't want to
19 interrupt the train service through the city. It was
20 all kinds of issues that delayed this project. And,
21 you know, with the opportunity that the CF money
22 presented us, we potentially funded this project
23 solely at no cost to the railroad. There was only
24 one caveat and that is it had to be completed by the
25 end of -- December 31st of 2016. So it was a very

1 aggressive timeline. So low and behold they figured
2 out a way that it could be done for much cheaper than
3 originally anticipated.

4 So I put these pictures up. This was at
5 8:25 in the morning on Thanksgiving, just a couple of
6 weeks ago. That's the last train passing over the
7 existing tracks in Donaldsonville and you see just
8 nine minutes later they started ripping the tracks
9 up.

10 This was later that afternoon. They
11 started doing some excavating, getting down to the
12 piles that had been driven. And this is the next
13 morning. They had already begun constructing. Half
14 of the bridge is complete. Later that evening, on
15 Friday, the bridge is, for all practical purposes,
16 done. I don't have a time stamp on this one, but
17 this is 8:00 Saturday morning. The first train
18 passes back over the brand new bridge.

19 So this is really, really due to -- and
20 this is how it stands today. Obviously, they had
21 excavated everything under it, removed all the
22 infrastructure below it. So this is going to allow us to
23 pump year-round all of our existing pumping capacity.
24 But, also, it removes the biggest hurdle that we had
25 in this whole project. Now we can pass our

1 anticipated increase in flow through this bridge
2 without any impediments in the City of
3 Donaldsonville.

4 And so a few other projects we have
5 underway, building on some of that, is we already
6 began the analysis and design of the pump station up
7 in Donaldsonville. That project is underway. It
8 started the beginning of this year. We're hoping to
9 have some conceptual plan to put together to go to
10 the Corps to begin a quarry beginning by the end of
11 this year. So that's moving forward. And then we
12 also began the analysis to take the weir out in
13 Thibodaux.

14 So it's been a really, really aggressive
15 and exciting three years for the FreshWater District.
16 We began a lot of this work in 2014 and on
17 December 31st, 2016, when the Department tells us we
18 have to put our shovels down, we'll have installed
19 approximately 32 million dollars into this project in
20 Bayou Lafourche. So it's been really fun. It's been
21 a really exciting time and I think all of the
22 residents in the parishes that we serve are really
23 going to reap these benefits. So, obviously, it's
24 all exciting and we're high fiving each other right
25 now, but we still have a long way to go.

1 We still have to dredge in Napoleonville.
2 We're about 15 miles into about 35 miles worth of
3 dredging that needs to be done. We obviously have to
4 address our flow constraints with either the
5 expansion of our existing pump station or a new pump
6 station altogether. We obviously have to remove the
7 weir, which is something we initiated, and some water
8 control structure we're looking at to alleviate some
9 emergency situation.

10 That's really it. That's what we've got
11 going on. Stay informed. We have a website and I
12 try to post enough stuff on Facebook to keep
13 everybody updated. And if anybody has any questions,
14 I'll go be glad to attempt to answer them.

15 MR. SPICER: Thank you, Ben. Does
16 anybody have any questions for Ben?

17 MR. BALKUM: First of all, as someone
18 who pounded their head against that wall for a long
19 time, I'd like to congratulate you for the railroad
20 bridge. I wasn't sure I would see that in my
21 lifetime. It's a remarkable accomplishment. We
22 talked about the dredging going on in Napoleonville.
23 I remember there was --

24 THE COURT REPORTER: I'm sorry, I
25 can't hear you.

1 MR. BALKUM: -- people who had pushed
2 the little homemade levy and pushed them into their
3 backyards by decreasing the cross section of Bayou
4 Lafourche and there was a study that to determined
5 what the State owned and didn't own. Has that been
6 resolved, where the limits of ownership are?

7 MR. MALBROUGH: So when the money --
8 when the state surplus money was allocated to the
9 first dredging, that was obviously the first thing
10 that needed to be done and they started that effort
11 back in 2008 and it was a joint effort between the
12 Department of Natural Resources, the Office of State
13 Lands and the Attorney General's office. And they
14 spent a lot of time and a lot of money and a lot of
15 effort on determining where they believe those lines
16 are -- and we've actually had Matt from the head of
17 the Bayou in Donaldsonville down to the intercoastal
18 in LaRose -- what the State Land's office believes
19 are the state-owned water rights and also the
20 right-of-ways. Mark and I were talking about that
21 right before this meeting. I don't think there's
22 anyone along the Bayou who lives there who believes
23 those lines, and it's certainly a struggle that we
24 have to contend with every day. But, you know,
25 they're there and I guess that could be argued. They

1 haven't been taken to the argument of the courts yet.
2 It wouldn't surprise me if someone did. Hopefully,
3 we'll be finished implementing the project when that
4 happens.

5 But, yes, that's something that comes up
6 every day because one of the big things is, you know,
7 people want to build things on the Bayou and we
8 certainly want them to do that, but we want them to
9 do that in a way that doesn't impede anything that
10 we're trying to do and it doesn't add cost to our
11 main dredging project that we have to do further
12 down.

13 So at 1,000 CFS, okay -- and I think this
14 went into some of the analysis for determining those
15 lines -- most, of it, if not all of the work that
16 needs to be done from a dredging perspective is done
17 within the State Lands' office, their own waterlines.

18 MR. KNOTTS: That's the way I remember
19 it too, at 1,000. Also when you take a weir out --
20 people that are concerned that the water level would
21 go up way high in Donaldsonville hadn't realized that
22 the weir was bringing artificially high pools above
23 that. You take the weir out and the water level in
24 Donaldsonville I think is around a foot maybe.

25 MR. MALBROUGH: It goes down. You

1 know, you really start to see -- the impacts
2 obviously for the weir in Thibodaux are 16, 17 miles
3 north of that. As you go further up in
4 Donaldsonville because of the geography -- the
5 topography of the Bayou is very steep in
6 Donaldsonville and then the slope gradually levels
7 off all the way down to the Gulf. So the impacts of
8 the weir are not as significant to the City of
9 Donaldsonville as they are as you go further south.

10 MR. KNOTTS: When you remove the weir,
11 you put more water -- the impact is not as great
12 because it flows downstream.

13 MR. MALBROUGH: Right. So the fully
14 implemented project is that actually the water
15 surface elevation in Donaldsonville goes down,
16 whereas the water surface elevation just above the
17 weir and just below will go up.

18 MR. BALKUM: Great presentation, Matt.
19 Thank you.

20 MR. MALBROUGH: Thank you.

21 MR. SPICER: Thank you. Any other
22 questions?

23 MR. CHABERT: Yeah. First, Ben, thank
24 you for all your hard work that you did. It's a
25 different operation than, you know, previous to you

1 arriving. And the Commissioner needs to really be
2 commended as well as a lot of the folks from
3 Terrebone who decided to become full-fledge members
4 of that. You know, they get the majority of their
5 drinking water from Bayou Lafourche.

6 One thing I appreciate is you going back.
7 It was a hell of a presentation from a visual
8 standpoint. The Bayou Lafourche was cut off from the
9 Mississippi when-ish?

10 MR. MALBROUGH: 1904.

11 MR. CHABERT: And when was Bayou
12 Terrebone cut off from Bayou Lafourche, when-ish? I
13 mean, just for point of discussion.

14 MR. MALBROUGH: You know, it's
15 difficult to tell, but I want to say it was
16 sometime -- Chris, you might be able to help me with
17 that. It was sometime maybe in the '40s or '50s.

18 MR. KNOTTS: I want to say early '50s.

19 MR. CHABERT: 1950s?

20 MR. KNOTTS: Yes.

21 MR. MALBROUGH: Yes.

22 MR. CHABERT: So that is obviously one
23 of the main problems for coastal land loss in the
24 Terrebonne basin is all that stuff. One of the major
25 charts or maps or whatever we see constantly from

1 CPRA is the deveining, if you will, of all of the
2 tributaries from the Mississippi River and from the
3 central tributaries, if you will, the Atchafalaya to
4 the west of the Mississippi and from the east. I
5 mean, all of that degradation in that entire
6 floodplain basically exists from those two events,
7 right, which is basically traced back to Bayou
8 Lafourche being cut off from the Mississippi and
9 Terrebonne being cut off from Bayou Lafourche.

10 As we move forward, as the district moves
11 forward, I'm going to encourage you and the
12 Commissioners to really take a -- I know your budget
13 constraints, but once these, you know, physical
14 projects are completed and issues concerning the size
15 and the pumping capacity of the Donaldsonville
16 pumping station are addressed, the reintroduction of
17 fresh water, not so much sediment, but if possible
18 sediment, for that whole area is going to have to
19 really be almost a Bayou Lafourche solution in some
20 way because as a lot of folks here know, the science
21 and the money just isn't there to get what we need
22 from the Mississippi in the east or the Atchafalaya
23 in the west. It gets very, very close to where we
24 need it to be, but it doesn't get to where we need it
25 to be. The only true solution is to try to get it

1 back to as close to natural as we've been in the not
2 so distant past. So that's -- I think the FreshWater
3 District is going to play a big role going forward
4 into finding the solution of really getting that
5 freshwater back to the central part of our coast, so
6 good luck.

7 MR. SPICER: Karen?

8 MS. GAUTREUX: Well, thank you, Ben,
9 for that presentation. As a person who was around on
10 the public task force, then called the Breaux Act,
11 who passed that FreshWater Reintroduction, it's been
12 very -- there's been a lot of report in terms of
13 recognition and the multiple benefits and it was a
14 little bit frustrating when it got kicked because
15 Terrebonne didn't have freshwater benefits. So all
16 that you did and all of the people who worked hard on
17 this project, congratulations on the job that you're
18 doing. I look forward to the updates in the future
19 about new progress. Thank you.

20 MR. MALBROUGH: Thank you.

21 MR. SPICER: Any other questions for
22 Ben?

23 MR. DAVIS: Yeah. I would like to
24 echo what Mr. Chabert and Karen and Chris said. This
25 has been an extraordinarily long road, but it can't

1 be where it ends. I think you're right. You know,
2 this is like a patient with circulatory problems. We
3 really have to get the circulation working.

4 I wanted to -- you and I were talking about
5 it beforehand, but I think the Commissioner just
6 needed to know, Bayou Lafourche, as far as navigable
7 streams, you know, people that live there have
8 private rights of ownership and they're subject to a
9 levy servitude. You know, if you think that the
10 levies along the Mississippi River were built by the
11 Army Corps of Engineers, you're largely wrong. They
12 were built locally and there was no money paid for
13 the land to do it. That was essentially part of the
14 servitude. Obviously, it's a flood-control servitude
15 more than purely levies, and clearly what we're
16 really talking about here is managing these systems
17 really to reduce not only stream flooding but coastal
18 flooding.

19 So I think we need to make sure that we
20 understand the full suite of rights and tools that we
21 have and that we need to start educating other people
22 about that they have a privilege of living where they
23 live and working where they live because people used
24 these civic tools to make it possible. Now, it's our
25 turn, and I think we have to make sure that, you know

1 we understand it. It's not true on every stream, but
2 it is true on navigable Bayou Lafourche. It's one of
3 the most historical navigable streams.

4 MR. CHABERT: One more thing. In
5 terms of the FreshWater Reintroduction Project and
6 Master Plan, this is certainly one, right?

7 MR. MALBROUGH: Yes. We were in the
8 2012 plan and we're optimistically going to be in the
9 new plan that will be released in January.

10 MR. CHABERT: Thank you.

11 MR. SPICER: Any other questions for
12 Ben? Thank you, Ben. Very good presentation. Next
13 we're going to have the Office of Conservation Agency
14 Report. Matt Reonas is going to give that report.

15 MR. REONAS: Thank you, Mr. Chairman.
16 I do want to run through sort of some updates on what
17 our agency has been at work doing. We've kind of
18 covered several different spheres here. First off,
19 I'm going to talk a little bit about education and
20 then we tap into some legislative issues. So I'm
21 going to bounce around a little bit.

22 First off, I do want to let the Commission
23 know that we are at work on sort of the annual
24 report. This project sort of started -- it's not
25 really -- we're not really tasked to doing it, but

1 we've sort of been doing updates ever since the 2012
2 report came out and so we just try to do periodic
3 updates to the Legislature and the Governor's office
4 and it's sort of turned into an annual report. It's
5 usually not very long. It's usually under ten pages
6 and then some appendages, but it does talk about what
7 the Commission has done, it's actions, activities,
8 issues that have been debated or discussed or
9 presented during the Commission's meetings through
10 the years.

11 So we are at work on that if any of y'all
12 want to contact me about it and we can discuss those.
13 But we're looking really at probably having this
14 ready by mid January. We go through a review period
15 and pass it around the Commission and then sort of
16 take those edits and we'll float this out probably in
17 February to the Governor's office and the
18 Legislature. But, again, it just sort of recaps what
19 the Commission's been doing, its activities, topics
20 that have been brought before the Commission and
21 then, of course, any actions, resolutions, things of
22 that nature that the Commission has acted upon.

23 Then switching gears here, I'd like to sort
24 of talk a little bit about education. An important
25 sort of development has come up recently. Obviously,

1 it's been in the works for a little while, but the
2 State Department of Education recently released the
3 new or the first draft of the new science content
4 standards and this has been in the works for several
5 years.

6 I've had a number of conversations with
7 staff over in the Department of Education, but these
8 came out at the end of last week, first part of this
9 week. I started looking at them on Monday, so I
10 really haven't had a chance to go through them very
11 thoroughly and give sort of a strong analysis of what
12 this Commission's interest would be in new content
13 standards.

14 But having said that, I did pull the
15 environmental standards and these would be at the
16 high school level. And these things are of interest
17 to this Commission particularly in terms of talking
18 about natural resources, evaluating sustainability,
19 evaluating relationships between management, how we
20 manage for sustainability, what the environmental
21 standards are for the State's management plans. So I
22 would like to, on behalf of the Commission, go
23 through and but together some comments and forward
24 those on to the Department of Education and their
25 review committee for consideration.

1 Again, I can -- the comments are accepted
2 through January 6th, so a pretty tight timeframe.
3 And, again, these content standards range from
4 essentially kindergarten all the way up to high
5 school. And, again, Gary and I were talking about
6 this earlier in the week, but the interest of this
7 Commission in terms of water resources management are
8 pretty strong in here. They're covered. And really
9 what the content standards are -- and you have to
10 think of this probably from an educator's point of
11 view -- the content standards are the big goals, what
12 we want to get across.

13 So I'll just pull one of these. That will
14 be the easiest thing to do. So for Environmental
15 Science I -- this is again high school -- analyze the
16 performance expectation, analyze and interpret it to
17 identify factors, effects, sustainable development
18 and evaluate the effectiveness of natural resource
19 management of Louisiana. That's the performance
20 expectations. That's the big goal. And then it goes
21 on to provide a clarification statement:

22 Understanding functions and values of the very
23 ecosystems and environments of the state; supply
24 nonrenewable mining products and profitable
25 agricultural commodities; examples of key natural

1 resources, include state waterways and marine life
2 found; and then regions of agriculture, high
3 concentrations of minerals and fossil fuels and so
4 on.

5 So there's plenty of -- within that broad
6 goal, there's plenty. And, again, that's just one of
7 the performance expectations. There's a number
8 throughout there and for each grade level. So within
9 that broad set of expectations are big goals.

10 There's plenty of room for opportunity. The
11 emphasis -- in talking with the Department of
12 Education staff, the emphasis is on basic scientific
13 literacy, understanding how to read graphs, construct
14 graphs, evaluate evidence, understand models, create
15 models. All of these things are key points of any
16 kind of science educational curriculum going forward,
17 engineering and technology. So this is a big step
18 forward, in my opinion. Again, having watched the
19 process a little bit and then seeing the final draft
20 or the near final draft, I think it's a big step
21 forward for Louisiana.

22 The important thing for this Commission,
23 and certainly for all of the agencies represented
24 here, especially state agencies, is that from an
25 educational point of view you again have these big

1 goals, these big content standards, performance
2 expectations, but how you get to those goals is
3 varied. And teachers are going to need a curriculum.
4 They're going to need lesson plans that move them
5 towards the performance expectations to get them to
6 achieving these content standards. So, for me,
7 that's the exciting part.

8 Of course, we work a lot in curriculum here
9 in the Office of Conservation, strictly in the
10 Baton Rouge area. And I'll talk about that in a
11 minute, but we're already doing a lot of that in the
12 curriculum we've developed locally. So I'm excited
13 about it and I would like to, if it's not -- I'm not
14 sure if the correct move here is to ask for a
15 resolution or any sort of an okay just to move
16 forward on behalf of the Commission based on the
17 recommendations from the 2012 report to put together
18 some comments and send those on to the Department of
19 Education based on this Commission's interest. Brad,
20 I don't know if that's the correct --

21 MR. SPICER: I don't think we need a
22 resolution. I just think we need an agreement to
23 have you move forward with this.

24 MR. REONAS: Okay. That sounds fine.
25 Well, I'll circulate my comments once they're

1 completed and, again, it's a pretty steep amount of
2 material. Again, as I said, I got one from
3 kindergarten all the way through high school. So
4 there is a lot of information out there. I did
5 enclose in your packets the "How to Read" the content
6 standards, if y'all get a craving to go out and dig
7 through these yourselves. But, again, coming from an
8 educational background myself and looking through
9 them, there's a lot of material in there that meets
10 the goals that this Commission established back in
11 2012 with the 2012 report for educating about water
12 resource management. So I'm excited about that. But
13 the real goal now is really going to be providing a
14 curriculum and developing those lesson plans that
15 meet these goals.

16 So sticking in the realm of education, we
17 did actually reach a pinnacle in our local campaign.
18 We released on Halloween our Waterman video. So I've
19 included in each of your packets a copy of our DVD.
20 It's online as well. I don't know if we want to take
21 12 minutes to view it, Brad, but it is online at our
22 Water-Wise.

23 MR. SPICER: Maybe not.

24 MR. REONAS: No, no. That's fine. So
25 we were excited about it. It's a very

1 tongue-in-cheek sort of production. Again, to give
2 you some background, in 2012/2013, the previous
3 commissioner, Commissioner Welsh, mandated or asked
4 that we put together a local curriculum on
5 groundwater here in Baton Rouge. I saw it as an
6 opportunity, as sort of a first-step committee
7 developing a larger statewide plan, and hopefully we
8 can get to that.

9 We did end up putting together a
10 curriculum. One of the first things we did was our
11 classroom poster. I know I've presented this before.
12 This is the second addition with some updated stats
13 and we have some of those outside, if anyone wants to
14 take them. Of course, we did adult education
15 brochures as well and we have a large curriculum,
16 environmental science and earth sciences curriculum.
17 We dropped down to the fifth grade as well and we
18 have some math and social studies components also.

19 We also wanted to do something that was fun
20 for the students and so that's where the idea of this
21 video came through. Again, it runs about 12 minutes.
22 It's the idea that we have these kids, young
23 students, and they get transported to Waterman's H2O
24 HG and there they learn all about groundwater and
25 surface water in the Baton Rouge area and the

1 different facets of that.

2 So, again, it's very tongue-in-cheek. We
3 had very good reception. We went up to
4 Scottlandville Pre-engineering Middle School up there
5 and had good reception. Of course, I was watching
6 the kids. None of them -- they were all engaged in
7 it, which I was glad for. Again, we try to make it
8 relevant to them, but also connect our curriculum,
9 which we hope will be continued to be used in
10 classrooms locally.

11 So I do have a DVD. If any one of you know
12 any science educators and you aren't keen to keeping
13 it in your collection, please pass that along.
14 That's our goal to try to get each of the science
15 teachers here in East Baton Rouge Parish a copy of
16 this and, of course, it's online as well. But it is
17 applicable across the area, the Southern Hills area
18 around Baton Rouge, the Capital Region. So, again,
19 this was a project that we were really excited about
20 and glad to get it released.

21 We initially kind of scheduled it for early
22 September. Of course after the flood in August,
23 maybe having Waterman so close to that was perhaps
24 not the best idea, but we were glad to get a release
25 of it and have it out there. So our goal again is to

1 keep moving forward with our workshop and eventually
2 try to take this statewide in terms of groundwater
3 education to provide a curriculum and lesson plans to
4 meet those new content standards that are coming
5 forward.

6 Now, switching gears a little bit, one that
7 kind of -- we do periodically get legislative
8 updates. So there are three pieces, one Act and two
9 House bills or House resolutions that we have an
10 interest in, and this Commission should obviously
11 have an interest in it as well.

12 The first one is Act 362 from earlier this
13 year and we, in the Office of Conservation, from our
14 position with the Oil Spill Coordinators Office, have
15 somewhat of an interest in this project, but it's
16 really a CPRA project. And it's really just getting
17 started, but it's Natural Resources Damage
18 Restoration Banking. It's kind of a really
19 fascinating idea. The goal really is to generate
20 private investment in the Coastal Master Plan
21 projects. And I think as everybody that's involved
22 in coastal issues knows -- I mean, the big issue
23 there is money and how to move forward with some of
24 these projects. This is a way of creating a set of
25 credits that private investors could then trade on

1 the open market for responsible parties in oil
2 spills. Of course, I think it's -- the goal here,
3 again, is to provide some -- provide opportunities
4 for people, investors to help build these projects
5 and for any of these responsible parties involved in
6 future oil spills to be able to at least get some
7 credit for helping rebuild the coast.

8 So the planning process is underway.
9 Again, that's -- the Office of Conservation isn't
10 greatly involved in it. Again, it's more of a CPRA
11 project, but it's something that we did want to bring
12 out in front of the Commission if some of you weren't
13 aware of it. And we do have the contact information.
14 It's simply here in our presentation. It's
15 mitigation.banking@la.gov.

16 Again, I do want to, I guess, note that all
17 of these presentations, we'll have those up via pdf
18 on our website and we'll circulate those, a notice of
19 that probably tomorrow or Monday. So all of this
20 information will be available.

21 So an interesting -- I think CPRA is in the
22 mist of developing the rules and regs of its own
23 time. Again, it's not something that the Office of
24 Conservation is deeply involved in, but it is
25 something we did want to bring out in front of this

1 Commission for those that may not be aware of it.

2 The other two bills -- or the other two
3 pieces of legislation and current resolutions the
4 Office of Conservation and DNR have a little bit more
5 interest in, the first one is HCR 110, the management
6 of scenic -- natural scenic rivers through energy
7 management. This was by Representative Carter and it
8 is how natural scenic rivers are being utilized for
9 hydraulic fracturing in oil and gas development
10 generally.

11 So the lead agency on this is the
12 Department of Wildlife and Fisheries. DNR is acting
13 in sort of a supporting role here developing a lot of
14 stats on groundwater and surface water used across
15 the board. I would like to note that the 2015, 2016
16 numbers in oil and gas development, about 85 percent
17 of the total water usage is from surface water
18 sources. Again, going back to Haynesville Shale, the
19 agency's interest was in trying to move operators
20 from groundwater used in delicate or stressed areas.
21 In northwest Louisiana, the groundwater systems there
22 aren't as robust as elsewhere in the state, so that
23 was a concern. But, again, our most recent stats,
24 2015 and 2016, about 85 percent of that water usage
25 is from surface water, surface water sources.

1 Again, the report is due in March. I'm
2 sure it will be probably available before then or at
3 least the work -- drafts of it will be available
4 before then. Kyle, did you --

5 MR. BALKUM: Yeah, Matt. I just want
6 to bring it to the attention of the Commission, we
7 have a meeting next week with some of the staff at
8 DNR to work through and kind of find out where the
9 agency is for things right now. Thanks for bringing
10 that up.

11 MR. REONAS: Yes. So, again, that
12 report is in the works and will be available soon.
13 The next one is strictly Office of Conservation.
14 This is HCR 115. This was again by Representative
15 Carter. It's on the sustainability of groundwater
16 use in the Southern Hills system of southeast
17 Louisiana. Again, Conservation is the lead agency on
18 this groundwater interest.

19 So what we're doing at this point in time
20 is going back and evaluating all the water level data
21 from the USGS that's available. Again, going back to
22 the importance of that water level network, we're
23 pulling all of that information. We're also
24 evaluating water use across the region, looking at
25 sustainability. And, again, the Southern Hill system

1 is a large system. You're talking about a system
2 that covers geographically about 14,000 square miles
3 in Mississippi and Louisiana and ten separate
4 aquifers within the system. Some of them have been
5 more productive and more robust at different places
6 than others. But, again, a large, very robust,
7 productive system. This supplies groundwater for
8 public supply across at least ten parishes in
9 southeast Louisiana, depending on how you count it.
10 Then, of course, all the industry and agriculture in
11 those parishes as well, or a large percentage of
12 industry. So we're looking at all of that ourselves.

13 The U.S. Geological Survey is also
14 developing a groundwater resources pamphlet that
15 we're going to have as a support document. And,
16 again, this is also set for -- the deadline is in
17 March, March 1st, but we're looking to try to finish
18 this up by the end of December internally, at least
19 get it under review by then and then hopefully have
20 it out probably in January, depending on how it goes.
21 But that's essentially strictly an Office of
22 Conservation project. And, again, for example, we
23 had a couple of the USGS potentiometric maps from
24 some of -- from several of the aquifers within that
25 system. So that's that project.

1 I believe in terms of speaking of the
2 Capital Area and the Southern Hill system -- I guess
3 I can take any questions right now, but I do want to
4 take this moment to transition over to -- we have the
5 Chairman of the Capital Area Groundwater Commission
6 available to kind of talk about the direction that
7 that group is going. But I can take any questions
8 right now on any of these topics, the education, the
9 annual report or any of the legislative subjects.

10 MR. SPICER: Any questions for Matt?

11 MR. BALKUM: You did a good job.

12 MR. REONAS: Thank you, Brad. So I'd
13 like to introduce the new chairman of the Capital
14 Area Groundwater Conservation Commission, Barry
15 Huggins. Barry is taking over as chairman, I guess,
16 effective -- well, you're interim chair.

17 MR. HUGGHINS: I'm the chairman elect
18 for 2017.

19 MR. REONAS: Right. So, again,
20 that's a district that comprises five parishes here
21 in the Capital Area.

22 MR. HUGGHINS: Good afternoon. I
23 appreciate the opportunity to come and speak and I'll
24 be very brief. I'm sure y'all have sat here long
25 enough. I am the new chairman of the Capital Area

1 Groundwater Conservation Commission. We protect the
2 groundwater in a five-parish area around Baton Rouge.

3 Our challenge is very simple. We have had
4 saltwater encroachment across the Baton Rouge fault.
5 Currently, we are managing the pumping in such a way
6 that the withdrawals minimize the amount of saltwater
7 that comes across. We are in the process of
8 installing some monitoring wells. We have worked
9 quite extensively with USGS on miles development and
10 with Dr. Frank Tsai at LSU on developing a model of
11 groundwater transport so we can understand exactly
12 what happens as water moves through the Southern
13 Hills aquifer in the Capital Area and as water is
14 withdrawn.

15 We have worked also with Baton Rouge Water
16 Company. They have installed a scavenger well for
17 the 1,500-foot aquifer sands not too far from here at
18 the Lula pumping station. That system seems to be
19 working very well and I believe we have a very good
20 handle on the issues that we're facing. I don't
21 think we're in any immediate danger of running out of
22 water in the Capital Area, but certainly it's
23 something that's critical to our area and we need to
24 stay around and talk about it. I'll be happy to
25 answer any questions that you might have.

1 MR. SPICER: Do we have any questions?
2 Okay. Thank you. Any more comments, Matt?

3 MR. REONAS: No.

4 MR. FREY: Mr. Vice Chairman, before
5 you go to public comments, I wanted to commend the
6 Conservation staff, Matt, Gary, John for putting
7 together a very robust agenda. I think it was very
8 informative, at least from my perspective it was.
9 One of the things that's concerned me over the years
10 as we sit through things and talk about water budgets
11 and water codes, et cetera is that we haven't had a
12 lot of good information relative to the water
13 budgets.

14 We had a -- I want to say about three years
15 ago we had a presentation from Kai Midboe with the
16 Water Institute relative to the importance of water
17 budgets and the fact that we don't need to get the
18 cart before the horse. We've got to find out how
19 much we've got, how much we're using before we get
20 into talking about codes and regulations, et cetera.
21 So I'm glad to see we're getting that in the agenda,
22 things we can hear as a Commission and get our teeth
23 into.

24 With that said, going back again to one of
25 those older meetings, we had a workshop where we

1 heard a number of presentations and had a lot of
2 feedback. One that stuck in my craw was a comment by
3 Pat Credeur with the Louisiana Rural Water
4 Association. Pat mentioned that a number of these
5 rural water systems were still fighting a leakage
6 problem. And I don't remember the number he quoted,
7 but it was several million gallons and I want to say
8 that was on a daily basis, which, you know, if that's
9 correct, we've got to do something about that.

10 I don't know what's been done. I'd like to
11 encourage the staff and this Commission as a whole to
12 charge someone with looking at that and see what
13 we're doing and are we making any progress in regard
14 to that leakage issue. Because if we're losing that
15 water due to leakage, we need to determine whether we
16 can, you know, create some incentives or close that
17 drip. So I just wanted to throw that out before we
18 moved on.

19 MR. SPICER: Thank you, Mr. Frey, for
20 your comments. Any other comments? Do we have any
21 comments from the public? We don't have any cards
22 here. If not, then we're ready to adjourn.

23

24 (Meeting is adjourned at 1:07 p.m.)

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Baton Rouge, Louisiana, this 27th day of December, 2016.

Laura Quinette, CCR, RPR
CCR No. 2014011, RPR No. 73367