as, "What is the impact of a large industry?" Now, here, it's not really large, because even one large industry is a relatively minor addition to about 100 million gallons a day used by agriculture. But this is an example of how that regional models can be used towards ultimately, maybe close-in studies within a parish.

The large regional models, for example, in Chicot, if you added one large industry, it would largely be lost, but if you had a focus model, an inset model, which can be quickly developed out of a regional model by the computerized technique, a refinement mesh technique, you can pull it out almost in an automated way, and you can build off the regional model and quickly run a series of scenarios.

Thank you. That's all I have to say. I'll be glad to answer questions, and I'm sure Tom would, as well.

MR. WELSH:

Perhaps we could get Mr. Dial to give his report, and then we could just open it up for questions to any of the presentations.

MR. DIAL:

My name is Don Dial. I'm the present director of the Capitol Area Ground Water Conservation Commission. This -- Capitol Area includes -- it's a ground water management district in the Greater Baton Rouge area. The district covers five parishes, which includes East and West Baton Rouge, East and West Feliciana, and Pointe Coupee.

I'm going to just talk to you and tell you about the what the Commission is all about, what we do, and some of the things that -- how we're funded and so forth. We'll first talk about the function of the Capitol Area, number two, the authority of the Commission, Board makeup, funding, and the powers of the Board.

In the beginning, the function of the Capitol Area Ground Water District was to promote the orderly development of the ground water resources of the Capitol Area District, and a second very important function was, protect the quality of the ground water. This was generated by -- going back to the -- in the '60s, there were concerns back then about things like ground water declines, water level declines. There were concerns also with -- it was determined early on that one of our sands, the 600-foot sand, had migrated across the Baton Rouge fault and was moving northward toward the downtown area, so there was salt water encroachment at that point. And another thing they were concerned about was land subsidence, and I'll go over that a little bit later.

The Capitol Area Water District was put into being by the act -- by an act of the legislature in the 1974 session, and -- so that's about -- we've been in business about 30 years. The Commission started up its operation January 1, 1975, and the object was to inventory all the water users in the district that were covered by the Commission and to keep track of all the ground water pumpage from all the various aquifers.

And there's -- of course, there's a number of water-bearing sands beneath Baton Rouge, and each of these is used both for public water supply and also for industrial usage.

The Commission was set up with a governing Board, which consists of 15 commissioners, somewhat like the set up of the State Ground Water Commission here, and it was set up where they would have rotating terms. Each commissioner serves a three-year term, which can be -- you can have one carryover. In other words, you can be renominated for a second three-year term. He can serve, or she can serve, for a total of six years. A couple of exceptions to that are the two State agencies, DOTD and DEQ. Their representatives may have as many terms as they want. It depends on who selects them. The secretary of the agency selects his representative to the Commission, so many of those, like -- well, Mr. Bo Bolourchi, with the DOTD, he's been on the Commission for a number of years.

We have five representatives representing the five parishes; three represent industry, and we have three representing municipal or privately-owned public water suppliers. We have a representative from the Farm Bureau and the Louisiana Cattleman's Association, and, as I mentioned, we have two State appointees, DOTD and DEQ, and one nominee is what they call the "Board nominee," and he's selected by the Board itself. Okay.

How are we funded? Well, we don't get any State appropriation, and that's good, because we don't have to depend on money coming from somebody else. The

Capitol Area Ground Water was set up originally to be self-supporting. It would be supported solely by the pumpage fees accessed to the ground water users in the district. And it's worked out quite well. We've had to raise the pumpage fees. I think the pumpage fees back in the early days -- by the way, the early days were -- well, back in 1975, we were represented by a fellow named Alcee Turcan. I'm sure Turcan is well known to especially some of the older people here, the second director was George Cardwell, and both of these guys were experienced ground water hydrologists. They served their careers with the U.S. Geological Survey and had good knowledge of ground water.

The funding, at the present time, the user fees are $3.50 per million gallons. And we have two salaried employees, which is myself and one administrative assistant, so we have a fairly low overhead concerning that. Now, the user fees have some exemptions which were placed into effect whenever the law was made enacting the Ground Water Commission. The Alluvial Aquifer is exempt from any fees. Of course, the Alluvial Aquifer is primarily on the west side, over in West Baton Rouge and Pointe Coupee Parishes. Also, we did not charge any fees for wells completed at depths less than four hundred feet. And I think their thinking at the time there was that there would be an incentive for people maybe to put some wells in the shallow sands and save usage from some of the deeper sands, which are heavily pumped. Another exception was wells not capable of producing more than 50,000 gallons

a day, that would include, primarily, domestic wells, household wells, and we don't charge any usage from those people. And then agricultural purposes was also given an exemption.

Now, we'll get into the powers of the Board. The Enabling Act, as they call it, was -- gave the Board the authority to do such and so things, and they wanted to give it some teeth, I guess, to operate. And one thing has to do with the well registration. We actually share this information with the USGS and DOTD. The wells are registered with DOTD, and any well, especially a well that affects us, that is a non-exempt well, we get the information from them so we can have it in our database, because we have to have all the wells in our database in order to send out our pumpage invoices, which we do quarterly.

Authority to issue permits to all the nonexempt pumping wells, and we have had a permit rule in effect for several years. And the idea of the permit was simply to get some information ahead of time about where are you going to put the well, how deep are you going to put the well, and is it close to any other wells pumping in that same sand? It would give us an idea to get an advance review of it. And at the present time, we share this same responsibility with the State Ground Water Commission. They get this information from people who are contemplating a well. They're supposed to give them, I believe, it's 60 days, is that right, 60 days notice, ahead of time of the well, and that way, it gives you a chance to look at it

ahead of time. Now, I've gotten a few wells in the district that I found out about them after they were drilled, and that's not a very good way of doing business. Because, usually, they would call me whenever they ran into a problem and say, we thought there was a sand there, and it didn't show up. We've gone on down to such and so depth, and what do we do now? So if they put in their information to start with, in the beginning, beforehand, and give some people a chance to look at it and say, okay, you may have a problem here with this sand; it looks like it has high iron or low pH or any number of things.

I'll just skip through these quickly. Require abandoned wells to be reported and plugged, that's also a function of DOTD, so, in a sense, we and the State agencies are interested -- are all interested in the same thing, that is, to make sure that wells are properly reported and plugged. And also, there may come a time when we may have to specify the spacing of wells, where there's a problem maybe with, well, declining water levels or subsidence.

And back in the early '90s, the Board did pass a resolution where they would somewhat restrict the pumpage in the industrial area. It was known that the water levels in the 2000-foot sand were declining at a pretty rapid rate, so they specified a pumpage limit within a certain area up there in the industrial area. And it worked out really good, and the industry, themselves, and I'll have to commend them for this, they have instituted conservation measures to cut back

on pumpage, do more recycling, and in some cases, they're using -- they've gone to the river for water, put in the treatment plant, use river water, and use that for some of their industrial applications, especially cooling and things of this sort. So, we've had no -- since that time, we've had no problem with very rapid declines of water levels. That doesn't mean that that's not a problem, because they are declining slightly in some of the sands, and so we continue to monitor that.

Enter into contracts with government or private agencies, since the beginning, the Capitol Area Ground Water Commission has had a pretty close relationship with the U.S. Geological Survey. We've always been located right next door to them, and we have entered into a number of ground water studies with some of the ground water professionals in the USGS, and that's worked out real good. These contracts are operated on a cooperative basis, that is, we put in 50 percent of the money, and this is matched by Federal funds. And it usually ends up on a -- some sort of publication on some phase of ground water, which we're interested in.

Number two, to receive grants, we've only -- in my experience, we've only used this grant procedure one time. Back several years ago, we applied for a grant through the EPA to look at possibly controlling or holding at bay some saltwater encroachment that was occurring in the 1500-foot sand, and so we got that grant after a lot of rigmarole, and we finished this project back in 1999. And the idea was, we put a -- in

what we call a connector well. We connected two sands, the 800-foot sand and the 1500-foot sand. And since the saltwater was approaching the public water supply wells on Government Street, we put the connector well just south of those Government Street wells and connected the two sands, and the 800-foot sand is constantly recharging the 1500-foot sand. It's run by -- strictly by a head difference. There is a head difference of 80 or 90 feet between the two sands, so the well just sits there and flows day and night. And the idea was to build up -- instead of a draw-down cone, you would build up a recharge cone, and you would raise the hydraulic head on the 1500-foot sand and change the flow pattern the way the saltwater was moving and actually shuttle it off to the westward, away from those two wells. Up to this point, it's worked. There may be a time whenever some saltwater will eventually get to those wells, but it's worked for up to seven years now.

Oh, I just talked about that, prevent saltwater encroachment, operation of wells for removal, well, this would have to with either operating a scavenger well or an injection well or a connector well. I just talked about the connector well. But a scavenger well is simply where you have a well that's starting to go salty because the toe of the saltwater always moves along the bottom of the aquifer, because the saltwater is denser than the freshwater. So, therefore, whenever a well starts to creep up on a chloride concentration, that's a dead giveaway that the saltwater front has

reached the well. So you can put in a scavenger well -- and this has been done in a test. In fact, the USGS did a test on that back in the '60s, I think it was, on a well down in Gonzales that was starting to go salty. You simply -- you -- whenever you pump the freshwater in the well, you would go down and screen the saltwater section.

In this well in Gonzales, they put in a liner pipe with a packer, and so they had to -- they would pump out of the regular well, or the annular space of the well, and they would pump out of the liner pipe. The liner pipe was screened in the bottom of the aquifer so it made saltwater. So you would pump the two wells simultaneously. The freshwater is good to go, and the saltwater, you would have to dump it somewhere.

And there's another type of well used in the oil patch, which is functional, but I don't know of anywhere that it's used in ground water hydrology. And I think it's a good thing for research, and that is, what they call a doublet well, or in petroleum terms, they call it a deep-well sink type of technology. In other words, whenever you drill an oil test well and it makes gas and it makes a certain amount of oil and maybe, along with that oil, it will make some saltwater. In time, the oil production decreases, the saltwater production increases, and so that's not good on your pilot sheet, you know, on the bottom line. You have to -- in the early days, they just simply dumped this saltwater in creeks or on the surface of the earth or whatever. The State now has pretty strict

regulations on that saltwater, and most of the pumpage, I think, is now -- they pump it back down into the ground. They call it deep-well -- deep-water disposal. But the doublet well would work the same way in the freshwater. We had a very well-known hydrologist back in the, I think it was the '40s; his name was Jacob. He actually applied for a patent on this kind of operation. And what you do is, you pump the freshwater upward; you pump the saltwater downward. In other words, you would have a reverse pump, and you would have a packer between them, and so the saltwater just rotates around in a circle, endlessly, but you can continue to pump the freshwater part of the aquifer on the top. And, like I said, the oil well people have got this down to a technology. The people down here at LSU have done a lot of research in what they call deep-well sink technology.

Control pumping in areas threatened by encroachment, I think -- yes, I've just covered that, okay.

To summarize it, the Ground Water District began operation in January of 1975, and the reason -- the thing that brought this organization into being was, there were three major concerns, and these were concerns of a lot of people. It just wasn't one or two people, but these were the concerns of the government agencies, like the USGS. It was concerned with -- certainly with the public water supply industry, Baton Rouge Water Company, and it was a concern with industries, like Exxon and some of the larger

industries up there. And the concerns were, of course, are the water levels going to continue to decline? There was a problem with saltwater encroachment, and also, they were concerned about land subsidence, because in the Houston area, that had been quite a problem. They had pumped a lot of ground water over there, and their stratigraphy was such that it promoted land subsidence. The intervening clays were compressed causing the surface of the land to subside. That's not been much of a problem here in Baton Rouge. We still have three subsidence wells up in the Exxon plant yard. They've been in operation for -- I guess, since the '70s, and we keep continuous records on them, okay.

Our budget for the District is somewhere in the neighborhood of $200,000 per year, that's what we get from our pumpage fees. So some of that goes to the two employees' salaries and we -- office rent and so forth, but we have a substantial amount to put up in ground water studies, like cooperative studies that I mentioned earlier, with the USGS or with the City Parish or whoever, okay.

Just a few of the activities, review the plans for the new wells, collect and maintain the records, we keep these -- we've got records on all the pumpage in the five parish districts since 1975. These are available in the computer. We also keep hard drive -- hard copies of those in the -- in our files, as well. Review water level data and all those sort of things, conduct cooperative studies, that's with the USGS, primarily. Supply ground water information to the

public.

Down at the bottom, I print a quarterly newsletter. We just came out with our October 2006 newsletter, and I'll leave a few on the tabletop if somebody would like to see our newsletter. Many of you are on our mailing list. If you are not on the mailing list, you could leave your name and address or call our office at 293-7370, and we'll be glad to put you on the mailing list.

I guess that's it, and that's all I have. Thank you very much.

MR. WELSH:

Thank you, Don. That was very interesting. I guess, the speakers today, if you would be willing to answer any questions that the audience might have.

Does anyone on the Commission have questions for any of the speakers?

MR. LOWE:

I think I know the answer, Mr. Dial. But where are you getting the individual pumpage rates for a well; are they coming through the permit process?

MR. DIAL:

Pardon?

MR. LOWE:

The individual pumpage rate, do you print out an invoice? It's based on pumpage rates, right?

MR. DIAL:

Yes.

MR. LOWE:

Okay. So is that a part of the permit there to