

Transcript Prepared by Clerk of the Legislature Transcribers Office  
Natural Resources Committee December 6, 2019  
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**HUGHES:** I see it's 1:30. So we shall begin. Welcome to the Nebraska-- the Natural Resources Committee. I am Senator Dan Hughes. I am from Venango, Nebraska, and I represent the 44th Legislative District. I serve as chair of the committee. Today we are hearing testimony for LR138, an interim study to identify for adoption by the Legislature three to five infrastructure project opportunities in eastern Nebraska to provide flood control over reliable drinking water supply, power generation, climate change mitigation and recreation. The purpose of this hearing is to gather information for the committee, no positions of support or opposition are taken. We will only be hearing testimony from invited testifiers today. I ask that you abide by the following procedures to better facilitate today's proceedings. Please silence or turn off your cell phones. If you do not wish to testify, but would like your name entered into the official record as being present at the hearing, there is a white sheet on the back table that you can sign for that purpose. This will become part of the official record of the hearing. Those testifying written-- to those testifying, written materials may be distributed to committee members as exhibits only while testimony is being offered. If you have handouts, please make sure you have 11 copies and glue-- and give them to the clerk to distribute-- distribute to the committee when you are up to testify. Please, please speak clearly into the microphone. Tell us your name and please spell your first and last name to ensure we get an accurate record. The committee members with us today will introduce themselves starting on my far left.

**GRAGERT:** Good afternoon. Tim Gragert from District LD40 up in northeast Nebraska.

**ALBRECHT:** Hi, I'm Joni Albrecht, LD17, northeast Nebraska.

**BOSTELMAN:** Bruce Bostelman, District 23, Saunders, Butler, majority of Colfax County.

**HUGHES:** And on my right.

**HALLORAN:** You're in the wrong seat.

**MOSER:** Mike Moser, District 22, Platte County, a little bit of Colfax County and most of Stanton County.

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**HALLORAN:** Steve Halloran, representing District 33, which is Adams County and the better part of Hall County.

**GEIST:** Suzanne Geist, District 25, which is the east side of Lancaster County, includes southeast Lincoln, Walton and Waverly.

**HUGHES:** And to my right is our committee legal counsel, Laurie Lage. And on my far left is our committee clerk, Mandy Mizerski. So with that, we will begin. Welcome, Senator McDonnell.

**McDONNELL:** Thank you. Chairman Hughes and members of the Natural Resource Committee, My name is Mike McDonnell, M-i-k-e M-c-D-o-n-n-e-l-l. I represent LD5, south Omaha. As you are all well aware, we are experiencing a period of catastrophic flooding in Nebraska. What we've previously considered hundred year and five hundred year events are now becoming regular occurrences in our state. For your consideration today is a continuation of a conversation that in Nebraska dates back to at least 1895. This conversation, of course, is potential infrastructure projects along the Platte River and tributaries to provide flood control, a reliable source of drinking water, power generation and economic development. In 1948, public hearings throughout the state identified the desire for projects to control flooding, control bank erosion and residents from communities along the Platte and Elkhorn Rivers specifically asked for relief from flooding caused by the waters flowing into the Platte River. Studies resulting from those public hearings looked at a number of projects along the Platte River, including a series of reservoirs or one large reservoir along the Platte River as potential projects for flood relief. In 1963, business leaders in eastern Nebraska asked for an updated study on a series of reservoirs or one large reservoir along the Platte River and for the first time requested that it be studied for economic and recreational development, as well as for flood control and water supply. This study identified five sites that could develop water storage, ranging from 2.6 to 4 million acre-feet. One large reservoir site near I-80 was selected for further study because it would provide the greatest benefit for downstream Platte River floodplain at the lowest cost. Operational studies at this time showed that this reservoir would have reduced flood damage along the Missouri River during 1960, 1962 and 1967 floods by one-half mile. It was estimated by the Bureau of Outdoor Recreation that it would have a financial impact of 7.4 million annual for fishing and wildlife alone. Today that would be approximately 50 million-- 50 million accounting for inflation. In 1969, a report by the Midwest Research Institute of

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Kansas City measured the economic impact of the potential Platte River Reservoir. And they found and placed in the public record that the original enhancement of the project, measured in terms of personal income, would average 160-- 162 million annually. Adjusted for inflation that would be \$1.1 billion per year today. This conversation has often stalled for the same reason. Local communities and local stakeholders get removed from planning stages and their concerns and ideas are not incorporated into an eventual proposal. This is what we seek to avoid at all costs and remember our actual priority, which is to protect the lives of communities and protect-- and properties along the river Basin. With that said, I have-- I met with Mayor Grauerholz of Ashland about their experience with the 2019 flooding, and we discussed many of the recovery and infrastructure challenges they continue to have. I have also met with Lincoln Mayor Gaylord Baird to discuss Lincoln's future water needs and the damage they took to their current infrastructure. Let me stress right now that any plan or study that potentially causes any harm to communities that rely on the Platte River is a nonstarter. These communities need to be at the table and their needs and ideas need to be a driving-- any potential infrastructure investments along the Platte River. Now you're going to hear testimony about flood control, water quality, water needs and economic impact from subject matter experts. Before their testimony, I would like to point out what has happened that has changed our sense of urgency. This coming Sunday, the Missouri River in Nebraska City is projected to drop below the flood stage for the first time in 265 days. Concern is mounting that conditions are ripe for a repeat of 2019's flooding in 2020. Rivers are unusually high and ground-- the ground is saturated and the National Weather Service is expecting a wetter than usual winter. Already, flood damage from 2019 in Nebraska and Iowa has exceeded \$3 billion in total destruction. Damage to Offutt Air Force Base alone could cost over \$1 billion to repair. Over one million acres of farmland was put under water and much of the farmland in Nebraska was blanketed in sand, making the land expensive or impossible to farm. Governor Ricketts has joined a coalition of governors, along with Iowa, Missouri and Kansas to advocate ways to change the way the U.S. Army Corps of Engineers manages the Missouri River. But we as Nebraskans need to understand the flooding of 2019 was not caused because of the Missouri River. It was caused because of tributaries like the Platte, Elkhorn and Loup Rivers. About 50 percent of the water that flooded southeast Nebraska, Iowa, Kansas and Missouri came from our lack of flood control along the Platte River. Flood storage capacity of 200,000 to 250,000 acre-feet would have

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reduced peak flows by 10 to 25 percent in the lower Platte River and that would have been enough to keep the levee's systems around Offutt Air Force Base and all of the levee systems south of the mouth of the Platte and Missouri River in Iowa, Nebraska, Kansas, and Missouri within their design capacities and potentially would have prevented an estimated \$3 billion in damage. The purpose of this interim study is not to propose a preordained-- preordained solution, but to take the first of a thousand steps to work with local communities and subject matter experts to research and identify potential infrastructure projects in eastern Nebraska that will give us greater control of one of our greatest natural resources and to provide multi-state flood control, a stable and reliable supply of drinking water, renewable energy, recreation opportunities, and to help strengthen our regional and economic capacity. We are fortunate to live in a state with a constant supply of water. Greater control over this research will give us a competitive advantage and it will help us protect communities, lives and property from catastrophic flooding. I thank you for your time and I encourage you to look at opportunities for our state to wield greater control over our natural resources and support Governor Ricketts with a collaboration with our neighboring states to continue to work with the federal government and solve our flooding and water problems. Thank you, and I'm now ready to try to answer any of your questions.

**HUGHES:** Are there any questions for Senator McDonnell? Senator Bostelman.

**BOSTELMAN:** Thank you, Chairman Hughes. Senator McDonnell, do you-- have you looked at preliminarily just how many homes, villages, towns, railroad crossings, roads, bridges that will need to be moved out of the area of the project you propose?

**McDONNELL:** No, because that's one thing we didn't want to make the mistake. As I said, this is the first step of a thousand steps. We want to make sure that we're taking input in from the local communities. From this-- this committee from-- from others just say, okay, we can-- we can design up to four or five possible reservoirs and then we would look at the impact of that, but we haven't decided we are gonna do A, B and C yet. We're just trying to get input before we start any of those studies. So at some point we would definitely have that information.

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**BOSTELMAN:** Have you looked-- have you talked to Lower Platte North NRD because they have six structures specifically for flood control that they're putting in and how that may have changed or affected things and other NRDs upstream in the Platte while that they are-- what-- have you talked with them at all prior to now?

**McDONNELL:** Two of our expert witnesses today are going to be from the NRD.

**BOSTELMAN:** But are they from the Lower Platte North NRD? Who are they from?

**McDONNELL:** No, they're from the Papillion NRD Papillion.

**BOSTELMAN:** OK, so that's downstream.

**McDONNELL:** Papio, I'm sorry. NRD, Papio.

**BOSTELMAN:** Papio, that's downstream, right, not upstream. OK. Thank you.

**HUGHES:** Any additional questions? Seeing none, thank you.

**McDONNELL:** Yeah.

**HUGHES:** So I'll ask our first invited testifier to come forward, please. Welcome.

**JOHN WINKLER:** Thank you. Good afternoon, Chairman Hughes, and, members of the Natural Resource Committee. My name is John Winkler, J-o-h-n W-i-n-k-l-e-r. I'm the general manager of the Papio-Missouri River Natural Resources District. First, I'd like to thank you today for giving me the opportunity to testify on LR138. In the state of Nebraska we are all too familiar with the extremes when it comes to our weather from stifling heat and drought to Arctic cold and historic flooding, which occurred in March of this year. These types of extremes are not unusual in the history of our state. However, I'm sure you've heard this before, the extremes are getting more extreme, mean annual temperatures have increased and are forecast to increase with time. Temperatures, particularly nighttime temps, will increase in Nebraska, growing seasons extended high overnight. Temps mean continuous plant respiration and depletion of soil moisture-- moisture and a state with 9 million irrigated acres. That means more irrigation. Therefore, in a state with tremendous surface groundwater

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connection that means more surface water depletions and less flow in rivers. Mean annual precipitation has increased and is projected to continue to increase. Summer mean annual precipitation. The main driver of flooding is forecast to increase as much as 30 percent. Extreme participation intensity of events is forecast to increase as well. The frequency of large floods is increasing over time and expected to increase in the future. Of the historical record high water events in Missouri River, 13 have occurred in the last 20 years. Just in my 13 years with the energy, we have experienced two 500-year flood events. I'm starting to think it's my fault, but they say it's not. Also, the frequency in duration of droughts is also projected to increase and continue to do so over time, especially large droughts that occurred in 2012. I list some references there, some of the material that I read in these statistics for you to research if you'd like to yourself. As I'm equally sure you've heard of the many causes of these trends in our weather and climate and various theories, strategies and actions that need to occur to combat or reverse these trends. Most would agree that even the most robust and aggressive climate mitigation actions would not yield significant results or differences for decades to come. Therefore, how do we as a state mitigate these extremes and their impact on our citizens and our economy and our quality of life? A step further, how do we mitigate these extremes and create resilience in a way that improves our citizens' safety, improves and strengthens our economy and makes our quality of life better? I will discuss three major benefits of potential infrastructure projects in the Lower Platte Basin. Flood control. The historic flood of 2019 was all about the uncontrolled tributaries like the Platte, Elkhorn and Loup Rivers, which greatly impacted the Missouri River mainstream flooding. I've attached a map that you can review that will put a little illustration on what I'm about to say next. Preliminary analysis illustrates that if a significant reservoir or several reservoirs were in place on the Platte River or its tributaries during the March 2019 flood event with flood storage capacity of 275,000 to 300,000 acre-feet, the system could have realized that 10 to 25 percent reduction in peak flows in the lower Platte River. This reduction would equate to one and a half to two feet reduction in surface water elevation of the flood. If this level of reduction would have been realized, preliminary analysis reveals the certified levee system that protects Offutt Air Force Base, as well as all certified levee systems south of the mouth of the Platte, Missouri River in Iowa, Nebraska, Kansas, and Missouri would have been within their designed capacities and potentially would not

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have overtopped or failed. The minimum damage that could have been prevented include close to one billion and forty-five million dollars for Offutt Air Force Base in the city of Omaha's wastewater treatment plant and one billion dollars for the repair and placement of damaged and destroyed levees along the Missouri River in four states. This figure does not include damages to public infrastructure such as highways, bridges, water and wastewater treatment plants, or private property such as rail lines, agricultural land, homes businesses, lost income, entire communities destroyed, and future productivity of thousands of acres of farm ground compromised, all from one single event. In addition, the city of Omaha would potentially have not had to divert 60 to 65 million gallons of untreated sewage per day into the area's waterways for several months. And the city of Plattsmouth potentially would not still be diverting one million gallons of untreated sewage per day into the Missouri River until June of 2020. Also it is predicted that the duration intensity of droughts will increase. Flash droughts like the May through September 2012 will become more frequent. All signs point to additional stresses on our drinkable and irrigated water supplies that will test their resiliency. A large reservoir or several reservoirs could provide enough surface water augmentation on demand and enhance aquifer recharge all year long,-- round would be a tremendous boost to the resiliency of the lower Platte corridor, where nearly 70 percent of the population resides. Furthermore, the benefits extend beyond the lower Platte, especially when you look at 100,000 acres of cropland upstream in the Loup and Elkhorn River Basins . With surface water rights junior to the city of Lincoln, the effect of the city of Lincoln placing an administrative call in the Platte River at precisely the time when crops need irrigation the most would be economically devastating. Consider a reduction of 150 bushels per acre from, say, 250 to 100, for example. As a result of the city's administrative call and subsequent deficits to irrigation, that's a total loss of production of 50 million bushels and at \$4 to \$5 a bushel per corn is a direct impact to producers and local economies in this portion of the state of 60 to 75 million dollars just from one single flash drought. Furthermore, urban and rural areas suffer drought have lingering consequences to its reputation and attractiveness to industry. Vulnerability to drought and an iffy water supply can hamstring economic development opportunities and insulate. A large reservoir or several reservoirs would add a tremendous amount of recreational benefits both land and water base to the Omaha and Lincoln metropolitan area. It is consistently reported that the urban

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areas of our state and country lack sufficient outdoor recreation opportunities. With 4,000, 8,000 acres of Platte water recreation, it is reasonable, conservatively expect 500,000 to a million visitors per year. For example, Mahoney State Park generates 580,000 visitors, Lake McConaughy, 1.3 million visitors, and Lake Okoboji in Iowa over a million annually. The potential annual economic impact from these water-based infrastructure projects of this magnitude would be on average of \$200 to \$300 [SIC] annually in the state's economy. And I'd be happy to answer any questions and thank you for this opportunity to testify.

**HUGHES:** Thank you, Mr. Winkler. Are there questions from the committee? Senator Gragert.

**GRAGERT:** Thank you, Chairman Hughes. I just have a couple of questions. This site is it by Ashland?

**JOHN WINKLER:** No, it's-- I think what Mr.-- what Senator McDonnell mentioned there's no preplanned locations.

**GRAGERT:** OK.

**JOHN WINKLER:** I know in the past that has been kind of a focus, but what we wanted to do and what the senator want to do is start from a blank slate and say this is the amount of protection we would like. These are the kind of amenities we would like. These are the kind of water, drought mitigation things that we would like. But where do you put them? What makes the most sense? Where is the most economically viable to do that? So there is no pre idea of what locate. Is it one big reservoir? Is it ten smaller reservoirs that you can get-- that you can get to have that capacity for those benefits.

**GRAGERT:** Yeah, you know, up in the northeast right now with the situation we had with devastation we just went through, sedimentation, of course, is a big, big issue. And to have one dam versus a number of dams, I guess I would go for a number of dams in and out, especially with one hundred thousand acres of crop land up above something for-sale purposes.

**JOHN WINKLER:** Right. And all of those types of things need to be as part of the study. There will be geology. There'll be hydraulics, hydrology, erosion, all those types of things would go into it. Anytime you try to set a location for structure.



**GRAGERT:** Thank you.

**HUGHES:** Senator Albrecht.

**ALBRECHT:** Thank you, Senator Hughes, and thank you for being here today. OK, could we talk about this map again?

**JOHN WINKLER:** Sure.

**ALBRECHT:** So this was just an example of areas that would have been safe.

**JOHN WINKLER:** Right. So the hatched areas you see in white, that was the extent of the March flood. If, for example, in the testimony, if there would have been controls on the Platte River, that would have been able to retain that 270,000 to 300,000 acre-feet of water, then the Blue would have been the extents of the flood. Now that these extents would have continued south into the other states, Iowa, Kansas and Missouri. At the-- at the height of the flood, the Platte River was flowing with as much or more flow than the Missouri River. And so everything south of that obviously was inundated and those levees were never designed for that type of capacity. And so what happened, those levees overtopped and failed. If you would have had controls on the Platte that would have held back that much water, that kind of this initial analysis, those levees most likely would have not even been overtopped or failed. So towns like Hamburg and Pacific Junction and maybe in the issue with Nebraska City down by Peru, those issues would not have occurred potentially.

**ALBRECHT:** OK. So I'm just gonna ask a few quick questions because I think this person that's out in the audience probably won't have an opportunity to come speak. So, concerns about the dams being built. Who'll pay for them? Who will get the drinking water? And I don't think there is a site that can generate power. Is there a site that can generate power?

**JOHN WINKLER:** Testifiers before me will talk about hydro. That's not something in my expertise.

**ALBRECHT:** But who would pay for this?

**JOHN WINKLER:** So this-- something of this magnitude would take federal funding, it would take state funding, local funding. No particular entity by itself. For example, an NRD or a city or county could take

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this on by themselves. In addition, I think that eventually the structures will be over multiple jurisdictions. And so you will need cooperation from all those, not only in the permitting process, but in the funding process.

**ALBRECHT:** So then what would you be coming to the state Legislature for?

**JOHN WINKLER:** I think, and Senator McDonnell can answer this but I think it's just to, you know, to get the-- I don't know if it's funding or the OK to say, hey, let's look at this and let's study this and see if it's even possible.

**ALBRECHT:** OK. And if someone has surface water rights for irrigation, will this be protected?

**JOHN WINKLER:** Those are all things that have to be part of the part of the study. All the impacts, questions like that, Senator Albrecht, would all have to be answered as part of that. And quite frankly, we don't know the answer to that until we can delve into it further. And I think that's what we're trying to get to.

**ALBRECHT:** Thanks. Thank you.

**HUGHES:** OK. Any additional questions? Senator Moser.

**MOSER:** Well, having lived along the Platte and looked at the-- you know, just this is just a layman's perspective but the topography of the Platte Valley doesn't necessarily lend itself to being dammed very well because the-- the Platte Valley goes, I mean, it's multiple miles wide and to dam it up to appreciably store water, you'd have to flood a lot of property. I mean, there are some areas where the rivers flow and canyons and you can put in a dam and your other boundaries are pretty much determined by the local topography.

**JOHN WINKLER:** Right.

**MOSER:** But, you know, the Platte, I question, you know, whether that's economically feasible, because when the-- when the Loup flooded in Columbus, it flowed from the Loup River Bridge in Columbus along Highway 81. Then it flowed south all the way to the Platte River, ran in there. And that was I don't know what that distance is. I was trying to load Google Earth--

**JOHN WINKLER:** Right.

**MOSER:** --and the Wi-Fi and it's not hot enough to get it loaded. I'm going to have to do it at home and then bring it back where I've got Wi-Fi, I guess. But you'd-- it would be very, I think, very expensive. And with that much water, the Loup flowed about 6-feet deep from, you know, half a mile from my house straight south. And if you would have had a structure there it would have got wiped out too so you could have just increased the cost instead of trying to help, so. Not saying it can't be done, but I don't think it's going to be easy. And again, that would all be part of the analysis of where and when and how you could do that and if you can do that, so. Thank you.

**MOSER:** Thank you.

**HUGHES:** Additional questions? Senator Halloran.

**HALLORAN:** Thank you, Chairman Hughes. Thank you, Mr. Martin, [SIC] for being here. There are-- there's a plethora of prod-- prognosticators of future weather events--

**JOHN WINKLER:** Yes.

**HALLORAN:** --and I, just as kind of a cautionary note of putting together data that under one bullet says mean annual precipitation has increased and if projected to continue to increase summer mean annual precipitation main driver of flooding. Your fourth is forecast to increase as much as 30 percent.

**JOHN WINKLER:** Right.

**HALLORAN:** That's a good argument. I understand that. But long-term predictors of weather is challenged. But then further on, we do point out that drought argument.

**JOHN WINKLER:** Uh-huh.

**HALLORAN:** It says it is predicted that the duration intensity of droughts will increase.

**JOHN WINKLER:** Correct.

**HALLORAN:** Oh, here it says that its forecast, annual precipitation is forecast to increase.

**JOHN WINKLER:** Right.

**HALLORAN:** And over here it says speaking to the duration intensity of droughts is going to increase. I'm just-- this is just kind of kind of a--kind of a FYI. We need to make sure that we're kind of on the same page on our data when we look at it.

**JOHN WINKLER:** Right. So these numbers-- and I appreciate that because in my position we have to try to plan for both of those. And regardless of even the future predictions, Nebraska, throughout its history, we deal with extremes. We've always dealt with extremes. We always had-- we've either had too much water or we've had droughts. And that's throughout my lifetime, throughout my parents, grandparents lifetime. We've always dealt with extremes. And even if we took out the climate change or the extreme weather type of scenarios that are predicted, I think we will always be with a state that will deal with those regardless of the weather, even state as it is now, or even as it was 50 years ago. We've always had floods. We've always had droughts. And so no matter what occurs in the future, we'll still be dealing with those. And that's why I-- I listen to those statistics because that's what we're hearing, but I know from our perspective, we've been Basing all of our decisions on not only what the future's prediction is, but what has happened in the past. And so I guess that we've either been fortunate or unfortunate as a state. We've always-- we've always have to deal with way over here, way over here. And very few times right in the middle. And so I think this would address that as well, so. But I appreciate that. And we do take-- you do have to be careful when you talk about predictions. And even with this year's weather prediction, it is a prediction. It could-- and ultimately be a-- just a normal winter for us and a normal spring and we don't have to worry about flooding. But unfortunately in the NRDs roles we have to worry about that. And so we are preparing for both. We're preparing for drought. We're preparing for flood. And we do it every single day, regardless of the projection, because that's what we've dealt with forever, so.

**HUGHES:** Senator, are you finished?

**HALLORAN:** I'm done. Thanks.

**HUGHES:** Senator Bostelman.

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**BOSTELMAN:** Thank you, Chairman Hughes. Thank you, Mr.-- Direct Manager Winkler, for being here today. One comment I guess I have is on the off of flooding and that was really a core engineer problem. That wasn't a-- because that was-- that design was done three years prior. The core-- and the core set on it.

**JOHN WINKLER:** Eight years prior.

**BOSTELMAN:** And the core would have gone on and permitted it, we wouldn't have had that problem would we?

**JOHN WINKLER:** That's correct.

**BOSTELMAN:** I mean, I-- let's-- let's put it where it's at.

**JOHN WINKLER:** You're absolutely correct.

**BOSTELMAN:** [INAUDIBLE] And that kind of leads me to the next thing because obviously I've been going across the state looking at flooding, things that are happening across across the state. And a lot of it is our levees in the areas that we have. We have levees that-- levees that failed. We have lovely-- lovely-- levees that have gone in disrepair because maybe they're in irrigation district now that's no longer in existence.

**JOHN WINKLER:** Right.

**BOSTELMAN:** We just got a hodgepodge of things across the state. And we now have areas that-- that now create a risk to cities or infrastructure that didn't exist before. So now it does need a levee. The challenge-- part of what I'm getting at is, as I said in a meeting recently with a member of the Corps and it-- and they basically said levees don't protect at all on the Platte River. My problem with that is, is we need levees to be built. And another part of it is I'm not so sure NRDs are willing to step up to the plate to get these levees put in to where they need to be put in to to mitigate the risk. There's no 100 percent, like you said. There's no 100 percent guarantee where we could protect it. There's no hundred percent guarantee if we put a dam in that that dam wouldn't break and flood down. You know, you just think, you know, what happens, happens, circumstances. So I guess part of it is, is as-- if this would be looked at, are you the only NRD here to testify for--

**JOHN WINKLER:** No, Lower Elkhorn is here as well.

**BOSTELMAN:** OK. So part of it is is that we have a system that's-- that we've let being neglected and that be our levee system. And I'm wondering how much of, if that levee system would been-- would have been taken care of, would have been intact, if we would have come back through and looked to where we need to replace that our flooding would not have been nearly as bad or in the Offutt scenario, if we would have got-- if we would have had it built the way it was supposed to have been built and the time is was supposed to be built--

**JOHN WINKLER:** Right.

**BOSTELMAN:** --we wouldn't have had the problems that-- how that may play into this 'cause I know other NRDs, one at Platte North right now have six structures they're going to be putting in specifically for flood control, those type of things that would reduce water into the Ashland area. Those type of things, so.

**JOHN WINKLER:** Right.

**BOSTELMAN:** I know there's a lot of things already happening out there. I guess your thoughts on the levee system.

**JOHN WINKLER:** So, and that's a very good grade and it was seven years we could have that permit just to make that-- clarify the record. But no, so the levee system on the Platte is, it's a hodgepodge. And I think the course point was there is no or very few federally certified levees on the Platte. And we have one that's federally certified along the Platte that protects, kind of the valley area in Lincoln's well filled and the guard camp, but it was designed to a 50-year level, so 500 year flood obviously overtopped that. But what we're experiencing now is along the Platte, there were a number of-- quite a number of either ag levees or levees that were built, you know, 50, 100 years ago. They may have protected a mining operation or they may have protected an ag producer, but they they were-- they weren't built with-- in any standard. There wasn't a local sponsor like the NRD or city or county or the corps or the state. It was just-- it was built. And so it did provide a level of protection for all those years it was-- it was in existence. So what happened? March of 0-- March 19 is a 500-year event, totally destroyed that system. But it wasn't a system that there's anybody responsible for. It was private property owners' levees. And so now what happens is who's responsible for

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repairing those? Is it the landowner? Is it the NRD? Is it the state? And we've been having this conversation with anyone that will listen is how do we-- how do we bring that-- that, I guess, unofficial system back into some level of protection and who does the ongoing maintenance? And there's literally, there could be thousands or hundreds of these levee systems that were in private hands. And so what you'll see now is you will see, I think, on the Platte there could be what we would consider an insignificant type of flow that's maybe just really moderate or minor flooding. You're going to see areas of the state that will flood now because of those-- those private levees are now gone or damaged that maybe never flooded before with that certain level of event. Um. So that's-- that's a big struggle along the Platte. Now, the Missouri has more formalized federal, federally approved, federally certified levees. And so it could be a combination it could be a combination of storage, like with Lower Platte North is doing, like what Laurel Pointe is doing, like what we're doing, and then also let levee systems. But they have to be a levee system that's built to some standard and that is operated and maintained by someone that will do it in perpetuity. It can't be just replace these -- these former old levees to maybe where they were, and then somebody walks away because they have to be maintained. They have to make sure that they work. And so I think that's the environment we're in right now. And we, quite frankly, ourselves and I know the other NRD, we don't know how to address that because there's land rights issues, there's just all kinds of issues that you have to figure out. And it was just-- there was no standard system, and that's the problem we're having.

**BOSTELMAN:** And I think that there's no standard system, but there's no inventory either. I don't know, so.

**JOHN WINKLER:** That's correct. We've actually had people that built a house in the garage into the levee and it was a private levee, but they actually-- so it was high ground, which I'm thinking, yes, probably a smart idea, but they-- they dropped the garage into the less. So when the flood hit, basically the house caved in and became the levee because it weakened it to a point where and so-- but who's responsible for that? Is it the landowner or is it the NRD? Is it the city? Who fixes that? And so that's-- that's what we're dealing with.

**BOSTELMAN:** Thank you.

**JOHN WINKLER:** All right.

**HUGHES:** Additional questions. I guess I've got just a couple of-- I appreciate Senator Halloran's point of getting your perspective on climate change, you know, through your life. First, I want to ask how old you are and how soon you're going to retire so we can get rid of these five hundred year of those--

**JOHN WINKLER:** Yeah, I know that's-- I felt bad. I'm like--

**HUGHES:** We could take up a pool and help you [INAUDIBLE]-- neither here nor there.

**JOHN WINKLER:** I just don't want to go in front of your committee anymore.

**HUGHES:** For those of us who have been around a while.

**JOHN WINKLER:** Right.

**HUGHES:** You know, and who live-- live and die or live and work with weather, you know, it's not quite as earth shattering as what some of the younger generation with less experience believes about our climate. So I guess just-- just a comment on my part, but what I really wanted to ask you as-- as an NRD manager in charge of an NRD who has spent a lot of time, you know, working on flood mitigation projects.

**JOHN WINKLER:** Uh-huh.

**HUGHES:** How hard is it going to be to do a three or four projects that are going to be significant to have an impact just based on exponentially looking at how much larger are than the smaller project that you've looked at? I mean, is that--how hard is that going to be?

**JOHN WINKLER:** It will be exponentially more difficult and--

**HUGHES:** So is that a-- is that a state issue or who-- who's going to do that?

**JOHN WINKLER:** I think it's everybody's. I mean, I think it's multiple jurisdictions issues. So it-- I mean, it will be exponentially harder because the size of structures obviously make it more difficult in either in permitting or funding or construction. And so I think that's where-- at least in this. If you look at the damages that would have



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been prevented by a reservoir or series of reservoirs on the Platte in Nebraska, I mean, you're taking in a whole region. You're obviously you're protecting Iowa, you're protecting Kansas, you're protecting Missouri, you're protecting Nebraska. And so that's where you have to get the federal component and the corps has stated many times that I'm going to serve on that committee with the four states as a representative from Nebraska is it was the uncontrolled tributaries. It wasn't. The releases from Gavin's Point obviously contributed. But a lot of that particular event occurred south or lower than the dams. And it was the big Sioux and the tributaries like the Platte that contributed to the majority of that flooding, or at least half of that flooding that occurred. In 2011 it was totally different. It was all in the upper Basin and the course releases obviously caused that in Missouri. So it's a multi-jurisdictional. This isn't something that the state could pick up on its own or, like I said, any NRD or any-- any city or county. This is a lift, right. And you're going to have to bring the resources of everyone to do that. Again, this was discussed in 1895. So this isn't a new idea and that, I kind of address this-- Senator Halloran's comments too. I mean they were addressing this issues. All of these issues that we bring up today, they're trying to address them in 1895, long before we heard anything of climate change or-- or any of that. And so-- but it will continue regardless if nothing gets done. Somebody will be back here in another 10 years or 15 years or 20 years dealing with the exact same issues we're talking about today. There's no question about it. So--

**HUGHES:** So, just-- just in your limited experience building small dams, one-- one thing like the Endangered Species Act, how-- how in-- how onerous is that to try and deal with it on a small project, then? Would that translate exponentially into a big project like this?

**JOHN WINKLER:** Yes. They're-- they're with the permitting, I mean, you're looking at a decade of permitting, if not even a little longer that this-- this will be a almost-- I will not be alive to see this project when it's constructed or the several-- you may see little-- projects here and there. It depends on their size. It depends on if you do it the way of the larger large structures, smaller structures. So that will all come out into-- when you do the analysis. But it's going to take some time. But like I said, it's going to come back. If it doesn't get done, all these ideas will be back because the problems will continue to have to be addressed.

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**HUGHES:** My last question then, was there any flooding on the-- within the Papio NRD this-- I mean, did you have any structures your flood control worked?

**JOHN WINKLER:** Right. It worked. And the reason it worked is obviously-- we had flooding, obviously, along the Elkhorn and the Platte and the Missouri in our district within the Papillion Creek watershed, which is the major Omaha metro area. We had no flooding because of what we have done in the past with the reservoirs and the levees and everything that we've done. In addition, though, we didn't have the extreme or the rainfall that was in other parts of the state. So we-- we dodged a bullet on the precipitation levels, but then also because of the robust system that we do have. It got stretched, but it held. And so, um, it obviously worked. The levees worked, the dams worked and so--

**HUGHES:** Do you have plans to raise any dams or levees?

**JOHN WINKLER:** We have-- we have nine priority-- or six priority reservoirs that are still on the-- on the--

**HUGHES:** Additional reservoirs.

**JOHN WINKLER:** Yes. And then also we're working with the corps to raise levees and to build maybe some additional floodwalls and all those types of things in that general investigative site, which has nothing to do with this. That's--

**HUGHES:** Right, yeah.

**JOHN WINKLER:** That's in the Papillion Creek watersheds.

**HUGHES:** Okay. Senator Geist.

**GEIST:** Just quickly, uh-- uh, generally, do NRDs or the corps or any people who build things like this, do they build things with the thought of a 500-year flood?

**JOHN WINKLER:** So everything we construct is to a 500-year level.

**GEIST:** OK.

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**JOHN WINKLER:** And even our levees, they say it's a 100-year protection, but we add three-foot free board, which would cover a 500-year event.

**GEIST:** OK.

**JOHN WINKLER:** All of our dams are built to a 500-year level. The corps, uh, they don't build very many things anymore. It's mostly turned into a regulatory type of issue. But yeah, we do. We-- we try to take the most extreme what they call maximum precipitation event that could occur. They-- that throws a little bit of a curve, though, as Noah just updated their rainfall estimates for our area. We were dealing with 1960s data. They redid it a few years ago. And so the maximum rainfall event for 100 year went up an inch, inch and a half. And a lot of things that we do, too, we're dealing with what the current environment is, is what we're seeing. And over the last 5 years in the Papio NRD in the eastern part of the state, we've seen more high intensity rain events. So they're shorter duration, but they're higher amounts of water. And so what-- we were seeing the system react differently than, you know, I've got assistant general manager who's serving his 45th year with the district. And in the last 5 years, he's-- he's basically has come to us and said the system isn't acting the way it used to. And so that's when we had-- we did some analysis and we're just seeing higher precipitation events. So we're responding to those.

**GEIST:** OK. Thank you.

**JOHN WINKLER:** OK.

**HUGHES:** Any additional questions?

**GRAGERT:** Just one quick one.

**HUGHES:** Senator Gragert.

**GRAGERT:** Thank you, Chairman Hughes. Could you-- could you just tell us when a 500 year, what kind of rainfall is that?

**JOHN WINKLER:** Oh, it's-- so it's 2 percent. You know, It's a half of 1 percent every year that you can have a 500 year, so just because you have a 500-year event, does it give you 500 years. That the precipitation for 100 year is about seven and a half to eight inches in a 24-hour period. So it's safe to say double that for the 500 year.

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And I don't know off the top of my head, but I'm just trying to extrapolate that. So if you got, you know, a foot of water in a 24-hour period or over a couple [INAUDIBLE], that would be a 500-year event.

**GRAGERT:** So how do you determine I'm going to build this dam into 500 year versus a 700 year?

**JOHN WINKLER:** The-- it's all in requirements of Neo dam safety requirements and what's-- what's required by the state and the federal government for your permits, and anything in the urban area it has to be built to-- to that 500-year event. Also, every dam that's built has-- that we build has a-- it has a bypass structure. So when it-- if it ever did get to that event, the water would-- would go through the bypass structure. So the dam doesn't fail. So you probably have more than a 500-year event there, but that's what the requirement is, that it's built that [INAUDIBLE].

**GRAGERT:** And one last thing on these levees and how high you're gonna build them, like if you would have built the one at three foot higher, whatever, Offutt.

**JOHN WINKLER:** Yes.

**GRAGERT:** So when you build those levees that much higher, does that force that much more water down that-- where it can't get out into the flood plain? And what kind of-- what kind of-- are you setting up for downstream?

**JOHN WINKLER:** Good question. So when-- as part of the permitting process, you cannot build a levee higher than your neighboring levees, either state or even your own state. So we couldn't build a levee higher than what was occurring in Iowa. We-- you can't legally push your water on to someone else. And so the Corps of Engineers and their permitting process, you have to build your levee equal on both sides of the channel so you don't cause that type of damage. And that's a very extensive and long process. And even if you had a-- you know, I think ours was like maybe three hundreds of a foot was the impact and we had to mitigate for that. And that's-- I mean, you could literally take a crop duster over the levee and drop some dirt and you would have covered that three hundredths of a foot. But-- but that's how much that it's-- it's regulated. So you can't do that. We can only build it to a certain height.

**GRAGERT:** Thank you.

**JOHN WINKLER:** Yep.

**HUGHES:** OK.

**JOHN WINKLER:** That answer your questions then?

**GRAGERT:** Thank you.

**JOHN WINKLER:** OK.

**HUGHES:** Senator Halloran.

**HALLORAN:** Just a quick question or two, do you-- because it's talked about recreation in here and potential electrical generation. Do you see anything on the scale of Lake McConaughy?

**JOHN WINKLER:** No. It would not be--

**HALLORAN:** Half of the scale.

**JOHN WINKLER:** It could. Again, that would, I think that would have to take into account what are the impacts. I think it's-- a reservoir of that scale would have too many impacts on communities and well fields and all those other about half of the scale. I mean--

**HALLORAN:** Is there any [INAUDIBLE]?

**JOHN WINKLER:** You could. But again, that's-- you'd have to wait to see what the-- what this analysis came out with.

**HALLORAN:** Right. Senator Hughes brought it up, Chairman Hughes brought it up, and I think when we were on a tour at Lake McConaughy, I asked the question of the people that had been around for a long time and we were studying the history of the building of Lake McConaughy, and I asked a question if-- if this did not exist today, did not exist today, could we build it today with today's regulations and permitting? And they unanimously said, there's not a chance.

**JOHN WINKLER:** It's very difficult, yes.

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**HALLORAN:** I mean, you know, I'm not trying to say pro or con on this, but I'm just saying that hurdle would be huge and the cost of going through all that permitting process. Anyway, thanks.

**HUGHES:** Thank you, Mr. Winkler. Appreciate you coming today.

**JOHN WINKLER:** All right. Thank you.

**HUGHES:** Next testifier. Welcome.

**MIKE SOUSEK:** Good afternoon, Chairman Hughes and members of Natural Resource Committee. My name is Mike Sousek, M-i-k-e S-o-u-s-e-k, and I'm the general manager of the Lower Elkhorn NRD. Our office is located in Norfolk, Nebraska, and we have parts or all of 15 counties in northeast Nebraska. First, I'd like to thank the Natural Resource Committee for allowing me to testify this afternoon on LR138. I'd also like to thank Senator McDonnell for introducing LR138 to the Legislature. While I'm confident this committee understands the effect that climate cycles have cause in the state of Nebraska, I want to highlight a few startling facts from northeast Nebraska. The Elkhorn River provides 32 percent of all the water reaching the Missouri River during the summer season. The Loup Basin provides 46 percent and the remaining water comes from the Lower Platte Basin, 22 percent. Over the last 12 years, we have had watersheds experience, 100-year storm on average every four years. While some of these storms surpassed the 100-year threshold and peaked past the 500-year storm, the most recent 500-year storm was this year during the March bomb cyclone. It may come as a surprise to this committee, but during the March flooding the city of Norfolk had as much water in the bypass channel running through the city that is usually flowing in the Missouri River. This amount of water stressed the diversion channel to its limit, and the only reason it survived was due to a dam structure 15 miles upstream, which held back 18,000--

\_\_\_\_\_ : Sorry, I couldn't hear what you said.

[LAUGHTER]

**MIKE SOUSEK:** We'll just do that. The only reason it survived was for NRD structure that we have in Pierce County, near Pierce, which held back 18,000 acre feet of water, 5.8 million gallons. Think of that, a tributary to the Elkhorn River, two hours west of Omaha became the size of Missouri River as it was flowing and gaining volume, navigating and destroying regions from the Elkhorn River to the Platte

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River and ultimately-- ultimately ending in the Missouri River. During the same 12-year period, we have experienced the most extreme flash drought in the last 17 years, which occurred in 2012. This extreme drought brought to the forefront the vulnerability in our agriculture system that has such a reliance on irrigation. Should the drought have lasted another year, catastrophic environmental and economic ramifications would have been realized. The extremes we are experiencing in weather cycles is unprecedented. For example, flash flood followed two years that were plagued with flooding along the Elkhorn River. The Lower Elkhorn Natural Resource District in recent years has shifted our priorities to better plan for these unprecedented weather extremes. While I can talk to you about the changes we have made in our groundwater management, reinforced by changes we have made in our rules and regulations of our groundwater management plan, I'm going to focus this testimony on potential infrastructure mitigation project to address the extreme weather in the Battle Creek watershed, a tributary to the Elkhorn River. This singular project could address flood control, drought mitigation, water quantity-- water quality and recreation opportunities for the immediate area and be part of a larger plan to address these concerns in eastern Nebraska. First, water quality. While this aspect often gets overlooked, a dam structure brings water quality to the forefront. News address-- and is addressed in design and implementation of the project. Large reservoirs improve water quality immensely because they do it both above and below the reservoir. The large reservoir and the inlaid features such as water quality basins built with it will allow sediment from the watershed above to settle out and keep it from being transferred downstream. But the benefits do not stop there. The creation of a reservoir actually allows us to focus on the contributing watershed in order to improve water quality and aquatic habitat function and fisheries in the reservoir. Through the reservoir design process we assess sediment loading to the reservoir and by focusing on opportunities to improve water quality in the reservoir can partner with NRCS, NPA, and other agency stakeholders to use funding such as EPA Section 319 funding and NRCSs has numerous conservation practices to improve water quality above the reservoir. Often NRCS can identify the watershed as a priority watershed and further reduce landowner project cost share in improving upstream water quality. Flood protection. Downstream of the potential Battle Creek reservoir there are 190 structures, 168 urban, and 22 businesses in the 100-year flood plain with an estimated value of 11.2 million. If the dam was constructed, it would remove all of them from

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the 100-year flood plain. Additionally, there is 1,169 total farmable acres in a two-mile stretch between the reservoir and the Elkhorn River in the flood plain with an estimate-- estimated annual crop value of 219,000. The dam would remove 698 acres or 120,000 in potential damage to crop value. These values do not account for any savings downstream once the water reaches the Elkhorn River.

Infrastructure such as highways, bridges, rail lines and agricultural ground would continue to see benefits downstream with the water being held back in the flood pool of the reservoir. In the handout, you'll see two-- two photos showing the city of Battle Creek with a reservoir and without and it highlights that the total town of the Battle Creek comes out of 100-year flood plain with the-- with building and structure there. The potential risks flood reduction project would provide 500,000 in annual flood damage avoidance in the project area, in addition to a savings of approximately 450,000 annually in required flood insurance premiums for a total of, approximately \$1 million annually. Drought mitigation. This project, water pool-- water supply pool sits at 1,671 feet above sea level. The conceptual Battle Creek Dam would provide 12,205-acre feet of water or 1,333 surface acres of water. If this structure is used for streamflow augmentation, water could be released for 13.8 days using a release rate of 400 CFS and assuming-- that's assuming initially for reservoir. This in conjunction with potentially other reservoirs could supply the Metropolitan Utilities District and the Lincoln Water Supplies System water during a flash drought to keep their well fields functional. These types of projects bring resiliency to a system that currently has none. If the water is kept in the reservoir, it also provides resiliency to the agricultural demand on irrigation. The site is ranked as high potential for aquifer recharge. It will provide water to the Elkhorn River through its connection with groundwater and keep the local up for recharge providing water at a time when it will be needed most. Recreation. A reservoir of this size could provide recreation opportunities in an area of Nebraska that is lacking such quality of life benefits. The economic benefits to the local economy and its attractiveness to bring people to northeast Nebraska cannot be understated. One of the recently constructed reservoirs in eastern Nebraska have shown average annual benefits of 700,000. This proposed site, which would be twice the size, I believe it is safe to say, we could provide a minimum, a similar amount of benefit. In your handouts, a chart showing how we came up with those numbers. I'd be



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happy to answer any questions the committee may have. And thank you once again for this opportunity.

**HUGHES:** Thank you, Mr. Sousek. Any questions? Senator Gragert.

**GRAGERT:** Thank you, Chairman Hughes. Just a real quick one on the lifespan of the dam. What do-- with the sedimentation or the hydrology up above, you know, what do you build? What do you expect that dam-- lifespan of that dam?

**MIKE SOUSEK:** Well, at least 100 years is what it would it be engineered for. But we do projects upstream of it to control the sedimentation on the water quality aspect to-- to further--

**GRAGERT:** 100 years.

**MIKE SOUSEK:** Yes.

**GRAGERT:** Thank you.

**HUGHES:** Any other questions? Senator Bostelman.

**BOSTELMAN:** Thank you, Chairman Hughes. On the river that would go into this dam that you're proposing here is that-- what's the-- the sediment that's coming out? Is that sand? Is that-- what type?

**MIKE SOUSEK:** A little bit of sand, it's a clay-- clay-sand mixture.

**BOSTELMAN:** Because I was-- when we were up on the Loup Canal diversion--

**MIKE SOUSEK:** That-- they'll do more sand. We have a little more clay in that area where-- on the Battle Creek watershed.

**BOSTELMAN:** Because they have to have a dredge in there just to keep that canal open. The first mile, mile and a half there's an active dredge because there is so much sediment comes in off the Loup, sand that comes in off there that it fills it up. And they've had to dredge that out. So I guess it kind of comes back what Senator Gragert was saying has a life expectancy of something like this if there's going to be a lot of sediment that's going to reduce that. What are you going to do on that?

**MIKE SOUSEK:** The sand-- the sand on it in this particular area really doesn't become in play until the Elkhorn Valley. So this-- this dam is

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being built right-- right at that junction where changes from the hills to the valley. Most of it's going to be clay with some sand in it, but there's terraces and other practices that will control that.

**BOSTELMAN:** So on the eastern-- thank you. And on the eastern side, you're talking about Wanahoo-- the dam?

**MIKE SOUSEK:** Yes.

**BOSTELMAN:** Well, Wanahoo sets in a pretty unique place because it's midway between Lincoln and Omaha, so it gets a lot of traffic just because of the location itself. I'm not so sure if this one will-- receive the same traffic, maybe it would. On your recreational days, that's users. So you have 13,000 on hiking on there. We have recreational 13,000. Could you explain that 13,000?

**MIKE SOUSEK:** Well, that's a-- it comes from the engineers that they have been approved with the Natural Resource Committee and DNR. It's a formula. There's a formula behind this spreadsheet which contains a whole bunch of information. And that's-- that's the way they-- that's the output of it.

**BOSTELMAN:** So it's-- potentially could be users, but it gets out [INAUDIBLE].

**MIKE SOUSEK:** Users are part of the equation and it's usable days. But when it says usable days, I think-- says 13,000 on some.

**BOSTELMAN:** 20,000, 50,000.

**MIKE SOUSEK:** Yes.

**BOSTELMAN:** And then what we don't-- yeah, okay.

**MIKE SOUSEK:** Gets the formula that they-- it's the only formula that they allow us to use to calculate these benefits.

**BOSTELMAN:** And on the NRD-- the last question I have. What's the NRD's mission? What is your call? What is it that you're responsible to do as far as water?

**MIKE SOUSEK:** From a statute's point of view or from our-- from our direction that the board is giving us?

**BOSTELMAN:** Well, what's your responsibilities then?

**MIKE SOUSEK:** Well, we have 12 responsibilities that are laid out in statute. Flood control being one, flood protection, groundwater management, recreation. Rural water systems, things of that nature.

**BOSTELMAN:** So with that, one of the things that would keep them coming back and it's not specific to you.

**MIKE SOUSEK:** Yeah.

**BOSTELMAN:** It's just-- it's just an area that-- it's a thing that we're dealing with from the flooding that has come back to the levees, because who's responsible for those levees or ensuring surface water protection? Is it the NRDs? Is it the Corps? Who is it that's responsible? Not that-- it's a question that's out there, because if the NRDs are responsible for flood protection and surface water, then why aren't the NRDs more engaged in accepting responsibility for these levees and doing that? I don't know if you have any thoughts on that?

**MIKE SOUSEK:** Well, the-- I'm going to kind of mimic what Mr. Winkler had just said that the levees-- the NRDs' responsible for some if they have built them and taken that responsibility to own and operate them. We're currently working with the city of West Point. We're redoing-- we're helping financially rebuild their-- their levee system. But ultimately, the city of West Point is taking the responsibility to maintain it. There's other levees out there that farmers have just pushed up next to a creek to protect their field, and that's their responsibility. But in the end, if we're dealing with major problems across the whole area, it's gonna be federal, state, local, and everyone is going to be involved.

**BOSTELMAN:** I appreciate that. I'm not-- to me, it's more-- it's more of an NRD thing. Not specific to you. It's-- it's, we don't know an inventory. We don't know what's out there as far as levees and that we don't know what's been there or what's going to be there. We don't know what we need to protect. And that's what we found-- I found going across the state looking at the different areas that were flooded. We just don't know. And I appreciate everything that you said to us. You know, there's a different-- there is levees at different stages and different how they got built, those type of things. But the challenge we have right now and all the flood control, what we're doing with surface water is we have to get our hands around-- minds around to

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whatever. We have to get to understand where-- what exactly we have inventorywise and levees and what's gone or where do we need to put them in in new areas. And that's something that needs to be-- it's being worked on, needs to be worked on but its something that I think the NRDs really play a critical, pivotal role in that.

**MIKE SOUSEK:** I agree with you, Senator Bostelman, that we do play a critical role. But I also look at this as-- the NRD system is a function of the state of Nebraska. It's-- it's something that was created by the state to-- to do these certain 12 responsibilities. So I kind of look at it like, we are in this together. We're both wanting the same things. We both want the same protection for our citizens. And how we get there is-- is why we have these discussions. But the responsibility of flood protection overall is, is all ours. And we-- we all play a role in that, so.

**BOSTELMAN:** Sure. Sure. Thank you.

**HUGHES:** OK. Senator Albrecht.

**ALBRECHT:** Thank you, Senator Hughes, and thanks for being here and talking about this. So you provided us these two photos.

**MIKE SOUSEK:** Yes.

**ALBRECHT:** Did you take it upon yourself to take a look at this or did the city of Battle Creek come and say, hey, can you help us out in case this flood is going to come again next year or? How did you--

**MIKE SOUSEK:** This has been a long process. I believe it started back in 1940. The Corps of Engineers at that time did a study and proposed a dam site here. At that time, they, for whatever reason, did not take the opportunity to build it. Twenty years later, 1960 range, Battle Creek flooded twice in that decade. Once again, it came-- came to the forefront. We need to do something. They talked about it. Nothing ever happened. Again, it happened in the '70s. At that point, they came to the NRD. The NRDs were now formed. The NRD did a study and said, OK, we can-- we can do this. It's going to cost this, and for whatever reason, the financial-- financially, it wasn't feasible. Fast forward to the '90s, Battle Creek gets flooded again. They bring it back up. We do another study. We actually studied five different options, two diversion channels widening the creek and two-- two different dam sites. Nothing happened. To 2000s they get flooded again. About 2011, I believe, 2010, 2011, they got flooded again. They came to the NRD.

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The NRD at that point told them, we will help, but we need you to tell us which project-- which one of these five projects do you want to do and how much money can you bring to the table? Well, come March, they came back after that flood, this recent flood and said we want the-- we want this structure, we want this dam, and we're going to bring 3.-- about 3.2 million to the table to help finance it. And that's currently where we're at.

**ALBRECHT:** And this area in here is that a lot of farm ground that was flooded?

**MIKE SOUSEK:** It's right next to the Elkhorn River. You can see the Elkhorn River in the top corner of the picture there. Yes, it is farm ground.

**ALBRECHT:** And how many other areas are like this in the Lower Elkhorn that you need to pay attention to and build some levees?

**MIKE SOUSEK:** Well, every-- every watershed we have there's potential for flooding.

**ALBRECHT:** Well, like all of them have flooding. I remember, you had like a top 10 list of different areas. Is that why you had a list of areas in the Lower Elkhorn that were important to you that--

**MIKE SOUSEK:** That-- we did a study about five years ago, four years ago maybe, that looked at sites. And what we were trying to address then was more-- more drought mitigation measures, how to keep the water in the-- water in the river and then also help recharge the aquifer for irrigation development. So that was the preface of that study, but with it comes flood protection recreation. So there are 10 different sites that we briefly looked at, a 10,000-foot view. It caused a lot of excitement in the area. And that study is still on the shelf, but this was one of those sites, yes.

**ALBRECHT:** But like of those recommendations, do you-- would you say that the NRDs put recreation over flood mitigation or drought or water quality?

**MIKE SOUSEK:** I would say-- I would-- no, I would not say that's the driving force.

**ALBRECHT:** OK.

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**MIKE SOUSEK:** It's mostly flood protection or now dealing with integrated management plans of the-- the connectivity between the aquifers and the river, keeping water, water in that river.

**ALBRECHT:** So this-- for the purposes of this resolution, LR138, you're just showing this as an example of--

**MIKE SOUSEK:** So there's-- there's talk of this. You know, the--

**ALBRECHT:** Would you do this anyway regardless?

**MIKE SOUSEK:** Yes. We're working-- we're working on this project anyway. But it was to highlight that there's the tributary to the Elkhorn, which is a tributary to the Platte. It's part of the-- it's part of the system. And if you're going to have one big dam, one big reservoir or 10, 10 different ones, this is an example of a lower one that could be part of the larger system.

**ALBRECHT:** OK. Thank you.

**HUGHES:** Senator Gragert.

**GRAGERT:** Thank you, Chairman Hughes. Real quick, where does this location and within the tributary lie? Is it on the bottom? Is it on the top? Is it in the middle of, you know, from the top of the tributary to the bottom tributary of this particular tributary?

**MIKE SOUSEK:** Well, Battle Creek-- Battle Creek is 10 miles west of Norfolk. And then this dam site is 2 miles south of the river. So it's on the bottom side of the Battle Creek watershed. The watershed itself is about 93 square miles. And this is at the west. It's 2 miles from the river.

**GRAGERT:** And I'm sure you have an inventory of dams up above this and--

**MIKE SOUSEK:** Yeah, there's not very many dams above it at all.

**GRAGERT:** There's not very many.

**MIKE SOUSEK:** No. If there are they're a small sediment ponds and filled or something like that. There's no structures in that watershed that I'm aware of.

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**GRAGERT:** And would there be any consideration of doing the top of a watershed before you put in a big dam like this?

**MIKE SOUSEK:** Well, part of that study that I referenced when they looked at the five options, one of the options was a multiple how many little dams would have taken the entire watershed to do the same thing. And there wasn't enough area to- to make it work. So it was either going to be two dams or one larger dam, which is the one I presented to you today.

**GRAGERT:** So any type of bare soil and covered crop would be a good idea.

**MIKE SOUSEK:** It's a good idea for a lot of reasons. Yes, Senator Gragert.

**GRAGERT:** And we do cost share on that locally.

**MIKE SOUSEK:** All right.

**HUGHES:** Enough plugs, let's go. Any other questions? Seeing none. Thank you for coming today.

**MIKE SOUSEK:** Thank you.

**HUGHES:** Next testifier. Welcome.

**DONNA GARDEN:** Thank you. Good afternoon, Chairman Hughes and members of the committee. My name is Donna Garden. I am-- that's D-o-n-n-a G-a-r-d-e-n and I am the assistant director of utilities for the Lincoln Transportation Utilities. First and foremost, I want to thank Senator McDonnell for extending the invitation to the city of Lincoln to testify on this very important study. The city of Lincoln sets a high priority on the quality and continued availability of our water supply, as well as our city's resilience to flooding events. We hope to continue to be part of this discussion about any projects that result from this study. Now, there are several projects and some of them aren't reservoirs that could fall within the scope of this interim study that would provide great benefit to the city of Lincoln and to the state. Most important among those, particularly to the city of Lincoln, is the development of a second source of water for the city of Lincoln, particularly as our population grows. But we are currently evaluating what that means in terms of a specific project. It could take the form of a partnership between Lincoln and Omaha MUD

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or it could take the form of a new well field and treatment facilities. These options would provide a second source of water to Lincoln and could form the basis for a regional water supply from multiple municipalities in southeast Nebraska. That would ensure a stable and reliable supply of drinking water. And in addition, these projects would also provide for flood mitigation and protect us from a flood similar to what we saw in March and allow for the growth of Lincoln and southeast Nebraska's population and work force. In addition, we need to harden the infrastructure of our well field in Ashland, which was damaged by the historic flooding this spring. We're currently facing \$32 million in mitigation projects to address this need. These mitigation projects identified include protection of Lincoln's Island Well Field, particularly that Northern End, which has become famous by those pictures of the Air National Guard putting sandbags and by our exposed horizontal collection well. Other projects include an isolation valve for that northernmost well, while water transmission main protection in our north well field and hardening of our electrical infrastructure, wellhouses and foundations. I'd also like to speak about the potential development of a reservoir along the Platte or Elkhorn Rivers. The citing of a reservoir north of the city of Ashland could potentially provide storage of spring precipitation and controlled release during the summer months. This would augment the low flows in the Platte River. This would greatly benefit Lincoln by providing reliable streamflows and high-- higher water production rates from our Lincoln wells. Those wells are very much river flow dependent . Control of the river flows would also mitigate flood conditions by providing storage upstream. Furthermore, control flows would provide us a better way to forecast the supply for the city of Lincoln and with increased summer flows could delay that need for a second source of water. However, I would caution the committee that citing a reservoir in a location where water would inundate our well fields would not be in the best interests of the city of Lincoln or the state. Our greatest priority in terms of water management is the continued resilience of our well fields in Ashland, and we would oppose any project that negatively impacts that water source. The city of Lincoln welcomes the opportunity to participate in the continued conservation-- conversations about the importance of water infrastructure to our community. And Chairman Hughes and members of the committee, thank you for your time and I'd be happy to answer any questions that you might have.

**HUGHES:** Thank you, Ms. Garden. Are there questions? Senator Bostelman.



**BOSTELMAN:** Thank you, Chairman Hughes. Nice to see you again.

**DONNA GARDEN:** Yes, hi.

**BOSTELMAN:** It's-- we were out to visit you to-- you gave us a tour of the facility with our LR, and that was very enlight-- very, very eye opening as to what the flooding damage, those type of things that happened to your well field out there and what you're facing now, Director Garden. My question comes down to some we talked about before us, salt. You know, the movement of that sand down through your area. Could you speak a little bit to that? What challenges does that create? Challenges for you not-- have you seen over the years, you know, with the water flows, that there's-- there's been a lot of saltation, a lot of sand moments through-- through your area. Could you speak to that just a little bit of us?

**DONNA GARDEN:** We can really only speak to it as it affects our well fields there. We do have a well field on the island and we have a well on the eastern shore of the Platte River. And certainly with the flood that happened this last March, we saw a lot of movement of sand, a complete different landscape out there from what we had before. In fact, we were doing a bank stabilization project for that well on the east shore and we had to completely scrap the design because it changed that much in how much sand actually moved down the river during that flood event. Under normal circumstances we can pretty much plan about that, but we do see movement and it changes with the flows in the river.

**BOSTELMAN:** And some of it I-- I know and I think on the south end you had a bridge that used to or does go across that you used to be able to access [INAUDIBLE] and I just know that probably either through debris or just from the saltation that comes through there, that really changes that whole opportunity to be able to use those-- those facilities out the islands and stuff that's happened.

**DONNA GARDEN:** We do have a bridge that goes across, but fortunately we built it to its pretty high standards because it was a pretty important infrastructure on that island. So we haven't had the problems of [INAUDIBLE].

**BOSTELMAN:** But around that, though, would you see the movement of sand, other obstacles that come into that as far as trees, those kind of things?

Transcript Prepared by Clerk of the Legislature Transcribers Office

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**DONNA GARDEN:** We do collect some things there too. On the Highway 6 bridge does collect a lot of material.

**BOSTELMAN:** Right, and the trellis right there. Then an enormous amount of trees that collect in there on the flooding event whenever we see that. We'll in the springtime, spring thaw, we see a lot of trees come through, then build up. So that just adds into those areas. OK, thank you very much.

**HUGHES:** Additional questions? Senator Gragert.

**GRAGERT:** Thank you, Chairman Hughes. I don't have a question, but I can't let this go by. On page 2, halfway down where you say Air National Guard helicopters. It's Army National Guard.

**DONNA GARDEN:** Army National Guard, I'm sorry. [LAUGHTER] My apologies.

**HUGHES:** Stop with the plugs. [LAUGHTER] Any other questions? Seeing none, thank you, Ms. Gardner, for coming today.

**DONNA GARDEN:** Thank you.

**HUGHES:** And our last testifier. Welcome.

**BING CHEN:** Good afternoon, Chairman Hughes and all the members of the Natural Resources Committee. I'm delighted to be here to-- to address you. My name is Bing Chen and I am a Professor of electrical and computer engineering at-- of the University of Nebraska. My current interests at the university are focused on renewable-- renewable energy and sustainability. As a long-term educator, by the way, that's half a century, so I'm the living fossil at the University of Nebraska, by the way. Had to put that in. I have witnessed and have been concerned by our inability to keep our college students that graduate from departing Nebraska to work elsewhere. A quarter of a century ago, I can-- I coined the term Silicon Prairie to describe a future vision for Nebraska in order to retain its best and brightest students and to bring new industry to Nebraska. With tax code changes, infrastructure, and recreational enhancements coupled with public and private sector coalition of late-- leaders, I feel Nebraska could become a 21st century magnet to turn this Silicon Prairie concept into a reality. You have already heard the testimony of Mr. John Winkler of the Papio-Missouri River NRD regarding how a proposed study could mitigate the billions of dollars of damage caused by the 19-- 2019 flood, reduce the effects of flash drought, and provide recreational

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water resources to the people of eastern Nebraska. I am going to focus on economic development benefits that could be realized if such a study were to be undertaken with a statewide impact. On the macro scale, eastern Nebraska does not possess extensive water recreational resources. Cities known for technological development such as Raleigh, Durham, Charlotte and North Carolina with its research triangle, and Austin, Texas with its tech center. Both developed water recreational areas as a lure for tech companies to move there. I believe it could be eastern Nebraska's turn to move into this elite company. Already companies such as LinkedIn, Google and Facebook have begun to move some assets here. This process could accelerate if Nebraska were to have all the needed pieces in place. ,A study I was involved in some 14 years ago for president-- and new president J.B. Milligan suggested a series of recreational lakes ring rose encircling Omaha and Lincoln, in essence, expanding the roads that we have to 4-lane to provide direct access to Eppley Airfield, nonstop direct flights to both coasts to attract investors and the creation of new tech centers. Three of the recommendations have made some progress in the intervening 14 years. There are now nonstop air flights to both Silicon Valley in California and to New York City and Washington. Also, the Omaha Ring Road has portions built, including Highway 36 and 31, which will provide speedy access to Eppley when they are completed. Among the recommended tech centers, one, the innovation campus of UNL have been created. Now look to the stepping back a little bit. As a thought experiment to share with you, for this study, I would like to have you consider the possibility of one lake of 2,000 acres devoted to attracting high tech, I.T. driven companies to Nebraska and what its economic impact could be if one shore was dedicated for commercial development for tech companies and the other shore was dedicated for residential development, the economic value to adjoining communities and the involved counti-- involved counties would result in a proper-- property valuation of \$200 million. And this is assuming something like Lake Okoboji values, which at that time when I did this study was \$10,000 per lineal foot. Along each 10,000 foot shoreline, this does not include any valuation for lands adjacent to and overlooking the lake. Twenty companies, each with 100 employees, would result in 2,000 high tech paying positions, and at \$75,000 per person would be worth approximately \$150 million in new taxable revenue, not including new corporate and property tax revenues, or the value of residential property taxes, impact on the construction industry, and growth of the retail sectors for the adjoining communities. It is interesting to know that having work at

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home within walking or biking distance reduces the need to commute and avoids traffic congestion as well as the need to burn fossil fuels, thus creating a greener living environment. In spite of their great success, neither the Research Triangle or Austin have this particular attribute that I've mentioned or have convenient access to their airports. Traffic congestion has hampered further expansion for both. Imagine the draw to companies seeking to expand to new locations of being able to lure their staffs with the enticing convenience of walking or riding a bicycle to return home after work. As another thought experiment, we might consider the constructing a tool-like system that is coupled to Nebraska's burgeoning wind farms, which in my last check now accounts for 1,972 megawatts of production as of 2019, and Peavey photovoltaic solar arrays, which are now at 45.23 megawatts, which were non-- largely nonexistent 25 years ago. As an aside, in the mid-90s, I sponsored the first wind conference in the state of Nebraska and came away saying, we're not ready for primetime yet. I'm happy to say we are ready for primetime today. It was a good friend of mine who who called me and said, Bing, you guys know that Nebraska could become the next Saudi Arabia of wind energy. And I told him, show me-- show me the proof. I want to see your studies. Well, as one of the directors of the Union of Concerned Scientists, impeccable engineering, and so I presented this to colleagues at the primary utilities here. And finally they saw, hey, we need to get into this game. And I'm very pleased that Nebraska now is among the leaders in this country. That's an aside. A potential study, it could could review a pumped hydro system as an additional benefit to flood control. When there is excess renewable energy being generated, water is pumped from the lower lake into the higher lake. In times of need, the stored power from the upper reservoir can be recovered by a hydroelectric water turbines. A quick calculation I did for a lake with a 5 cubic meter per second flow and an-- and a 11 meter head height and an assumed overall generator efficiency of 75 percent-- sorry for all the numbers-- shows a 368 kilowatt power output. That's pretty considerable. This could provide an excess power storage solution for Nebraska utilities. However, in times of imminent flooding, both lakes could be allowed to absorb excess rainfall. Damaging as it was, the once in a century flood provides the Legislature an opportunity to seek solutions to prevent future floods and provide immediate benefits, but possible recreational resources that do not impinge on existing communities while expanding economic opportunities for sustainable, long gray-- long-term growth to create the Silicon Prairie. On my part. I will support the study at the

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University of Nebraska, assuming I have their approval. Should it be authorized by the Legislature, I can reach out to my colleagues in a number of disciplines, but they're so long, I know a lot of people. So it would be something I would be delighted to do, by the way. To consider a study of alternatives as you defined them and their technical requirements, environmental wildlife impacts and economic development benefits. In turn, what is beneficial to our NU students is that a project such a-- such as this is of relevant interest to this generation in studying such subjects as water conservation, flood control, climate change mitigation, renewable energy options, environmental impact sustainability and economic development. That's a real handful of subjects that-- in visiting with my students, they're interested in every one of these. So just to let you know, I feel pretty confident that I could recruit a lot of very interested help to assist us. I would like to close with one of my favorite Nebraska quotes. I very rarely get a chance to quote him, but that-- I'm going to take this opportunity, if you would pardon me and let me-- allow me to do this. Destiny is not a matter of chance, it is a matter of choice. It is not a thing to be waited for, it is a thing to be achieved. Williams Jennings Bryan. And that's one of the things that I just love of being-- about being a transplanted New Yorker is the rich treasury of authors and wisdom that I have learned since moving here. A century ago, it was homesteading and free land that first drew people to Nebraska. I think the time is at hand for a new term, tech setting where our former logo, Nebraska The Good Life becomes the clarion call for 21st century tech migration to the center of the Midwest, Silicon Prairie. Thank you for the opportunity to speak with you and I would be happy to answer any questions today and in the future, respectfully.

**HUGHES:** Thank you, Mr. Chen. Are there any questions? Senator Bostelman.

**BOSTELMAN:** Thank you, Chairman Hughes. Professor, thank you for being here and rendering the information. Since you've done some studies on that before in this area, give us a ballpark. What do you think that something like this would cost?

**BING CHEN:** We estimated for-- at that time it involved Omaha City Planning. John-- John Winkler's predecessor, the head of MAPA, head of the Omaha Airport Authority. And I think we were looking at a 50-plus thousand acre lake and we calculated something like \$2 billion to build that or less. I don't remember the exact figures. I remember

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that we were looking at- at that time the cities that are involved would become active participants in managing, let's say, the 2,000 foot of shoreline along the south edge of what we call Buffalo Lake and at \$10,000 a foot that was worth about \$2 billion, not including all the land south of there and east of there that would be available for development purposes. And-- and then we even proposed to the idea of a new Oregon Trail experience for tourists, because that's as a-- as a transplanted New York, I'm always looking for ways to make them stop. Whatever you do, you got to make them stop here. And I said, I think the one thing that would really get someone excited, yes, come to Nebraska, the good life, get on the Oregon Trail for an hour. You want to stay longer, stay here for a day. Take the one day Oregon Trail. Have that experience. And it would be right next to this lake because you have-- you have-- sand was discussed as an issue. And I say don't make sand an issue. Make that a real opportunity. Build your own sandhills here on the eastern side of the state.

**BOSTELMAN:** To do the study, excuse me, sir, but to do the study or to look at this--

**BING CHEN:** Sorry, Senator.

**BOSTELMAN:** To do the study or to do the research behind this, what do you think that would cost-- the plan? The cost to do this.

**BING CHEN:** Oh, the cost to do this?

**BOSTELMAN:** The entire-- the entire-- well, s kind of like the entire eastern part of the state to take a look at what's-- what is all proposed.

**BING CHEN:** Well, I can say that my costs would be because I believe in this project. I believe I would like to see the state prosper. I would like to see the state become the 21st century tech center here in the Midwest. So convincing my colleagues probably would also-- probably would do it.

**BOSTELMAN:** OK.

**BING CHEN:** Yeah, and I think that there may be others outside the university that you may want to consult, that-- that may charge fees. But I would say that at least for me and my various student research groups, this would be a pro bono project. They would do it with a great deal of enthusiasm and passion. And I would invite you all to

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come to their presentations when they're done or be happy to give you copies of their studies. But-- so these are some of the classes that I'm teaching now are in sustainability, renewable energy and solar energy right now.

**BOSTELMAN:** Thank you, Professor.

**BING CHEN:** My pleasure.

**HUGHES:** Additional questions?

**BING CHEN:** No?

**HUGHES:** Seeing none, thank you, Professor, for coming today.

**BING CHEN:** My pleasure. Thank you.

**McDONNELL:** I want to thank everyone that came to testify, having a short period of time to work with these individuals. You can't manufacture passions, got to come from the heart. These people have passion and you start asking questions. You find out on much you don't know. But I really appreciate the time they spent with me, them coming here today. I was taught if you-- if you have a problem, bring a possible solution, otherwise, you're just whining. Today, I purposely did not bring a solution. If you look back to 1895, we started having these discussions in some public forum. You look at all of the studies that have been done. Look at what Dr.-- what Dr. Chen's done over his-- his career and there's something to learn from all that. There's definitely some positives. But there was also one thing that was glaring. Everyone came and said, this is the idea. This is it. This is what we're going to do and let's get going in here, let's get the support and the votes, let's-- let's do this. We're not approaching it that way. Senator Bostelman's question about the cost of the study. Serving on Appropriations, when I bring this bill, there is going to be a zero fiscal note. Now, when I say that, we're going to want to open up all of our resources from the state, but this is going to be a private-public partnership. We're going to ask people to step up from the-- the private sector and help us look at this. And at the end of the day, we might be wrong. We might be right. You went-- when you were talking earlier, Senator Moser, about the idea of-- can we really even do this with the geography? You might be right. The idea of doing this with one lake or X number of lakes, we don't know. We don't know with reservoirs. We don't know if there should be a large reservoir, if there should be 8, 9, 10, 11, 4, whatever the number, we have no

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idea. We have a problem. We know that. And we all came here to solve problems. And I've worked with every one of you. And nothing worth doing is easy. This is not going to be easy. The discussions aren't going to be easy, but we know we have a problem. Going back to 1895, OK, we've had these discussions, we have information, we have data. Not knowing, Senator Halloran, you're right. We don't know what the future is going to hold with the weather. We don't. But we know we have a problem now and we have-- it's our responsibility to help try to fix that problem. So in this process, I've tried to keep an open mind and I've learned so much, but I came in thinking, gee, some of these studies I've looked at some of the information they gave me, let's just do that. That's-- then you start digging into it. But also, I wanted to make sure that's why I met with the mayor of Ashland and the mayor of Lincoln, and we're going to meet with others, but specifically the mayor of Ashland. Based on-- you look at some of the information and some of the stories and going back to 2005 and the people of Ashland weren't even contacted in 2005. There was an idea was put out there, and this is what we're going to do. We're not gonna make that mistake. We're going to learn from other people's mistakes. We're also going to learn from what they did right in the past and how they approach this. But we are starting with this clean slate. So, again, I normally would come here and say, I think there's a problem, here's a possible solution, but on this one, I didn't want to. And I had asked all these-- these people to come down and testify because they are subject matter experts and they are-- they are passion about-- about it. And with the idea of just Dr. Chen stepping up right now and say it's going to cost nothing because he's going to dedicate his time. But we're going to ask the private sector to step forward and we're going to say if we're going to do a study and have possibly the resources from the state available, we're going to ask you to help us financially to do this study. And then we're gonna know and we're gonna know here's an option, here's an option, this was a good idea, this was a bad idea, we're gonna-- we're gonna-- we're gonna know, we're gonna find out. And that's-- that's the goal. The first step is usually the hardest and this could possibly be the first step of a thousand steps. But I appreciate your time and I know I'm-- I'm-- I'm the last hearing of the year. And so, I know you're eager to get out of here and I want to wish all of you Merry Christmas and happy holidays. And I'm definitely here to try to answer any of your questions today or in the future.



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**HUGHES:** Thank you, Senator McDonnell. Are there any questions? Seeing none. We do have one letter for the record from Lance Hedquist of South Sioux City. With that, we will wrap up our LR138 hearing and I appreciate everybody coming and have a very Merry Christmas.