

Oklahoma Innovations Radio Show

Air Date: November 22, 2009

Guests: Duane Smith, executive director, Oklahoma Water Resources Board

[Music]

From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is technology, its development, transfer, and commercialization. OCAST mission is to identify and fund promising research in technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of the state's most gifted and talented scientists, inventors, entrepreneurs, manufacturers, and business leaders who all have one common goal, developing technology-based economic growth for all Oklahomans. Now here are your hosts, Gary Owen and Steve Paris.

>> Owen: Welcome to this week's edition of *Oklahoma Innovations*, Gary Owen and Steve Paris and we're delighted to have you on this week's show. By the way, we want to make mention here, those of you who live in the northeast part of the state, we've got some big news for you, where this program is moving to a new time slot. On 740 AM and 102.3 FM, news talk KRMG is moving our show after 14 years, we're going to be moving to a new time slot. Better for us. And great for the audience, because we're going to gain more ears. And we're moving next Sunday to 8:00 AM on KRMG.

>> Paris: That's a big switch.

>> Owen: That is a huge switch for us.

>> Paris: From 5:00 in the morning.

>> Owen: That's right.

>> Paris: You bet.

>> Owen: So spread the word that, and what's great about it is we know that KRMG has a, a great Sunday morning audience there and a lot of people have heard about the show, maybe caught tidbits about it, now they'll be able to hear it at a new time. So make note of that. Of course our other great affiliates, our flag ship station, News Radio 1000 KTOK always a, a great station for us in Oklahoma City. And then of course we like to mention our stations out in Western, Southern and Northern Oklahoma. Thanks to Cameron University, a lot of great stations out there, KOCU in, in Altos, and KLCU, KCCU, KYCU FM and just a lot of great stations out there. And also we've got.

>> Paris: Now let me mention.

>> Owen: A new Woodward affiliate there as you know.

>> Paris: Exactly.

>> Owen: KZZU FM. And in Wichita Falls, Texas, you can hear us on KMCU FM. And so those of you in Wichita Falls, it is just across the border so they can.

>> Paris: Of course our friends in Texas. We want to make sure they know what's going on in Oklahoma.

>> Owen: That's right.

>> Paris: But you, so they found us.

>> Owen: [Inaudible].

>> Paris: [Inaudible], Clinton, Dunkin, [inaudible] and of course you mentioned Oklahoma City, Tulsa, Woodward, so and Wichita Falls. So those are where we're heard every week.

>> Owen: Hard to believe we've been doing this now as long as we have.

>> Paris: And guess what. What they can also pick us up the Monday after this show airs on our website.

>> Owen: On our website, which is absolutely phenomenal.

>> Paris: Which is OCAST at OK.gov.

>> Owen: That's right.

>> Paris: You bet.

>> Owen: Hey today we're going to be talking about water. If you have water problems, we're going to be talking about water today. Actually we're going to be talking about water resources. You know some of that's one resource, well sometimes I think people take for granted we just turn the tap on expect it to be there. But we have some people who are making sure that we have quality water for the future in Oklahoma [inaudible].

>> Paris: You just said a whole mouthful there Gary because getting water from its source to the user, to the end user, is no easy task. And Duane Smith, whose executive director of the Oklahoma Resources Board is going to be out guest today. We're going to talk with him in just a little bit, but he's been involved as a lot of people in the state have in Oklahoma Comprehensive Water Plan. And it means a lot for the future of every Oklahoman so we want to hear more about that here in just a few minutes.

>> Owen: Well we always like to talk about OCAST because you never know week to week, some new projects come up. Of course you guys always have some seed funding projects that come out every now and there. What's going on with OCAST?

>> Paris: Well the latest is, is something that's going on as we speak. We've got about 1.7 million dollars that's going to be put out this week under the OPRS Program. Now when I say OPRS, what am I talking about? The Oklahoma Plant Research Support Program. That's going to fund about 10 or 12 individual research projects for a sum total of three years. And they're going to be doing, of course, when we talk about how we approve those it goes through a peer review process. And not only that, we, we monitor the process as it goes along the entire three years, and they have to prove to do the work before we give them the money because it is the people's money and we're going to make sure that that gets used in the best way possible. And one of the things that, that we require of our peer review team is that when they look at these projects, that they think in terms of the potential commercialization of these projects. And in other words, making an up and running business that hires Oklahomans and puts, brings money into the state. So it's an economic development effort and we're going to hear more about the

specifics probably next, our next show because we'll have, we'll know who the winners are at that point. And then there's another side to it. We also have a student intern partnership program. We put.

>> Owen: Excellent program.

>> Paris: It is. We put a university faculty member alongside the student who, and monitors the process. The student is technically trained. We're not paying them to take out the trash. They're going to be people who are, who are working in, with private sector companies. OCAST pays half of their salary. And the company pays the other half. And we've had about, probably close to 600 students go through this program over the last 11, 12 years.

>> Owen: Wow. By the way you mentioned something a while ago and I, I hope our audience caught it. You said key phrase, the people's money. I.

>> Paris: That's right.

>> Owen: I think a lot of people who listen to this program understand what OCAST is about, but they forget that it is the taxpayer's dollars.

>> Paris: Yes it is.

>> Owen: That are being invested into science and technology and the return.

>> Paris: Right.

>> Owen: Is phenomenal. When you look at all of the projects that are out there that OCAST has helped provide seed funding for. And then of course a lot of dollars matched with.

>> Paris: Right.

>> Owen: Federal funding.

>> Paris: It is.

>> Owen: And a lot of great programs out there.

>> Paris: And that's one of our purposes Gary.

>> Owen: That's right.

>> Paris: Is to attract those federal and private sector dollars to the state. We've expended roughly in the 22 years, roughly 170 million dollars.

>> Owen: Wow.

>> Paris: Over 22 years.

>> Owen: That's amazing.

>> Paris: That we've been able to attracted with added to that at a total of three and a half billion. And sometimes our, our projects we may put up 100,000 dollars over a period over three years, but the researcher's about to get maybe or ten or 12 million from the NIH or the National Institutes of Health or the National Science Foundation. Any number of groups. The federal or private sector agencies or foundations.

>> Owen: And look at the talent we've drawn into the state.

>> Paris: That's.

>> Owen: In research.

>> Paris: You, you bet.

>> Owen: That is just phenomenal. In some of our science news this week. A U.S. based planetary society has announced its second attempt to launch a small space craft with sails propelled by sunlight. Its designers call it light sail one. And if it works as advertised, the solar sail project would represent a baby step toward humanities first star ship. Wouldn't that be cool. California based planetary society announced the new project to launch the small spacecraft. The principal idea is simple. Use the sail to intercept sunlight which passes on the sail, on the sail much like wind on canvas. The same pressure keeps the sun from collapsing under its own gravity. That's what they're talking about, this idea is about I guess. Initially a solar sail craft builds momentum almost, I, I don't, I just, I don't get this. Well anyway. This is one of those technologies that if it gets up to speed, leave the solar system, make an interstellar flight, and the project is only costing about two million, two million.

>> Paris: Really?

>> Owen: Dollars to demonstrate.

>> Paris: That's pretty inexpensive.

>> Owen: Yeah.

>> Paris: For space travel.

>> Owen: A newly discovered dinosaur species that roamed the earth about 200 million years ago, may help explain how the creatures evolved into the largest animals on land. Scientists in South Africa say they've found an Arandox, Aradonax excuse me. 30, 23 foot long, small headed [inaudible] with a huge barrel of, huge, huge barrel of chest. Walked on its hind legs, but also could drop all fours. And they're saying this newly discovered species shares many characteristics with plant eating [inaudible] that walked on two legs. Okay. A world wind of activity is underway to apply the findings of the three billion dollar human genome project. You know we talked about that quite a while back to improve healthcare in the United States and around the world. Six years after scientists finished decoding the human genome, the genetic instruction book for life, they're starting to take their new knowledge from the research laboratory to the doctor's office, and the patient's bedside. Scientists say they hope all this knowledge of the genome will lead to more kinds of therapies. They call it personalized medicine. That would be interesting. A quarter of a million people picked up droid phones recently. This according to one industry tracking firm. It's Verizon Wireless' droid, the Smartphone manufactured by Motorola and powered by Google android operating systems. It sounds like a robot, robotic phone, doesn't it?

>> Paris: It does doesn't it.

>> Owen: Yeah I guess everybody you know is trying to match up with the iPhone that Apple has just constantly turns the wheel on. Well anyway, early tests of the droid were largely positive with reviewers praising the droid's navigation capabilities, its full quarter keyboard and its lush screen display which easily bests the iPhone in terms of resolution. Here's a cool story. This related to Alzheimer's. Now we've stipulated on this program before that more than five million Americans are estimated to be living with Alzheimer's. As many of half in the diseases early stages, increasingly early diagnosis means many patients still have years of independent living

ahead of them before they have to give up the car and eventually give up going out alone at all. At some point nearly 60 percent of Alzheimer's patients will begin what's called wandering requiring more intense supervision to keep them safe. Well, guess what? There's a new, new type of I guess widget I would call it. That they're adapting, that's been used for monitoring prisoners. You know where they.

>> Paris: Okay.

>> Owen: It's a, it's a monitoring technology. Well now they're finding a way to use this technology to help family members track and keep track of Alzheimer's patients.

>> Paris: Is it GPS based?

>> Owen: Yes, that's right. And they're calling this new program the Comfort Zone Program. And it's a web based mapping service that works with multiple brands of tracking transmitters. First out are pocket sized transmitter and a car version with a harder to remove wrist watch style. And one secreted, put in a shoe. Can you believe that?

>> Paris: Really.

>> Owen: Yeah. Yeah. So I don't know its, technology explosion.

>> Paris: We, we've been using it in aviation for many, many years.

>> Owen: We have.

>> Paris: Yeah.

>> Owen: But I just think that's, that's cool. So.

>> Paris: You bet.

>> Owen: Families with Alzheimer's patients be aware. All right.

>> Paris: You ready for innovations in history?

>> Owen: Got our innovations in history.

>> Paris: Very good. On November 18, 1894, the New York World published the first Sunday comics in color. On the same date in 1970, Nobel Prize winner Linus Pauling declared that large doses of Vitamin C could ward off the common cold. November 19, 1895, Frederick Blazedale of Philadelphia, Pennsylvania patented what he called the paper pencil. The paper wrapped pencil with a stream for revealing more lead. Kind of like those china markers you buy these days.

>> Owen: Yeah, I hear ya.

>> Paris: Two automatic toe collectors were placed in service in the garden state parkway on November 19, 1954 in New Jersey, the first automatic toe collector accepted only correct change. One needed a quarter to activate the green light.

>> Owen: Didn't have a pipe vest back then though.

>> Paris: That's right, that's right. November 19, 1959, the last Edsel rolling off the assembly line. Ford Motor Company stopped production of the big flop after two years and a total of 110,847 cars.

>> Owen: You know back then I thought it had a cool looking grille, but I guess it was just a flop as a car. I don't know.

>> Paris: Yeah well, I'm not surprised. And people, they're collectors' items today by [inaudible].

>> Owen: Yeah they are.

>> Paris: The rotary cranked bicycle was patented November 20th, 1866 by Pierre Lamont in Paris, France. The bike incidentally was known as the bone shaker.

>> Owen: The bone shaker.

>> Paris: The first commercial teletype service was introduced by American Telephone and Telegraph Company on November 20th, 1931. And it was November 21st, 1871 when the cigar ladder was patented by Moses F. Gail of New York City. And those, Gary are just a few more of the innovations in history for the month of November.

>> Owen: That is absolutely phenomenal stuff there.

>> Paris: Fun stuff.

>> Owen: Bowling shaver, I'd like to see what that is like. That's interesting.

>> Paris: Well coming up we're going to be, in fact our whole show is going to be talking about water, what we take for granted with water resources around our state. Where does our water come from and how, how good a quality is it. Why is that so important, well I, that's a no brainer. But we have an organization here and I guess we're going to talk about that when we return on Oklahoma Science Magazine, *Oklahoma Innovations*.

[Music]

>> Imagine not being able to see your daughter on her wedding day? Or experiencing your grandchild's first smile? An estimated three and one-quarter million Americans over age 50 have developed a loss of vision or blindness due to age related macular degeneration. And of the more than 200,000 Oklahomans living with diabetes, 90 percent will develop eye disease. With the support of the Oklahoma Center for the Advancement of Science and Technology, an Oklahoma company is developing innovative treatments for blinding eye disease. The research will improve the lives of people across the nation. Create new treatments that are more comfortable for patients and prevent vision loss. OCAST is looking for Oklahoma researchers serious about investigating new treatments in products that improve the quality of life and the economy for Oklahomans. For more information call OCAST toll free at 866-265-2215. Or visit their website at OCAST.Ok.gov. Investing in science and technology, it's good for your health.

>> Now in its 14th year, this is *Oklahoma Innovations*. On the OCAST radio network.

[Music]

>> Owen: Welcome back to Oklahoma Science Radio Magazine, *Oklahoma Innovations*, Gary Owen and Steve Paris bring you this show each week, talk about science and technology. We talk about a variety of projects too. This week our guest is Duane Smith executive director of the Oklahoma Water Resources Board. And we're going to talk about an Oklahoma Comprehensive water plan Steve.

>> Paris: Among other things Gary. But I want to introduce Duane a little bit. He's been on the program before, and he is, as you mentioned Executive Director of the Oklahoma Water Resources Board. You know we have so many issues related to water in Oklahoma but we're not alone. Other states do too. Other regions do also. One of the issues I think that Duane will back me up on this, if I'm wrong just tell me I'm wrong Duane. But I, we have plenty of water. It's just a matter of getting it to where it needs to be. That's a big part of our issue, is it not? And all of our challenge. And some areas don't have enough water, but there's, when you count the overall inventory of Oklahoma's water supply, we have quite a bit of water in the state. Do we not?

>> Smith: That, that's exactly true. And, and gosh guys it's great to be back talking about water.

>> Paris: Oh yeah.

>> Smith: But when, when we address that particular issue, it, you know, we talked about kind of the godfather of water resources in Oklahoma, former Senator Bob Curtin.

>> Paris: Right.

>> Smith: And, and his legacy that he left with over 26 major federal reservoirs in Oklahoma that store over 14.

>> Paris: Yeah.

>> Smith: Million acre feet of water.

>> Paris: Right.

>> Smith: Without that vision of, of development, we wouldn't have the supplies.

>> Paris: Yeah.

>> Smith: Necessary to meet, to meet all of our needs in Oklahoma.

>> Paris: If somebody hadn't done that we would be thirsty today.

>> Smith: Oh that's.

>> Paris: And that's.

>> Smith: Absolutely correct.

>> Paris: And I don't mean that to be funny. I literally, we would be, be hurting for water. As far as having a water supply. Before we go any further let's talk a little bit about you. And we do this every time we have a guest on the show. I feel like I know you. I feel like our audience knows you. But it's been a little while since you've been on the show. Give us a little brief history of how you, how you came to be executive director. Some of your past history. Where's home for you, where you from originally? That kind of stuff.

>> Smith: Well I appreciate that. I'm originally from Kingman, Kansas, which is a little farming community west of Wichita, Kansas.

>> Paris: Having probably similar water issues that we had in Oklahoma.

>> Smith: Absolutely, the, the same issues. I went to school at the University of Oklahoma and have a degree in meteorology.

>> Paris: All right.

>> Smith: So I went to the Water Resources Board, worked for a, a short time at a private weather service and then moved to the Water Resources Board in September of 1978. So 31 years ago started at the Water Board and moved through various programs there with the agency. And have been the executive director now for about 12 years.

>> Paris: Yeah, and have an illustrious career already. And, I, I can tell by looking at you, you got a lot of years left.

>> Smith: Well I appreciate that and it's been a great ride. I still have to decide what I'm going to do when I grow up. I guess.

>> Paris: Well, well I tell you what, we've talked about water being the issue of the future. It's also the issue of the present. We worry about oil and natural gas. But water is, is soon, if it isn't already the corn of the realm is it not.

>> Smith: Well, certainly from my perspective. I think as we, as we look today and look back, we already talked about Senator Cure and his vision. And water resources development in Oklahoma and what that's done for us. But as we look forward, it, it's not Senator Cure's time anymore, it's out time.

>> Paris: Right.

>> Smith: And we have to make sure that we have a, a water program in Oklahoma that provides reliable water supplies, not just for public water supply, but for agriculture and oil and gas, and, and all of these activities that really are the backbone of our economy.

>> Paris: And something that maybe we didn't think too much about 30, 40 years ago. But has really come into its own, is you know there's other places, not in Oklahoma, that are looking to us and saying hey there's water there. And we might want to get some of it. And so.

>> Owen: That brings up a whole different set of issues that we probably don't have time to talk about on this show. At this particular time. But you know we all have heard about, what is it Tarrant County in Texas, it's looking to Oklahoma to, to take, to get some water and of course if you're an Oklahoman they're taking that water, of course, and if you're, you're in Texas, well we've got plenty of it, let's buy it from Oklahoma. Or let's just, you know, get it and, and that's, that remains to be seen how that happens. But let's get back to the, the comprehensive water plan. Because I, I bet you there's some shocking things there, shocking from the standpoint that, that typical Oklahomans don't really understand or don't know the issues that you're dealing with in the water plan. And that's I've got a lot of great expectations for that water plan. I think a lot of people do. So let's, let's talk about it. Give us kind of a board overview.

>> Smith: Well sounds great. And, and I also have great plans for our, the, certainly the implementation of our comprehensive water plan. And, and this year as we've discussed many times, and this particular update, we had 1980 plan and a 1995 update. But this update is, is quite a bit different in that we are having a two pronged approach. One that really involves robust public participation. We've been to 42 local meetings across the state getting input from citizens across Oklahoma and what they think are important on water issues. We then narrowed that down and, and have had more discussions about what those issue are and what possible solutions are. And in May, this is going to all culminate in a town hall that we've contracted with the Oklahoma Academy for state goals.

>> Paris: Right.

>> Smith: And they're going to, through this process come up with recommendations on what policy changes or implementations should happen on, on water. The other piece of that is the technical evaluation. And I, I believe the recipes for success is very clear. You have to have robust public participation so that the local people can support the, the implementation. But then you also have the expert technical evaluation that comes along with that. That is, I think the two pronged approach that it's going to make our plan really implemental at the end of the day.

>> Paris: Well I do know, as you put this together, as you held your meetings across the state, I understand there was tremendous participation. Everybody had an opportunity. If you didn't, if you didn't participate you had nobody to blame but yourself on that one. Because you sure made it available. These, these meetings were held all across the state over a fairly lengthy period of time were they not?

>> Smith: We had 42 meetings, we had over 3,000 people come, which I think is absolutely fabulous as we started this and if someone would have said to me we have that many, I would have said well we'll, we'll see.

>> Paris: Yeah.

>> Smith: But, but the other side of that really is, it's less than one percent of our population.

>> Paris: Right.

>> Smith: And, and so while we're really glad that we had that participation we, we also need to have more.

>> Owen: Duane Smith is our guest. Executive Director of the Oklahoma Water Resources Board. More to come on *Oklahoma Innovations*.

[Music]

>> This is *Oklahoma Innovations*, on the OCAST Radio Network.

[Music]

>> What have you done for your marriage today. For every couple it's a little different.

>> Well I would like to say a hug and a kiss, but it was kind of hectic for us this morning.

>> We're going to the museums, as a family.

>> I gave her a call and say thinking of her. And the kids.

>> What have I done for my marriage today.

>> Yeah, I sent my husband a love email.

>> I've avoided all controversial things today.

>> Is that your answer?

>> That's pretty much it. Yeah, yeah.

[Laughter]

>> Well we're spending the day together so that's good.

>> She works nights and I work during the day, so spend the day together actually pretty good.

>> Yeah.

>> I suppose I, I didn't yell at him for anything. At all.

>> Yeah can't beat that.

>> Anything.

>> I made my wife laugh. That is a big plus for a marriage, keep her laughing.

[Laughter]

>> What have you done for your marriage today? Small changes can make a world of difference. Get started at ForYourMarriage.org. A message from the Catholic Communication Campaign.

[Music]

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>> Research and development. Technology transfer and commercialization. Creating high paying jobs in Oklahoma is what OCAST is all about. This is *Oklahoma Innovations* on the OCAST Radio Network.

[Music]

>> Owen: This program is all about science, technology and research and related industry in Oklahoma. And our guest this week is Duane Smith. He's Executive Director of the Oklahoma Water Resources Board. An interesting fact here, I found this interesting in some of their materials. Did you know that one inch of rain falling on a 160 acre field delivers 4,344,680 gallons of water, or 13.3 acre feet. It would take just over four miles of 80,000 gallon capacity railroad tank cars to transport this amount of water which would weigh more than 18,000 tons. Out of one inch of rain.

>> Paris: Yeah.

>> Owen: That's amazing.

>> Paris: That's, when you think about the exponential, you know collection of water that nature's provided us, it's, it's pretty fascinating.

>> Owen: Now when your local meteorologists says, well we, we got an inch of rain, you'll be thinking about that and go wow.

>> Paris: Yeah.

>> Owen: Yeah.

>> Paris: A, a four mile long, you know set of train cars. Duane, during the break, you talked about us selling, or our water potential water agreement with Texas whatever that may turn out to be. You mentioned House Bill 1483. We want to get back to the water plan. But let's talk about House Bill 1483, because that's kind of a very current piece of legislation that's been looked at right?

>> Smith: Well it really is. And I, I believe it's the most significant piece of legislation that's ever been passed in Oklahoma. And I, I just really have to say that the Water Resources Board members, their support of that, Governor Henry was very active in that. And the legislators that passed with only five nay votes in the legislature. So it, it was really supported. And, and basically what it does is talks about the compacts, the river compacts that we have in other states in Oklahoma. And you have to go back and really fundamentally understand what the lawsuit that we have with Tarrant County now really does and says. From Tarrant County's perspective, they believe that Oklahoma should have to issue a water right to an out of state entity under the same premise that we issue a water right to in Oklahoma. And they, the Supreme Court has addressed this in different cases between Nebraska and Colorado and, and other particular cases what we call the [inaudible] case. That says that water co, what is an article of interstate commerce. Therefore, one state can't arbitrarily restrict other states from get, getting it. But in our particular case, we have the Red River Compact. And the Red River Compact is very clear that it states the water above Dennison Dam in Oklahoma is free and unrestricted use for Oklahoma. The water above Hugo Lake and above our reservoirs in southeast Oklahoma is free and unrestricted use in Oklahoma. And what we believe and what our legal position is, and what 1483 really outlines is the fact that when Congress approved that, they took out the commerce clause issue that Tarrant County's putting with Oklahoma. In other words, when the federal

government says that it's an article of interstate commerce, and then they come back and say Oklahoma has this quantity, Texas can't come to us and say well we deserve a permit just like an Oklahoman does.

>> Paris: I see.

>> Owen: So that, that's the legal issue?

>> Smith: That's really the legal issue. It's the heart of the battle. Now of course that's, they've appealed that. And that's under review in federal court. We feel very confident with that legal argument.

>> Paris: Good.

>> Smith: And so you know we believe that we have to protect Oklahoma's needs. Not just our consumptive use. People, people from Texas and, and other states have said Oklahoma you have this tremendous amount of water that flows out of the state each year. We just want a small part of that water. And, and while one side of that I could argue is true. They're only talking about the consumptive needs. That's the water that's actually used by cities, or agriculture. We also have a tremendous recreational need. And an environmental flow need in Oklahoma that has to be met.

>> Paris: You got it.

>> Smith: And so our comprehensive water plan is going to look at all of those needs in Oklahoma. Not just the consumptive use aspect that, that Texas wants us to address.

>> Paris: Very good. This is an issue that, from a standpoint of us, us being citizens who pay attention, we need to pay attention to this. And, and see how this turns out because it'll have an impact on our future.

>> Smith: You know and, and this issue, this particular issue of water sales and transfers is one that came up, as a part of our 42 local input meetings, that we came down there and as a part of that, that issue it was addressed by our legislature. So I'm going to say great success for the comprehensive water plan.

>> Paris: Right.

>> Smith: For the robust public participation that's so far been put in place. This is an example of how that works.

>> Paris: There you go. Jog, job my memory just a minute. Now in Tarrant County looking at Lake [inaudible] and near Clayton?

>> Smith: They're looking at water in the [inaudible] River below Hugo Dam.

>> Paris: Okay.

>> Smith: But not.

>> Paris: Okay.

>> Smith: Specifically at [inaudible] Lake.

>> Paris: Okay.

>> Smith: But, but the excess flows that would, that they consider to be excess flows that flow below Hugo Dam.

>> Paris: Okay.

>> Smith: And, and they're also looking at a couple of streams in southwest Oklahoma. I believe it's Beaver Creek and Cash Creek.

>> Paris: Okay.

>> Smith: In southwest Oklahoma.

>> Paris: Okay, very good. Okay that's an issue that's current, probably be current for quite some time. Let's talk about, you know, we've got a lot of water. There's some reasons why we can't always use it the way we want to though. We've got a lot of salt in Oklahoma. In certain streams. Not everywhere, but in certain streams. I think the Red River and the Arkansas both pick up a lot of salt from different sources. And you know while the technology is there to maybe convert that to fresh water use, it would be awfully expensive and that's just one of the many issues. So if you will, kind of give us an overview of, of availability of water. And, and the quality, what the quality issue in.

>> Smith: Again, as part of our comprehensive water plan. When we look at a reliable supply of water for a community, certainly we want to look at the water that's available. The surface water or a ground water supply that, that's available to that community. We also want to look at the infrastructure component of that. Do they have the infrastructure to move that water from, from where it is to where they need it and treat it if necessary and dispose of their waste, as, as, as so fits. But we also have to look at the water quality aspect. And as a part of the water plan we're doing a trend analysis on all of the waters in Oklahoma, to see where those waters are trending. EPA has what we call a 303 D list which is a list of impaired waters in Oklahoma. We've got a number of those in the state. And so as we look at the water supply for the communities we want to factor that in.

>> Paris: Sure.

>> Smith: When you talk about salt water and, and, and natural salt deposits in the Red River Basin, we have the largest salt deposit in Oklahoma in the Red River Basin.

>> Paris: Right.

>> Smith: And that's on the Elm Fort tributary to the north fork of the Red River, then that flows in to the.

>> Paris: Extreme southwestern Oklahoma.

>> Smith: Southwest Oklahoma.

>> Paris: Old [inaudible] county.

>> Smith: That's exactly right. And if, I'll tell you what, if no one's ever seen that it's absolutely a phenomenal.

>> Paris: I've seen it's.

>> Smith: It, it's it a neat, a neat deal.

>> Paris: It really is.

>> Smith: When we talk about factoids every day we have 100 train box car loads of salt flowing into Lake [inaudible] every single day.

>> Paris: Wow. And that's why not too many people draw water from there?

>> Smith: It's certainly as you go upstream of Lake [inaudible], the salt content restricts that use for agriculture use. Even up there on the M fork.

>> Paris: Yes.

>> Smith: The cattle won't drink that water it's so saline at, at a certain point there. So as a part of our water plan. And I want to say a big, a huge thanks to Senator [inaudible] for carrying federal funding dollars.

>> Paris: Sure.

>> Smith: To look at how we can provide additional supplies of water. Particularly for southwest Oklahoma.

>> Paris: Right.

>> Smith: But also can we clean up Lake [inaudible] to make it more suitable for.

>> Owen: What a tremendous body of water if we could, if we could desalinate that.

>> Smith: Absolutely.

>> Owen: And you mentioned and just for those who may not understand, you put salt water on a crop and you kill the crop.

>> Smith: Yeah, yeah exactly.

>> Owen: It, it just doesn't make it. And so it can't be done, and, and the Arkansas River picks up a lot of salt from Oklahoma streams from up, the north, the central part of the state.

>> Smith: We, we do have. In fact, even plans for chloride reductions in the Arkansas River's a part of our water plan as well.

>> Owen: Exactly. Do we have any major issues right now with, with things that occur, don't occur naturally. I mean you know we've got the issue with the, the chicken operations, the boarder operations in eastern Oklahoma. Are they or are they not you know putting too much, too much fertilizer or chicken litter in our streams? Things of that nature. And I know there's a lawsuit involved in, in that that were, you know, between us and Arkansas at this point. But just kind of give us, from a broad overview, how serious is that problem?

>> Smith: You know, generally across Oklahoma new trends in our water are a bigger and bigger concern. Not only just in Oklahoma but nationwide.

>> Owen: Right.

>> Smith: When you look at the Gulf of Mexico, the, the nutrients coming down the Mississippi River, we're certainly a tributary to that. Are having a dramatic impact in oxygen levels and fisheries and so forth in the Gulf of Mexico. In, in Oklahoma, our lakes turn green.

>> Owen: Yeah.

>> Smith: Because of excess nutrients. And when.

>> Owen: Get a lot of algae on the bottom of the boats.

>> Smith: Yes it creates algae. And when you look at Lake [inaudible], I would just ask people in Oklahoma what do you want Lake [inaudible] to look like? Do you want it to look like pea soup? Or do you want it to be able to see a quarter on the bottom of the lake? And, and probably not going to be able to see a quarter. And it probably won't be pea soup. But where do you draw the line?

>> Owen: Exactly.

>> Smith: And, and that's a, a constant issue. And I believe through our water plans and process, Oklahomans want good clean water.

>> Owen: Right.

>> Smith: They don't want polluted water.

>> Owen: No absolutely.

>> Paris: And you just mentioned the lake that, where I grew up. And so I'm very familiar with that lake. And have wondered about it for many, many years, and have noticed a change. We've got just a very short period of time here and then I want to talk to you about some other issues as it relates to the water plan. But compared to other states, just, just a.

>> Owen: Probably ought to wait, hold that question because we've only got a few seconds here. But I, I hope that our listeners are gaining some new insight as to the importance, and get, getting some great facts. When we come out of the break I've got a great one here about Oklahoma shorelines, a shoreline. Yeah you'll, you'll get, get a good kick out of this when we return on *Oklahoma Innovations*.

[Music]

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>> Owen: Thank you for joining us on this week's edition of *Oklahoma Innovations*. Our guest this week is Duane Smith, Executive Director of the Oklahoma Water Resources Board. We're talking about a variety of issues related to quality and quantity of water. Interesting statistics Steve that Oklahoma has approximately 11,611 miles of shoreline. Now that's slightly less than the estimated combined general non-title coast line of the Atlantic Gulf, Pacific and Artic coasts, which totals 12, 12,383 miles. I thought that was an interesting statistic. Do you know what Oklahoma's longest river is?

>> Smith: The longest river in Oklahoma?

>> Owen: The longest river.

>> Smith: Wow. I'm going to say South Canadian.

>> Owen: The Beaver North Canadian River.

>> Smith: Oh that's right.

>> Owen: 766 miles.

>> Smith: Comes in from the panhandle.

>> Owen: The Red River is the second longest, 592 miles. And Oklahoma's largest lake surface area.

>> Smith: That would be Lake [inaudible] at 102,500 acres.

>> Owen: 105,000.

>> Smith: I'd argue with you on that, but I'll accept that.

>> Owen: Yeah according to their statistics which come right from the Water Resources.

>> Smith: Well they ought to know.

>> Owen: They ought to know. Lake [inaudible] of course being the second. And here's something interesting. Irrigation is the number one use, use of water in Oklahoma. Water supply is a close second. Followed distantly by livestock watering. And ground water accounts for almost 90 percent of total irrigation water use in Oklahoma. So some interesting statistics.

>> Paris: That's because a lot of the irrigation activity happens in western Oklahoma.

>> Smith: Right.

>> Paris: Not all of it. But a lot of it. And we're going to talk about that with Duane Smith. Because there is a difference between when you're dealing with water. There's a difference between western Oklahoma and eastern Oklahoma. Talk a little bit about that and what that might mean for the future.

>> Owen: I will and, and but first of all, as you talk about Lake [inaudible], Steve you must have been talking when we were a little bit below low in participation and.

>> Paris: That's a big Y back there, a long lake.

>> Smith: And it reacts very much of course to droughts and, and floods and provides what a huge benefit, an economic benefit to Oklahoma. Not only to the recreation and that, but the flood control benefit, the water supply benefit. What a tremendous gem Lake [inaudible].

>> Paris: And the tourist [inaudible].

>> Smith: Oh yeah, and absolutely. It.

>> Paris: Oh yeah.

>> Smith: It's phenomenal for economics in Oklahoma. And when you talk about eastern Oklahoma and western Oklahoma, eastern Oklahoma's full of lakes. We have most of our big federal reservoirs.

>> Paris: It's closer to sea level.

>> Smith: It's closer, it's lower. We get a lot more rainfall. When you look at central Oklahoma getting somewhere in the mid 30's someplace over in southeast Oklahoma right near 50 inches of, of rain. The run off characteristics of the soil, and, and all of those are so much different than, than western Oklahoma.

>> Paris: Oh yes.

>> Smith: And so, but at the same time, the unique issues involved in eastern Oklahoma are that they don't have much ground water.

>> Paris: Right.

>> Smith: And, and so there's a lot of rural water districts in eastern Oklahoma that move water from what the water rich areas, the reservoir areas to the areas that don't have that.

>> Paris: Right.

>> Smith: And, and some, some quite frankly very significant issues with providing water supply and infrastructure in eastern Oklahoma that are quite a bit different than the west.

>> Paris: Exactly.

>> Smith: And in western Oklahoma. And we really pretty much divide I-35 as the water rich area and the water deficit area. We're fortunate to have ground water basins in western Oklahoma, the rush springs sandstone, the old [inaudible] aquaphor, the two of the, two of the bigger aquaphors, bedrock aquaphors. But we also have [inaudible] deposits. The city of Enid is our largest ground water user in Oklahoma.

>> Paris: Really?

>> Smith: A number of wells in the [inaudible] deposits of the [inaudible] river. And in talking with their city council they have over 60 water wells in that [inaudible] deposit. They've seen declines in their water levels.

>> Paris: That was, that was my next question.

>> Smith: They're worried about depletion. And, and so as a part of our water plain what we have to address for Enid is what's going to happen over the next 50 years for Enid. If Enid is going to continue to be what I consider to be a vibrant city in northwest Oklahoma.

>> Paris: Right.

>> Smith: They have to have, there is no question about it, they have to have a reliable water supply.

>> Paris: Right.

>> Smith: As you look at western Oklahoma, we have some counties in northwest Oklahoma that are predicted to lose population over the next 50 years. And that in and of itself is going to be a very difficult task for us to resolve. With the rising cost, I would say the spiraling cost of putting infrastructure in the ground, wells, lines, waste water treatment, water, waste water, all of those thing are going up astronomically. And the ability for citizens to pay with reduced population is going to be extremely difficult. And one of the policy calls Oklahoma's going to

have to make is what kind of face do we want to have in rural Oklahoma. I think most people believe they want rural Oklahoma to survive.

>> Paris: Yes.

>> Smith: And, and, and as we, we very well get that message. I'm a product of rural Kansas. But very similar. And so how we do that is, is going to be critical. The biggest way, on infrastructure, the biggest program that we have in Oklahoma is our financial assistance program that we provide loans and grants to public entities, communities, rural water districts, counties for water and waste water infrastructure. Now we have done over 2.6 billion dollars in loans and grants to Oklahoma communities. The, the impact of that cannot be, cannot be you know, I just don't believe Oklahomans realize that.

>> Paris: Hard to comprehend that, isn't it, when you talk about the value.

>> Smith: It is, it really is. And when you're talking about a, a small rural water district, just pick one. A small rural water district that's trying to go to the market place to get a five million dollar loan to build water and infrastructure. First of all in today's time, going to New York City and selling bonds for an un-ratable entity like that. If you can get the money.

>> Paris: Yes.

>> Smith: The interest rates are going to be super high.

>> Paris: Yes.

>> Smith: They go to local banks.

>> Paris: Which means your water bill's going to be high.

>> Smith: Absolutely. Which your water bill's going to be high. And our program allows that small rural water district to go to the water market place at the same rate that Oklahoma City and Tulsa can go.

>> Paris: There you go.

>> Smith: And then, then we actually subsidize that rate by 40 percent. So when you're going to the market place and getting money, that's the cheapest money around, but it's still expensive.

>> Paris: Sure.

>> Smith: And so that's part of the water plan. This is, is a critical, critical, critical piece of the water plan is how we provide reliable water supplies to our communities.

>> Paris: It would be extremely important. And you know when you have periods of growth like we've had up until about two years ago, and I have a little personal experience with that, and, and near Oklahoma City, southern Logan County. Where we were, the people were moving out to the country because they, they wanted country living. Well, you know, we went from about, about 1400 members in the little water district we have up there up to 2300 members over a period of just a very few compressed years. And amazingly, we became challenged on how do we get the water to the people. And we're still living with those issues. And trying to find unique ways. And, and probably instead of just using wells like we've used in the past, we're going to probably have to find a way to buy water from maybe some of the municipalities. And they're not always easy to work with sometimes. Those little water districts.

>> Smith: Well.

>> Paris: But I'm sure they think we aren't either, so.

>> Smith: Well you know, there's, there's issues there. But the bottom line is, they have to work together. The idea that we can have the Friday night football fights between communities and have our own sustainable infrastructure.

>> Paris: Yeah.

>> Smith: Are days of the past.

>> Paris: Yeah.

>> Smith: And one, another little fact that we're dealing, 90 percent of our water systems in Oklahoma, serve 10 percent of the population.

>> Paris: Wow.

>> Smith: So when you talk about your rural water district that the, the good part about your water district is it's drawing, and so you do have some options to pay for infrastructure.

>> Paris: We do.

>> Smith: A lot of these aren't growing.

>> Paris: Right.

>> Smith: And, and so we're.

>> Paris: And maybe declining as you mentioned in, in [inaudible].

>> Smith: Absolutely.

>> Paris: [Inaudible] parts of the state.

>> Smith: And if they're declining, then their ability to pay for infrastructure's pretty much non-existent yet. But we're looking at consolidation of systems as a part of our water plan.

>> Paris: Yeah and that, hopefully, will be done without a whole lot of weeping and gnashing of teeth and we can all work together and maybe everyone can have water. And you know, or maybe, maybe I'm just dreaming. But I think we can do this. I think, I think your plan, your comprehensive water plan is going to have a lot to do with solving a lot of the problems. And this is long term. This isn't going to happen next year. It's not going to happen all in five years or even 10, but long term we have a plan. And that's the most important thing.

>> Smith: We've also done some analysis on what people pay for utilities. And water being a utility as well as gas, electricity, we've thrown phones and cell phones into that mix. But about nine percent of an average Oklahoman's utility bill is for water. And it's probably the last thing that you would turn off.

>> Paris: Oh you know it.

>> Smith: And so you know, the Oklahomans, the price of water's going up. It's going to go up. It has to go up. And, and so let's get our grips around not only the fact that it's going to go up, but how can we be the most efficient.

>> Paris: Right.

>> Smith: Because without water then roads, schools, all of those other things become irrelevant as well.

>> Owen: Well I guess I'm only going to be able to sprinkle twice a week now instead of three. So let's see.

>> Smith: Well you know.

>> Paris: That's coming, that's coming around.

>> Owen: And it's coming around in, and it depends on where you are too you know.

>> Paris: That's right, that's right.

>> Owen: We got about a minute. So.

>> Paris: For instance if you, if you live in a large municipality that has a huge lake or maybe several huge lakes where you get your water supply, they don't get too concerned necessarily all the time about, about watering lawns and filling swimming pools. But if you live in a little rural area that gets all of it's water from wells, try to fill up a bunch of swimming pools and water a bunch of lawns, you know, with, with nine wells. Even though the wells are good wells. It's, you don't have the unlimited supply. So you have issues which you have to, you know, educate your members. Go ahead Gary.

>> Owen: I just want to say, Duane you've been a great guest. We've learned a lot more about the importance of our water resources in Oklahoma. And I hope that our listeners have gained new insight to that as well. If you'd like more information, obviously you can go to the Oklahoma Water Resources Board website and check out more information on that. We've got to run, we're out of time. Thank you for joining us on this week's edition of *Oklahoma Innovations*. Have a good week.

[Music]

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