S. HRG. 111–288

PROTECTING RESIDENTS OF THE DEVILS LAKE REGION FROM RISING WATERS, AND THE POTENTIAL FOR SPRING FLOODING IN THE RED RIVER VALLEY

HEARING

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

SPECIAL HEARING

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PROTECTING RESIDENTS OF THE DEVILS LAKE REGION FROM RISING WATERS, AND THE POTENTIAL FOR SPRING FLOODING IN THE RED RIVER VALLEY

WEDNESDAY, FEBRUARY 11, 2009

U.S. SENATE,
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 9:35 a.m., in room SD–138, Dirksen Senate Office Building, Hon. Byron L. Dorgan (chairman) presiding.

Present: Senator Dorgan.

OPENING STATEMENT OF SENATOR BYRON L. DORGAN

Senator DORGAN. I call the hearing to order. This is a hearing of the Appropriations Subcommittee on Energy and Water in the U.S. Senate.

Today the subcommittee is going to take testimony on the continued flooding problems and the issues—particularly in the Devils Lake Basin—and the projected potential flooding issues that we will face this spring in the Red River Valley of North Dakota.

I held a field hearing, on the issue of increasing lake levels in Devils Lake, last March. At that time, there was a 20 percent chance, we were told, that Devils Lake would match the record level that we saw in May 2006; that is, 1,449.2 feet. Now, 1 year later, the National Weather Service, with the latest estimate that I have seen, indicates that there is a 98 percent chance that the levels in Devils Lake will exceed the record high that was seen in 2006. There is a 25 percent chance that the levels will exceed 1,452 feet. This is a serious issue, and much, of course, has changed in the last year.

Since 1980, we've seen a substantial increase in precipitation in the Devils Lake region. There's a 72 percent chance, we are told by the Weather Service, that these conditions will persist for 10 years, and a 37 percent chance they will continue for 30 years.

Devils Lake is a body of water with no natural outlet, unless, of course, the lake rises to the level of 1,459 feet, at which point it's expected the water would flow naturally into the Cheyenne River and across the divide.

The precipitation forecast and the dramatic changes that we've seen in recent years are pretty troubling, in terms of what we might expect with respect to Devils Lake. I believe it is the only

closed basin with respect to "no outlet." We have a very small State outlet that is not letting a lot of water out at this point, but the Great Salt Lake and Devils Lake are two basins that are closed.

This is a very difficult and hard-to-understand problem for most people, because we don't have lake flooding in our country, we have river flooding, where the river courses and gorges and takes houses and buildings with it, and you can see the fury of it, and then it subsides and the event is over. That has not been the case with Devils Lake. This lake, a closed basin, has a flood that has come and stayed, and now will get worse, we are told.

In the report issued by the U.S. Geological Survey in 2008, people who live in an elevation of 1,454.6 feet will have the same chance of being flooded in the next 10 years as people who live at the edge of a 100 year floodplain along a river. According to the National Weather Service prediction, there's a 2 percent chance those folks at 1,454 feet will be flooded this year. Having been through this for some years, we now understand that, when there's a 2 percent or a 1 percent chance, it is not unusual for it to happen in Devils Lake. We've seen it happen before.

Last week, NOAA also issued a report that the Red River Basin in North Dakota has a 50 to 75 percent chance of "major flooding" this spring. I'm holding this hearing to try to understand what is happening and what the projections are for both circumstances, Devils Lake and the Devils Lake Basin, number one, and the Red River Valley, number two. We'll receive testimony on both.

We have asked Colonel Jon Christensen, the Commander of the St. Paul District of the Army Corps of Engineers, to be with us; Scott Dümmer, hydrologist in charge of the North Central River Forecast Center of the National Weather Service; and Myra Pearson chairwoman of the Spirit Lake Nation was to be with us—she was not able to—her travel arrangements were canceled; and Dale Frink, the State engineer from the North Dakota State Water Commission, is with us. In addition, Fred Bott, the mayor of Devils Lake, is with us, and Dennis Walaker, the mayor of Fargo.

And, Dennis, I understand you were selected to represent the interests of the Red River Valley, Wahpeton, Fargo, and Grand Forks. I appreciate your making the trip to Washington on short notice.

I believe that the National Weather Service forecast for the potential flooding of both Devils Lake—the continued flooding in Devils Lake and the Basin, and the Red River Valley, makes this a very important and timely hearing. Hopefully, we can address these issues, to the extent possible, and, prior to any flooding that occurs, develop any mitigation and other policies that will minimize flooding.

We last met on the subject of flooding at Devils Lake, as I said, less than a year ago. We had experienced a few relatively calm years, with the lake elevation holding, at Devils Lake, around 1,447 feet. The hearing last year was held to jumpstart the thinking about what might need to be done to protect people's homes and infrastructures if the water level continues to rise and what would the triggers be, what would trigger additional activities, such as levees and so on.

I included $5 million in the 2007 emergency supplemental bill to allow the Corps of Engineers to start the process of planning about how to continue to protect the community of Devils Lake from these lake levels. And the Corps, I know, is using that funding, and has had a number of meetings in the region to assess public support for various protection options. Colonel Christensen will discuss that in some detail.

The National Weather Service forecast, recently, is what has added to my concern and urgency about this. They predicted a 99 percent likelihood that Devils Lake will exceed the record storage level of 1,449.2 feet, due to the abundant snowfalls in the region. As I said, they've predicted, just recently, a 50 to 75 percent chance of major flooding in the spring in the eastern part of the State, particularly the Red River Valley, as a result of abundant snow and rain that we've had in recent months. Scott Dümmer will talk more about those forecasts.

All of us who have joined here have been involved in very significant flood fights in the past, probably no two people more than Mayor Walaker and Mayor Bott. These flood fights are difficult. Floods that visit the Red River Valley or a flood that has visited and stayed with respect to Devils Lake causes very substantial damage and there is a lot of concern by the people who live there.

We've done some work in virtually all of the communities. We've done a lot of work in Devils Lake with respect to roads and levees and mitigation issues. We've done a lot of work in the Red River Valley, Wahpeton-Breckenridge, Fargo-Moorhead, Grand Forks and East Grand Forks. Grand Forks and East Grand Forks have the largest completion of the significant flood-protection project. But, all of the communities have, since the flood 10 years—11 years, or 12 years ago—hit us, all of the communities have done a lot of work, and we'll hear a little about that today.

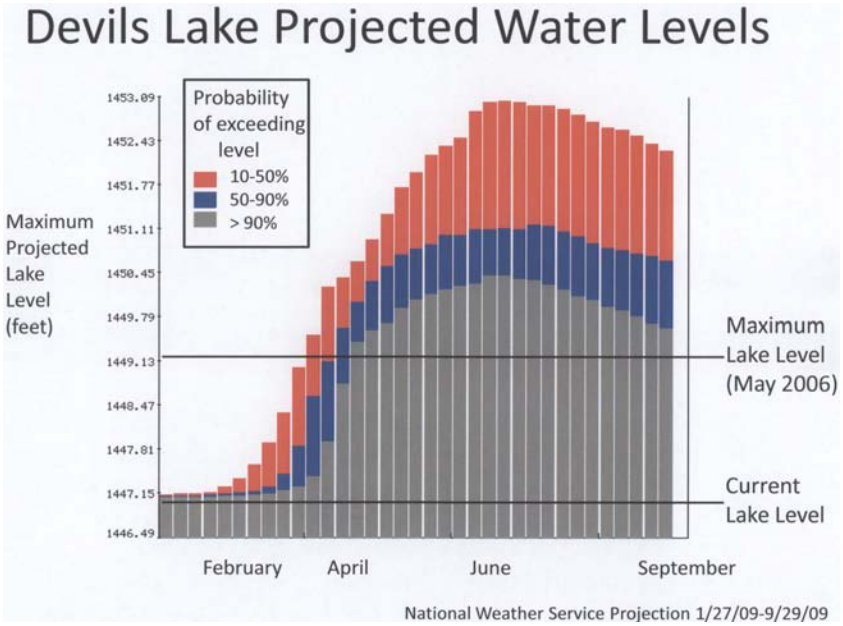
But, we need to try to get ahead of all of this as quickly as we can to understand what might happen and what we need to do as a result of it. In Devils Lake, we've done a lot of work by the Army Corps. My understanding from the Corps' estimates, if we have to raise the levee at Devils Lake once again, which may very well be likely with these forecasts, that is—that's a very expensive proposition; there are lots of ramifications with respect to raising the dikes or levees. We're in a situation here where this is an emergency, but we also have very significant fiscal problems. And I know the city of Devils Lake doesn't have the kind of resources for local matches, for much.

So, we also are now, likely to complete this afternoon or this evening, the stimulus program, or economic recovery plan—they worked through the night on trying to get all of that together. I just came from a meeting on that, and that's going to have some emergency funding for various things, as well. The Corps will have, I think, probably around $4.6 billion, and the question is, would we have projects that are ready, here, that could be accessed from that program, as well?

I want to make sure that we have all of the funding that is necessary to address a proper flood fight on the Red and the Red River Valley, and the things that we need to do to make sure that we are prepared for what is now expected to be an almost certain sub-

stantial rise and an almost certain record level of flooding at Devils Lake.

I want to just put up a chart that shows you what we have seen now with the projections. The gray represents a 90 percent probability. This line is the record line for Devils Lake. That's 1,449.13 feet—that's been the highest level for Devils Lake. And, of course, all of this is at flood level. I mean, at 1,449.13 feet, as you can see, the projection is, with a 90 percent confidence that we're going to exceed the highest level of Devils Lake at some point in April. And the 50 to 90 percent confidence is the blue, and the 10 to 50 percent confidence is the red. So, you can see what could happen up to 1,452–1,453 feet, at which point we have very serious issues, I think, with roads, roads built as dikes, but not really engineered for that purpose. At what point do you have too much stress on those roads? That's certainly true with respect to the Indian reservation, especially.



So, we have a lot of questions about all of this; and, again, the more recent projections of 50 to 75 percent major flooding in the Red River Valley persuades me that we need to include that as a part of this discussion.

So, I appreciate all of you coming to this hearing, and I want to begin and have a discussion with the Corps of Engineers, Colonel Jon Christensen, who's a district commander at the St. Paul District.

Colonel Christensen, thank you. If you will turn your microphone on, you may begin.

STATEMENT OF COLONEL JON L. CHRISTENSEN, DISTRICT COMMANDER, ST. PAUL DISTRICT, U.S. ARMY CORPS OF ENGINEERS

Colonel CHRISTENSEN. Chairman Dorgan, I'm honored to appear before you to report on the Corps of Engineers current efforts to address the rising lake levels of Devils Lake. My testimony will address the situation regarding Devils Lake and how the Corps of Engineers could continue to support the people of this lake region.

This past year, we have been working with the residents and the local agencies to address the potential continued rise of Devils Lake. The National Weather Service is forecasting an almost 99 percent likelihood the water level at Devils Lake will exceed the recent record lake level of 1,449.2 feet, set in May 2006. There is also a 25 percent probability that the water level at Devils Lake will exceed 1,452 feet, and a 2 percent possibility the water level will exceed the height of 1 foot below the current dike protection level of 1,455 feet.

We are taking these forecasts very seriously. Recent meetings in Bismark, North Dakota reinforced the urgency felt by the local officials and their concerns that construction proceed as quickly as possible.

Since updating you last March, the Corps team has had several public meetings in the city of Devils Lake, on the Spirit Lake Reservation, and in other communities, such as Minnewaukan and Cooperstown. The purpose was to identify all the potential solutions for combating a future lake rise, screen and eliminate those alternatives that were not feasible. The alternatives were evaluated to determine if the alternative was effective in maintaining a reliable level of flood risk management at the city of Devils Lake. Other criteria included environmental effects, social effects, expected acceptability, implementability, risk, and cost. This resulted in the conclusion that one of the immediate actions to afford reduced flooding risk to the city of Devils Lake was to raise the existing embankments from an elevation of 1,460 feet to 1,465 feet, and extend them to tie back into high ground. In designing the embankment system for the city of Devils Lake, we used the dam design criteria for the geotechnical design.

Senator DORGAN. Colonel, let me just interrupt you for a moment and ask, on a point you're just raising, you said 2 percent possibility the level will exceed a height of 1 foot below the current dike protection level of 1,455 feet. Our dike protection is 1,460 feet, with 5 foot freeboard—Is that correct?

Colonel CHRISTENSEN. Yes, sir.

Senator DORGAN. That gets to what you just described, of 1,460 to 1,465 feet. If you're at 1,465 feet, what is your real dike protection level?

Colonel CHRISTENSEN. It's the same 5-foot level that protects our freeboard underneath that.

Senator DORGAN. All right, thank you.

Colonel CHRISTENSEN. In designing the embankment system from the city of Devils Lake, we used dam design criteria for the geotechnical design. This was done due over long periods of time that water would remain against the embankments. Recently, we determined that we should apply some dam safety criteria to other aspects of the design, because the amount of water—time the water

would remain against the embankments. This includes the analysis of when the embankments should be raised.

While there are other alternative alignments still under consideration for the tieback, we are prepared to accelerate our design schedule on the most critical reach. The most critical reach is the Creel Bay reach, which is subject to the greatest wind and wave action. The challenge is to begin construction soon enough to stay ahead of possible future years of flooding. While the existing embankments will contain the high lake levels projected this year, the risk of exceeding these elevations increases each year, assuming projected increased lake levels, until there is a 17 percent probability that the current level of protection would be exceeded between 2010 and 2013.

Since it will take 2 to 3 years of construction to complete a raise of the embankments, it is important that the construction be initiated soon. We are continuing to work with the city of Devils Lake on its emergency action plan, communication of associated risks to the public, and other tools available to help reduce flood risks.

While the focus of the funding from Public Law 110–28, title III, chapter 2, titled "U.S. Troop Readiness, Veterans Care, Katrina Recovery, and Iraq Accountability Appropriations Act 2007," was for the study of alternatives and design of raising and extending the existing city of Devils Lake's embankments, the Corps also identified the need to coordinate with other areas bordering the lake; specifically, the Spirit Lake Nation and Minnewaukan. Our intent is to continue to provide technical flood risk reduction assistance to support them as they develop their responses to this spring's lake-level forecast.

We are particularly concerned about the Spirit Lake Nation. Some areas are currently relying on emergency temporary levees that were built during previous flood fights. These were constructed to keep water at bay until a permanent solution could be identified. The solution has been identified by the Federal Highways Administration, but has not yet been constructed. While construction of the work will be started this summer, the lake may come up this spring, before the permanent projects are in place. We will continue to work with the tribe, Bureau of Indian Affairs, North Dakota Department of Transportation, and the Federal Highway Administration to ensure that public safety is the top priority.

I would like to end by providing a progress update of other Corps projects in the Basin. Progress has been made on turning over the projects that raised the city of Devils Lake embankments to the current height of 1,460 feet. The project was turned over to the city on September 30, 2008. At that time, we were able to provide FEMA with reasonable assurance that the embankments would safely contain the 1 percent flood elevation, as determined by the United States Geological Survey. This is part of a process to keep the city out of the floodplain outlined in the FEMA flood insurance maps. However, in general, we would encourage the residents of the region to buy flood insurance to protect their investment, just as they buy homeowners insurance.

PREPARED STATEMENT

We understand there are many challenges to be overcome in the coming months. The Corps of Engineers will continue to work in our partnership with other Federal, State, and local agencies as long as our assistance is needed.

Again, thank you for allowing me to testify today, Mr. Chairman. This concludes my testimony. I would be happy to answer any questions you have.

[The statement follows:]

PREPARED STATEMENT OF COLONEL JON L. CHRISTENSEN

Chairman Dorgan and members of the subcommittee, I am honored to appear before you to report on the Corps of Engineers current efforts to address the rising lake levels of Devils Lake. My testimony will address the situation regarding Devils Lake and how the Corps of Engineers could continue to support the people of this lake region.

This past year, we have been working with the residents and local agencies to address the potential continued rise of Devils Lake. The National Weather Service is forecasting an almost 99 percent likelihood the water level at Devils Lake will exceed the recent record lake level of 1,449.2 feet, set in May 2006. There is also a 25 percent possibility the water level at Devils Lake will exceed 1,452.1 feet, and a 2 percent possibility the water level will exceed a height of 1 foot below the current dike protection level of 1,455.0 feet. We are taking these forecasts very seriously. Recent meetings in Bismarck, North Dakota reinforced the urgency felt by the local officials and their concerns that construction proceed as quickly as possible.

Since updating you last March, the Corps team has held several public meetings in the city of Devils Lake, on the Spirit Lake Indian Reservation, and in other communities such as Minnewaukan and Cooperstown. The purpose was to identify all the potential solutions for combating a future lake rise, screen them and eliminate those alternatives that were not feasible. The alternatives were evaluated to determine if the alternative was effective in maintaining a reliable level of flood risk management at the city of Devils Lake. Other criteria included environmental effects, social effects, expected acceptability, implementability, risk, and cost. This resulted in the conclusion that one of the immediate actions to afford reduced flooding risk to the city of Devils Lake was to raise the existing embankments from an elevation of 1,460 feet to 1,465 feet and extend them to tie back into high ground.

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We understand there are many challenges to be overcome in the coming months. The Corps of Engineers will continue to work together in our partnership with other Federal, State and local agencies as long as our assistance is needed. Again, thank you for allowing me to testify here today. Mr. Chairman, this concludes my testimony. I would be happy to answer any questions you may have.

Senator DORGAN. Colonel, thank you very much.

Next, we'll hear from Mr. Scott Dümmer, the National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Mr. Dümmer, thank you. You may proceed.

STATEMENT OF SCOTT DÜMMER, HYDROLOGIST-IN-CHARGE, NORTH CENTRAL RIVER FORECAST CENTER, NATIONAL WEATHER SERVICE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

Mr. DÜMMER. Good morning, Chairman Dorgan. I am Scott Dümmer, from NOAA's National Weather Service. I serve as the hydrologist in charge of the North Central River Forecast Center located in Chanhassen, Minnesota. NOAA's weather, water, and climate programs work to monitor conditions and provide forecasts to meet the Nation's need for reliable and accurate information. Thank you for inviting me to discuss the latest national weather forecast for the water levels at Devils Lake and the related science and coordination required to produce those forecasts.

This past fall, precipitation was 200 to 300 percent above average across eastern North Dakota and northwestern Minnesota. This was the wettest fall on record for the cities of Devils Lake, Fargo, and Grand Forks. Soil moisture observations taken just prior to freeze-up in early December revealed nearly saturated moisture levels in the upper 8 inches of soil across the Red River Valley. This includes those areas that feed into Devils Lake. Observations are critical for our understanding and prediction, including river-gauge observations from the United States Geological Survey, as well as radar, temperature, and precipitation observations.

The onset of winter came abruptly as temperatures plunged, in early December. The quick hard freeze occurred with minimal snow cover. Near-saturated soil moisture conditions allowed the frost to quickly penetrate to the ground to a depth of 2 feet. Snow fell on 23 days in December, with 24½ inches falling in Devils Lake after December 14. By the end of the month, new December snowfall

records were established for Fargo and Grand Forks. The water content of the snowpack was 170 to 300 percent of average levels. January precipitation and snowfall were near normal levels, while temperatures remained well below average. The result is a very heavy snowpack and very wet soil conditions.

We believe, when this year's snowpack melts, it will make a major contribution to flooding in the Red River Basin, which includes Devils Lake. The Devils Lake Basin is large and flat, which results in unusually long travel time for precipitation or snowmelt to reach Devils Lake. Current extended-range forecasts suggest the water levels at Devils Lake will peak in late June through early July, which is normal for this area. The current forecast calls for an almost 99 percent likelihood the water level at Devils Lake will exceed the recent rate—recent record lake level of 1,449.2 feet, set in May 2006. We continue to monitor the situation closely, update our forecasts using the latest information available to us, and provide briefings to Federal, State, and local officials.

Now I will speak briefly about some of the science and tools behind our forecasts. Our river and lake level forecasting system integrates soil moisture, snow, and icepack, seasonal precipitation, and temperatures. It continues to yield more complete and comprehensive forecast information through the implementation of the Advanced Hydrologic Prediction Service, or AHPS for short. AHPS is a new and essential component of our climate, water, and weather services. Through the implementation of the Web-based AHPS, we are extending the range, quantifying the certainty, and improving the timeliness and accuracy of our river forecasts and warnings. We are also making this information available in user-friendly text and graphical products. The AHPS provides forecasts of river and lake levels over periods ranging from an hour to a season, and for areas large and small.

AHPS includes river forecast information, such as how high the river or lake will rise, when the river or lake will reach its peak, and how long the flooding will continue. AHPS also provides better information to water managers and city officials. This helps them make decisions, such as when and where to conduct evacuations, how to use reservoir storage capacity and releases, and when to reinforce levees and dikes, and at what level.

There are currently 2,237 AHPS forecast points across the Nation, 404 within my area of responsibility, including one at Devils Lake. Our confidence in our forecasts and outlooks is based on our new AHPS capability and the environmental conditions, which include the excessive snowpack, the very wet soil conditions, and expected precipitation and temperatures for the next 9 months.

At this time, it is not possible to forecast how much additional snow will fall before the start of the normal snowmelt cycle. Historically, an additional 20 to 25 inches of snow can be expected to fall by the end of March. As conditions can change prior to snowmelt, the National Weather Service will continue to carefully monitor the situation. Snowmelt typically occurs in late March or early April. We update our long-range forecasts every month or more frequently if conditions warrant. Once snowmelt begins, we will issue daily forecasts for the lakes and rivers on our area, including Devils Lake.

PREPARED STATEMENT

Mr. Chairman, this concludes my testimony. I thank you for the opportunity to discuss the National Weather Service's role in forecasting lake levels for Devils Lake.

The threat for flooding this spring in that part of the country is high. The National Weather Service will continue to monitor the situation closely and work with Federal, State, and local officials to ensure they have the information needed to make the best decisions possible to prepare for flooding.

I would be happy to answer any questions you may have.

[The statement follows:]

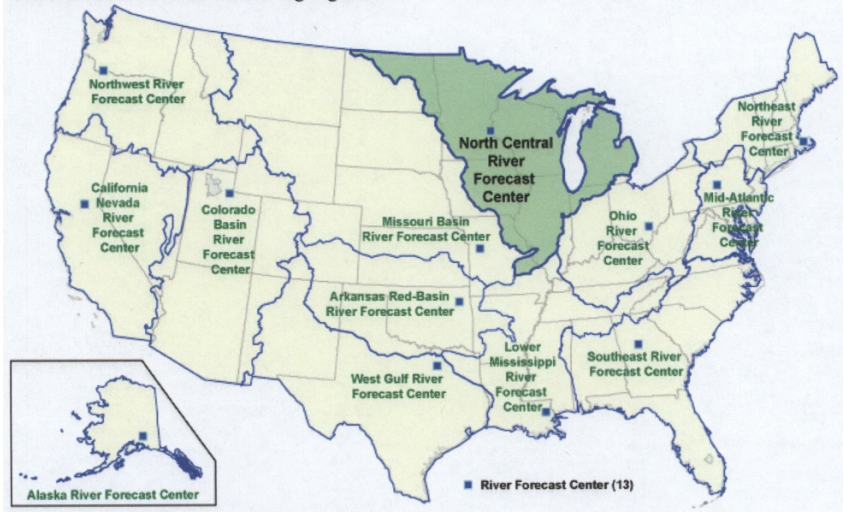
PREPARED STATEMENT OF SCOTT DÜMMER

Good morning, chairman and members of the subcommittee. I am Scott Dümmer of the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service. I am the Hydrologist-In-Charge of the North Central River Forecast Center, located in Chanhassen, Minnesota. Thank you for inviting me to discuss the National Weather Service (NWS) hydrologic forecast for the Devil's Lake region of North Dakota.

NOAA's vision is an informed society that uses a comprehensive understanding of the role of the oceans, rivers, lakes, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions. NOAA pursues this vision through its mission to monitor, understand and predict changes in Earth's environment and conserve and manage coastal, marine, and freshwater resources to meet our Nation's economic, social, and environmental needs. NOAA's programs provide the Nation with services and information to protect lives and property, and improve management of weather and water sensitive sectors, such as energy, agriculture, transportation, recreation and emergency response. These services and information are built upon an infrastructure which includes environmental observations, analyses and predictions, forecasts, and sustained user interaction. NOAA's weather, water, and climate programs work to monitor conditions and provide forecasts to meet the Nation's need for reliable and accurate information.

In my testimony today, I will discuss the latest NWS forecast and uncertainty information for the water levels at Devil's Lake, and describe the science and coordination required to produce our forecasts. First, I will provide a little background about the North Central River Forecast Center. The North Central River Forecast Center (NCRFC) is part of a network of 13 River Forecast Centers across the United States. River Forecast Centers collect and process observations, and provide forecasts and information about water resources for major rivers and their tributaries across the country. My area of responsibility is highlighted in Figure 1. River Forecast Centers are also fully integrated with the larger network of Weather Service Forecast Offices and together we communicate and coordinate our forecasts and information with Federal, State and local officials who play an active role in water management and emergency response. It is our role to provide information to these officials to enable them to make the best decisions possible.

Figure 1. The National Weather Services' thirteen River Foreccast Centers, with the North Centeral River Forecast Center highlighted.

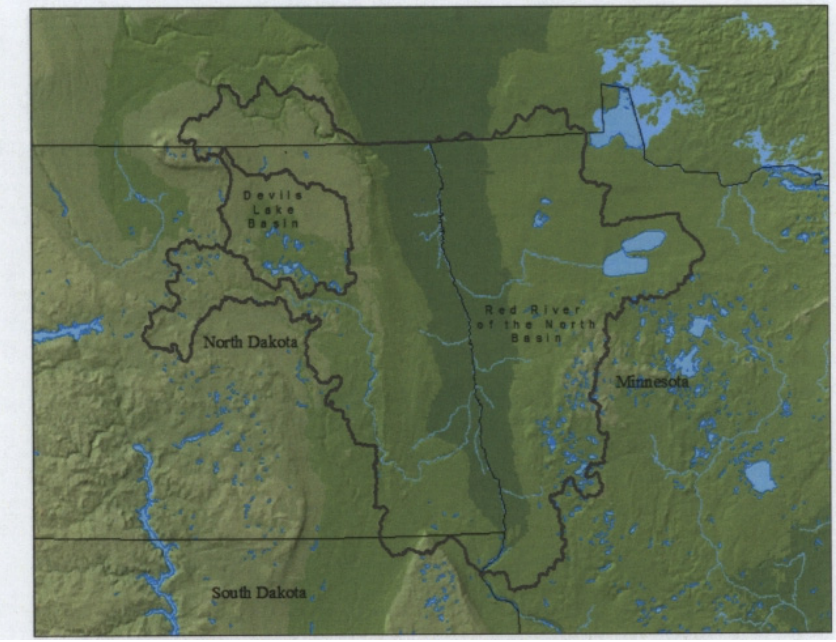


During this past fall (September, October, and November) precipitation was up to 200–300 percent of average across eastern North Dakota and northwestern Minnesota. The precipitation was spread across the entire 3 month period, as each of the 3 months recorded above average rainfall totals. This was the wettest fall on record for the cities of Devils Lake, Fargo and Grand Forks. Soil moisture observations taken just prior to the freeze-up in early December, revealed nearly saturated moisture levels in the upper 8 inches of soil across the Red River Valley, including those areas that feed into Devil's Lake.

The onset of winter came abruptly as temperatures plunged in early December. The quick, hard freeze occurring with minimal snow cover and near saturated soil moisture conditions allowed the frost to quickly penetrate the ground to a depth of 2 feet. Snow fell on 23 days in December, with 24.5 inches falling in Devils Lake after December 14. By the end of the month, new December snowfall records were established for Fargo and Grand Forks, with the water content of the snow pack at 170–300 percent of average levels. January precipitation and snowfall were near normal levels, while temperatures remained well below average.

Based on the fall and early winter weather, we identified a significant threat of major flooding this spring in the Red River of the North basin in northwestern Minnesota and eastern North Dakota (Figure 2). Devils Lake is located within this basin. We believe when this year's significant snowpack melts, it will make a major contribution to flooding in the Red River basin. Because of this threat, the NWS is actively coordinating with other Federal agencies, and State and local officials within the U.S. portion of the Red River basin, as well as providing information to appropriate authorities for Manitoba, Canada.

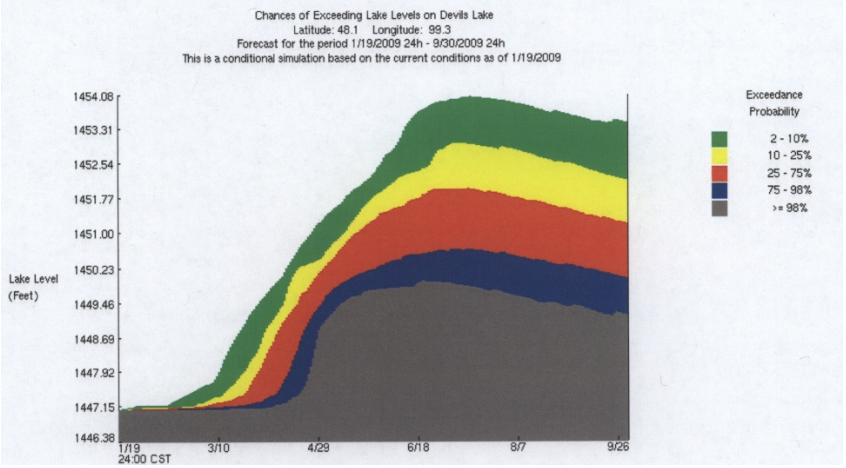
Figure 2. Image of the Red River of the North Basin.



We began mentioning the potential for significant spring flooding in December, based on the hard freeze and above average snowfall. In January, we increased our coordination and conducted a conference via the Internet with representatives from the U.S. Geological Survey's North Dakota Water Science Center, the U.S. Army Corps of Engineers' St. Paul District, the Department of Water Stewardship for the Government of Manitoba, and the North Dakota State Water Commission. The objective of the conference was to alert these agencies of the potential threat identified in our preliminary internal model runs, and the high probabilities of flooding in the Red River basin, including Devils Lake. We asked all of the conference participants to provide assistance in acquiring observations of snow water content throughout the area to help us produce the best possible outlook.

Our standard outlook available on the Internet provides potential water levels out to 3 months (http://www.weather.gov/water). However, the Devils Lake River Basin is large and flat which results in an unusually long travel time for precipitation and/or snow melt to reach Devils Lake. Due to this long travel time and associated slow response in the level of Devils Lake, we provide to our users extended outlooks for this location through September 2009. This particular service provides an early outlook which includes the possible height to which Devils Lake could rise during the spring and summer. An example of this product is in Figure 3. The "Exceedence Probability" graph represents the likelihood, or probability, of the lake exceeding a certain level for 5 ranges of probability, over the time period January 19–September 30, 2009. Current extended range forecasts suggest the water levels at Devils Lake will peak in late June through early July (which is normal for this area).

Figure 3. Forecast probability of exceeding specified lake levels on Devil's Lake for the period January 19, 2009 through September 30, 2009 (x-axis on the graph represents calendar date).



In developing forecasts, the NWS also considers historical data provided by local entities. Devils Lake is a closed basin (where runoff terminates in the lake) below the 1,459 foot level. According to the North Dakota State Water Commission: [1]

—Flooding in the Devils Lake Basin, which began in the 1990s and continues to the present (2008), has destroyed hundreds of homes and businesses and inundated thousands of acres of productive farmland.

—Since 1993, Devils Lake has risen about 25 feet and the volume of water in Devils Lake has quadrupled.

—The State of North Dakota has constructed an outlet to allow water from Devils Lake to flow into the Sheyenne River.

—At least twice in the last 4,000 years Devils Lake has risen to the 1,459 foot level. This is the level at which Devils Lake will begin to divert water into the Sheyenne River.

In addition, according to the U.S. Geological Survey, Devils Lake began flowing into Stump Lake (an adjacent closed basin) in 1999. The two lakes have since merged and are rising together.

The current forecast calls for an almost 99 percent likelihood the water level at Devils Lake will exceed the recent record lake level of 1,449.2 feet, set in May 2006. There is also a 25 percent possibility the water level at Devils Lake will exceed 1,452.1 feet, and a 2 percent possibility the water level will exceed a height of 1 foot below the current dike protection level of 1,455.0 feet (Figure 3). In late January, we briefed this information to the U.S. Army Corps of Engineers Regional Interagency Levee Task Force, and other public officials. We continue to monitor the situation closely, update our forecasts using the latest information available to us, and provide briefings to Federal, State, and local officials.

Now I will talk briefly about some of the science behind our forecasts. Our river and lake level forecasting system, which integrates soil moisture, snow and ice pack, and seasonal precipitation and temperatures, continues to yield more complete and comprehensive forecast information through the implementation of the Advanced Hydrologic Prediction Service (AHPS). Complex environmental conditions and interactions are represented in our models to produce forecast and uncertainty information for specific river or lake locations. Through the implementation of AHPS, we are extending the range, quantifying the certainty, improving the timeliness and accuracy of our river forecasts and warnings, and making this information available in user friendly text and graphical products. AHPS provides forecasts of river and lake levels over time periods ranging from 1 hour to a season and for areas large and small, including river forecast information such as:

—How high the river or lake will rise;

[1] http://www.swc.state.nd.us/4DLink9/4dcgi/GetContentPDF/PB-206/DL__Quick__Facts.pdf.

—When the river will reach its peak; and
—How long the flooding will continue.

AHPS also provides better information to water managers and city officials, helping them make decisions about water allocation and economics such as:

—When and where to evacuate people, goods and industrial property from potential flood areas;
—How to use reservoir storage capacity and release to reduce flood impacts on people and businesses, including agricultural demands; and
—When to reinforce levees and at what level.

AHPS provides more accurate forecasts for flow conditions ranging from droughts to floods in a timely and user-friendly manner. AHPS enables our forecasters to use a combination of software and hardware tools to analyze data and create graphical displays of probability forecasts. There are currently 2,237 AHPS forecast points across the Nation, 404 within my area of responsibility, including one at Devils Lake.

Our outlooks are for planning purposes and provide the probability of the lake exceeding various stages based on current conditions and 58 years (1948–2006) of observed precipitation and temperature data from January through September. We seldom see such a high probability of exceeding record levels. Our confidence is based on the excessive snowpack, the very wet soil conditions, and expected "average" precipitation and temperatures for the next 9 months. We also believe there is more snow in and near shelterbelts which is not well represented in an "average" snowpack. Shelterbelts, also known as windbreaks, and are made up of one or more rows of trees or shrubs planted in a manner which provides shelter from the wind. They are commonly planted around the edges of fields on farms. They are also planted to help keep snow from drifting onto roadways and yards.

At this time, it is not possible to forecast how much additional snow will fall before the start of the normal melt cycle, but historically, an additional 20–25 inches of snow can be expected to fall by the end of March. By incorporating the past 58 years of climatological data, the outlooks already take into account the threat of above average precipitation, and this is represented by the forecasts for higher lake levels, but with a much lower probability the levels will rise that high. As conditions can change prior to snow melt, the NWS will continue to carefully monitor the situation. Snow melt typically occurs in late March or early April. We update our long-range forecasts every month, or more frequently if conditions warrant. Once snow melt begins, we will issue daily forecasts for the lakes and rivers in our area.

CONCLUDING REMARKS

Mr. Chairman, this concludes my testimony. I thank you for the opportunity to discuss the NWS's role in forecasting lake levels for Devils Lake. The threat for flooding this spring in that part of the country is high. The NWS will continue to monitor the situation closely and work with Federal, State and local officials to ensure they have the information needed to make the best decisions possible to prepare for flooding. I would be happy to answer any questions you or other members of the subcommittee may have.

Senator DORGAN. Mr. Dümmer, thank you. You've painted a pretty ominous picture of what might be ahead of us in the next several months in North Dakota, but we appreciate the work the National Weather Service does to give us their best estimate of what might happen.

Mayor Walaker, you have been involved in flood fights in many different ways. In the major 1997 flood, I recall you standing on the top of a dike. You led the flood fight in the city of Fargo, and the Fargo Forum actually printed a cartoon of you standing on the top of the dike with a red cape on. But, I think the folks in Fargo understood the importance of your work in that flood fight in 1997. So, it's not as if this issue of flooding is a stranger to you. We appreciate your coming. You're now, of course, the mayor of the community, and will be engaged once again. But, I'm interested in hearing your perspective of what this might mean with the Weather Service suggesting that—the risk of major flooding in the Red

River Valley this year, and where we are relative to where we were in 1997.

You may proceed.

STATEMENT OF DENNIS WALAKER, MAYOR, CITY OF FARGO

Mr. WALAKER. Senator Dorgan and members of the committee, reflecting back to 1975, when I joined the engineering department of the city of Fargo, there is a certain amount of, always, optimism, because you can't enter these events without some optimism that you're going to succeed. But, it gets tiring. We thank you for inviting us to testify today on behalf of the city of Fargo in regards to flood issues in our community and the entire Red River Valley.

As mayor of Fargo, I can tell you from experience, flooding in the valley is the No. 1 cause for concern when it comes to natural disasters. I have firsthand experiences in dealing with the rising waters in our community, along with many of our staff.

Prior to becoming mayor in 1996, I was the head of the public works for the city and one of the lead-person staff on responding to flooding conditions in our community. Before I relate to you some of the flood issues in Fargo, I want to address some of the more general flood issues in the entire Red River Valley.

For the most part, the Red River to the north, from Lake Traverse, located in North Dakota, serves South Dakota, Minnesota and South Dakota border to Winnipeg, Manitoba, Canada. There's very little elevation drop. On average, the fall is about 1 foot per mile. The land surrounding the river is very flat. It's been described as a bathtub. And the Red River is where the drain is.

For the most part, the topography of the island—of the land in Minnesota is higher than North Dakota property. The Red River flows north into Hudson Bay; thus, the river melts faster in the south end of the stream than the north end. This causes problems, such as ice dams, pooling of water in the upper reaches, because the frozen river system in the lower reaches is not ready to accept water flowing north.

We all have to realize it is the only river in the United States that flows north. It starts, and it flows north into Canada. There are some rivers that start in Canada, come down, and then—and flow north, but this is the only one that begins in the United States and ends up in Hudson Bay.

As you're aware of a number of cities along the Red River experiencing severe drought flooding—or, severe flooding in 1997, and have addressed their problems through assistance of the Federal and State governments. Grand Forks, North Dakota, East Grand Forks, Minnesota, Breckenridge, Minnesota, and Wahpeton, North Dakota, have all developed a flood protection system that meets the Corps of Engineers certification process for levees.

Back in 1997, we were basically—since we were successful in our flood fight to allow the other cities to receive—so, as—the question always has been, Is it better to win than it is to lose? I still think winning is the answer.

Winnipeg, Manitoba, Canada, improved their bypass diversions after the 1997 flood, as well, with Federal expenditures there exceeding $800 million. Duff's Ditch as it's currently called—or Duff's Folly—was widened to double, basically, the size in their bypass.

One of the things about 1997 was it was the largest deployment of the National Guard in Manitoba in the history of the country.

I've been in touch with Mayor Brown, from Grand Forks, on the current status of their flood projects, attached is Mayor Brown's observations.

[The information follows:]

LETTER FROM MICHAEL R. BROWN, MAYOR

CITY OF GRAND FORKS,
Grand Forks, ND, February 10, 2009.

Senator BYRON L. DORGAN,
Chairman, Energy and Water Development Subcommittee on Appropriations, U.S. Senate, Washington, DC.

CHAIRMAN DORGAN AND MEMBERS OF THE SENATE APPROPRIATIONS SUBCOMMITTEE ON ENERGY AND WATER: Thank you for this opportunity to provide testimony on the potentially catastrophic situation that is taking shape in North Dakota in the form of unprecedented spring flooding events.

Unfortunately, we in Grand Forks have firsthand experience of a major flood disaster. In 1997, our community of 50,000 people was inundated with floodwater, forcing nearly all residents to evacuate and ceasing commerce for weeks and everyday life for months and even years. The financial cost alone, at an estimated $2 billion, is staggering. Just as significantly, the damage and the hardship of rebuilding took a tremendous psychological toll on individuals and the community as a whole.

As we look across the countryside and as we receive preliminary data about spring flood expectations this year, we shudder. Of course, our community was assisted by the entire Nation in our rebuilding and part of this Herculean effort included a flood protection system constructed under partnership at all levels of government. However, even with our flood protection project, we remain vigilant. We're continuously monitoring all new information available and we're taking precautionary measures to ensure we are as prepared as possible.

More pressing than our own situation, we shudder for our friends in the communities around us who are not as prepared as we are. Because we know the impact of this disaster, we are committed to make every effort to ensure other communities will not have to go through what we did. Therefore, we urge you to encourage and facilitate a significant planning effort by all appropriate Federal agencies.

Already, several organizations such as FEMA and the National Weather Service have been very helpful in providing preliminary data and evaluation and other mitigation planning tools. We are urging that they will continue to do so and, importantly, have the resources to do so. There is little doubt this area will be the scene of a crisis this spring. We all desperately need help to mitigate this impending disaster.

Thank you, again, for this opportunity to provide testimony on this serious matter and I, on behalf of our community and those all around us, appreciate any action you can take.

Sincerely,

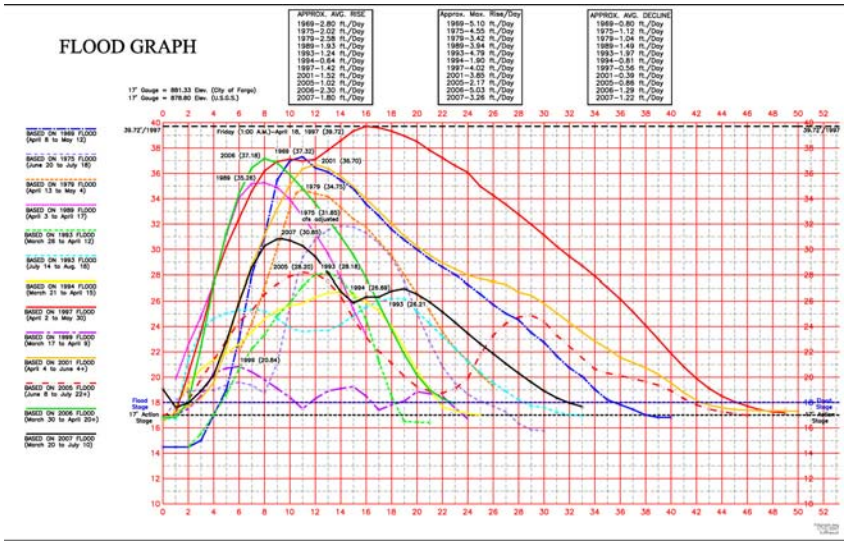
MICHAEL R. BROWN,
Mayor, City of Grand Forks, ND.

Mr. WALAKER. Since 1997, we have experienced three other significant flood events. One of the events was a summertime flood, in 2000. We—it was called a "hidden flood," because it flooded so many inland areas of our city—while 2 spring events in 2001 and 2006 also fell within the top 10 floods of all time in Fargo. Why is this? Is it weather patterns? Is it drainage issues? Is it farming practices? I would say it's a combination of all of them.

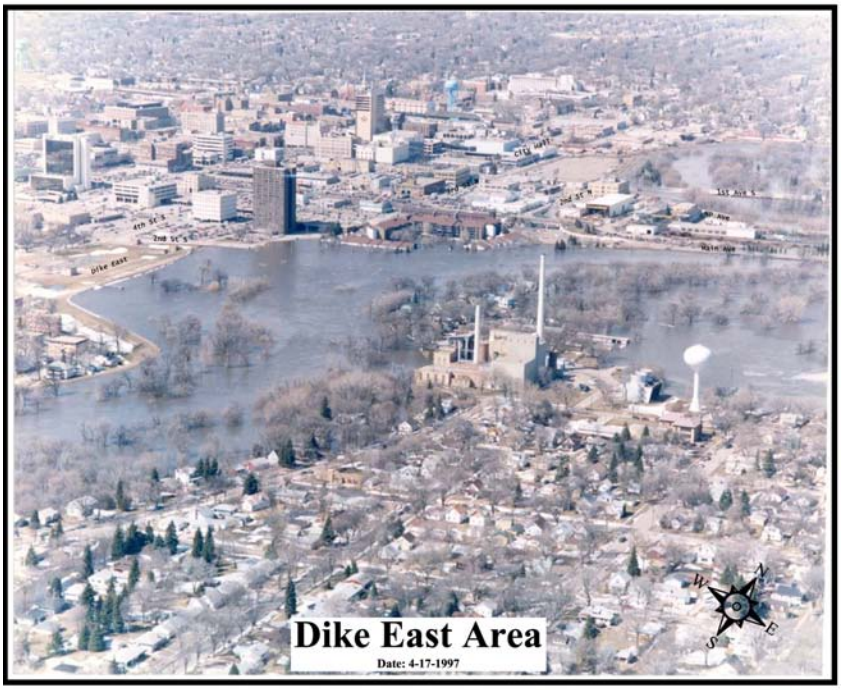
After the 2006 flood, I was invited down to Abercrombie, North Dakota, by one of its previous mayors, to survey the conditions and what's causing this quickness of flooding in the valley. As we traveled into the farmlands of both Minnesota and North Dakota, it appeared to us that more and more farmland is being drained into legal ditches that are being enlarged to accommodate farmland runoff. Given the prices of crops, who can blame the farmer for

seeking to increase his production? But, there is a price to pay, and that is an increase in the flows of the Red River. If we don't have protection around our communities, we will see more flooding taking place.

As for Fargo, I have attached a historic record of flood events for our community. You can see how the most recent floods have been paired against the 1997 flood that brought over 39 feet to the Red River flood stage through Fargo. Our normal flood stage is 18 feet; right now, the river is running about 15 feet. So, you understand that it's a significant raise.



Also attached are pictures of flooding waters south of Fargo during 1997. And one time during this flood, I flew to the upstream reaches of the Red River, and the Wild Rice River which joins the Red about 6 miles south of Fargo. During these aerial flyovers, we saw water coming at Fargo that was 8 miles wide and 10 to 12 miles long. All of the water had to flow through Fargo-Moorhead on its way north. Imagine an hourglass, and imagine how water flowing at 5 miles an hour at a rate of 28,000 cubic feet per second must move through a community for 14 miles before it reaches the north side of Fargo. Normally, the river flows at 3 miles an hour at a rate of about 2,000 cubic feet per second or less.


Dike East Area
Date: 4-17-1997


City Hall - Downtown
Date: 4-17-1997


Ridgewood
Date: 4-20-1997
S
W
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Ridgewood Area
Date: 4-20-1997
N
E
W
S


I-29
76th Ave S
25th St S
Jerry Dr S
68th Ave S
100th Ave S
N
E
W
S
Southside Wild Rice
Date: 4-16-1997


I-94
I-29
25th St S
40th Ave S
N
E
W
S
Meadow Creek Circle
Southside
Date: 4-17-1997

We have addressed a number of flood-prone areas since 1997. We have purchased over 100 homes that were located in the area that was flooded at 31 feet above flood stage. We have improved, relocated, and added pumping stations for our sanitary and storm sewers, but not—it should also be noted, while we must protect property from Red River flooding, we must also be aware of flooding during a rain event, whereby the community can be flooded from the inside of the dikes if the pumping system doesn't work.

We have grown into rural areas on the south side of Fargo that requires additional levee protection. One of the major revelations during the 1997 flood was the overland flooding that took place. We now—so, now we need to—not only protect the community from Red River breakouts, but we must protect our property from overland flooding that occurs when the water breaks out from lesser streams, like the Wild Rice River.

And finally, while all this protection is being planned, we must also assure our citizens that the pumps work in case we have a major rain or snow storm during high water.

In closing, first of all, I want to thank the committee for listening, remind everyone that a lot of work has gone into protecting our communities and properties of the Red River. If you drive north into Canada, you will see that every community, from the border to Winnipeg, is protected by rain dikes. After the 1997, Fargo committed to allowing other communities that suffered more damage to proceed in finding a flood protection plan to assist them. They are now protected. The Corps of Engineers did a wonderful job in Grand Forks, just an absolute wonderful job.

The figure that's being used for the 1997 flood was $2 billion. These figures would be exceeded if we would have lost Fargo. And I can remember our Governor at that time asking me the simple question—he said we couldn't afford to lose both towns, because we served as the basis for providing aid and assistance to Grand Forks after the 1997 flood.

PREPARED STATEMENT

We think it is our turn to receive assistance, and we are willing and—more than willing to work with anybody that could move our south-side flood protection. The dike up by the VA hospital, in that area, is proceeding. It should be completed this summer, this spring. They are doing a study on the rest of the city. We know that's not—even with our south-side flood protection, the projects do not end before we receive what we consider adequate protection from the raging Red.

Thank you.

[The statement follows:]

PREPARED STATEMENT OF DENNIS WALAKER

Dear Senator Dorgan and members of the subcommittee, thank you for inviting me to testify today on behalf of the city of Fargo in regards to flood issues in our community and the Red River Valley. As Mayor of Fargo, I can tell you from experience, flooding in the Valley is the number one cause for concern when it comes to natural disasters. I have first hand experiences in dealing with rising waters in our community. Prior to becoming Mayor in 2006, I was the head of Public Works for the city and lead staff person responding to flood conditions in our community. Before I relate to you some of the flood issues in Fargo, I want to address some of the more general flood issues in the Red River Valley.

For the most part the Red River of the north from Lake Traverse, located on the North Dakota, Minnesota, and South Dakota border, to Winnipeg, Manitoba, Canada has very little elevation drop—on average the fall is about 1 foot per mile. The land surrounding the river is very flat, for the most part the topography of the land in Minnesota is higher than the North Dakota property. The Red River flows north into Hudson Bay. Thus, the river melts faster on the south end of the stream then the north end. This causes problems such as ice dams, and pooling of water in the upper reaches because the frozen river system in the lower reaches is not ready to accept water flowing north.

As you are aware a number of cities along the Red River experienced severe flooding in 1997 and have addressed their problems through the assistance of the Federal and State governments. Grand Forks, East Grand Forks, Breckenridge, Wapheton all have developed a flood protection system that meets the Corp of Engineers certification process for levies. Winnipeg, Manitoba, Canada improved their by-pass diversions after the 1997 flood as well, with Federal expenditures up there exceeding $800 million. I have been in touch with Mayor Mike Brown from Grand Forks on the current status of their flood projects, attached is Mayor Brown's observations.

Since 1997, we have experienced three other significant flood events. One of the events was a summer time flood—2000; while two spring time events in 2001 and 2006 also fell within the top 10 floods of all time for Fargo. Why is this? Is it weather patterns, is it drainage issues, is it farming practices? I would say it is a combination of all of them. After the 2006 flood I was invited down to Abercrombie, North Dakota by its Mayor to survey conditions surrounding that small community. We traveled into the farm lands in both Minnesota and North Dakota. It appeared to us that more and more farm land is being drained into the legal ditches, that are being enlarged to accommodate the farm land run off. Given the price of crops nowadays, who can blame the farmer from seeking to increase production. But there is a price to pay and that is an increase in the flows of the Red River. If we don't have protection around our communities we will see more flooding taking place.

As for Fargo, I've attached an historic record of flood events for our community. You can see how the most recent floods have compared against the 1997 flood that brought over 39 feet to the Red River through Fargo. It should be noted flood stage for Fargo is 18 feet. Also attached are pictures of flooding waters south of Fargo during 1997. At one time during this flood, I flew the upstream reaches of the Red River and the Wild Rice River, which joins the Red about 6 miles south of Fargo. During these aerial flyovers we saw water coming at Fargo that was 8 miles wide and 10 to 12 miles long. All of the water had to flow through Fargo-Moorhead on its way north. Imagine an hour glass, and imagine how water flowing at 5 miles an hour, at a rate of 28,000 per cubic foot per second must move through a community for 14 miles before it reaches the north side of Fargo. Normally, the river flows at 3 miles an hour at a rate of about 2,000 per cubic foot per second or less.

We have addressed a number of flood prone areas since 1997. We have purchased over 100 homes that were located in areas that were flooded at 31 feet about flood stage. We have improved, relocated and added pumping station for our sanitary and storm sewers. It should be noted, while we must protect property from Red River flooding we must also be aware of flooding during a rain event whereby the community can be flooded from the inside of the dikes if the pumping system doesn't work.

We have also grown into rural areas on the south side of Fargo that requires additional levy protection. One of the major revelations during the 1997 flood was the overland flooding that took place. So now we need to not only protect the community from Red River breakouts, we must protect property from overland flooding that occurs when water breaks out from lesser streams like the Wild Rice River and finally while all this protection is being planned we must also assure our citizens that the pumps work in case we have a major rain or snow storm during high water.

In closing, I want to thank the subcommittee for listening and remind everyone that a lot of work has gone into protecting communities and properties along the Red River. After the 1997 flood, Fargo committed to allowing other communities that suffered more damage to proceed in finding a flood protection plan to assist them, they are now protected. We think it is our turn to receive assistance. Thank you.

Senator DORGAN. Mayor, thank you very much. You know, the issue of flood threats in some areas might be responded to differently than in our area after the 1997 flood—you know, apparently a 500-year flood, or perhaps even more, and essentially, the largest city evacuated since the Civil War—and to see the fight

that went on in Fargo to try to make sure you saved the city of Fargo—I think all of us understand the urgency and the tension whenever we hear, again, a flood threat, and especially when you talk about major flood threat. And so, this is not just some ordinary response in our part of the country. We understand the need to respond aggressively to just the threat. And it's the reason for this hearing.

Mayor Bott, you have, as I indicated, been the recipient of a lake flood that came and stayed, and now appears, by all accounts, to be moving towards new record levels of flooding, which will have a substantial impact on much of your infrastructure—levees, roads, the economy, and all the things that are impacted by this flooding. So, I appreciate your coming today, and why don't you proceed.

STATEMENT OF FRED BOTT, MAYOR, CITY OF DEVILS LAKE; PRESIDENT, DEVILS LAKE CITY COMMISSION

Mr. BOTT. Good morning, Senator Dorgan. Thank you for giving me the opportunity to speak to you today concerning these challenges facing our community and the implications with the rising water levels. I would have to echo what Mayor Walaker said. When you're living in a community where flooding is likely, it seems like it's always on the horizon. You certainly need to be optimistic that you're going to be able to deal with this.

I would like to thank you for the ongoing support you've provided to our community throughout those years of flooding. The dike protecting the city, the roads leading to our community, and the development of our new drinking water supply would not have been possible without your unrelenting support.

I'd like to discuss three items of the multiple challenges facing the city of Devils Lake: the importance of the city within the region, our water supply project, and then the levee system.

Devils Lake is the 11th largest city in North Dakota. The 2000 census placed our population at 7,222 residents. We have a regional airport that, last year, had 3,226 departures. Five miles south of Devils Lake is the Spirit Lake Nation, which is home to approximately 6,500 people. Spirit Lake relies almost entirely on the city of Devils Lake for its retail needs. Also just south of the city is Camp Grafton, a National Guard training facility which employs 220 people, year round. Camp Grafton is in the process of implementing tens of millions of dollars worth of improvements, and relies heavily on the local airport for transportation of students. Last year alone, Camp Grafton trained nearly 3,200 regular Army and Reserve-component soldiers. With the closest regional center being 90 miles away, the city of Devils Lake plays a vital role in the local economy.

The drinking water supply project, we are proceeding with the development of our emergency water source replacement project. This project was initiated several years ago to address the precarious situation created by the lake inundating 6 miles of our existing supply line. A failure within the inundated portion of the pipeline would leave the city without adequate drinking water.

In 2007, the city completed installation of 32½ miles of pipeline to connect the city to our new water source. Work on our well field has been ongoing since last fall. We hope to be able to supply water

from the new source to the city residents by the end of March this year.

The city is currently working on the design of a water treatment facility, with hopes of awarding bids for construction this summer.

The total water supply project is expected to cost nearly $18 million. With your help, Senator, the city has secured nearly $7.5 million in Federal grants, including $5.9 million from the U.S. Army Corps of Engineers and $1.6 million from the EPA. The city has also secured nearly $4.5 million in grant funds from the North Dakota State Water Commission.

And the levee project, my personal file, labeled "Corps and Bank Projects," has a beginning date of February 17, 1994. The lake elevation at that time was 1,428 feet. The first document in that file on that date is a copy of a letter sent by Senator Byron Dorgan to Colonel James T. Scott, District Engineer of the St. Paul District. The letter concerned potential spring flooding.

The second document within the file is dated March 3, 1994, and it is a reply to Senator Dorgan from the division engineer, Omaha District, concerning spring flooding.

Other documents within the file include the city's letter to then-Governor Shafer asking him to secure assistance from the U.S. Army Corps of Engineers to raise and extend the existing protection levee for the city of Devils Lake, dated June 21, 1996.

Our hope was that this would be our only request. We never expected that, nearly 13 years later, we would be making yet another request to protect the city from the flood emergency caused by the waters of Devils Lake.

It appears that there is significant chance the lake will experience a dramatic rise this spring. This is of great concern to the city, because the existing levee, with a top elevation of 1,460 feet, is already near the fringe for meeting Corps dam safety criteria and FEMA floodplain regulations. Increasing lake levels will exacerbate this problem and ultimately require additional protection measures to be implemented.

Approximately $54 million has been invested in the levee system protecting our area. Preliminary estimates for future levee work range in excess of $73 million for a 5-foot raise. This amount will make it extremely difficult to fund at a local level.

PREPARED STATEMENT

Again, Senator Dorgan, thank you for the opportunity to speak today. We appreciate that you continue to understand the challenges that lie ahead of us, and we hope we are able to work together to find workable solutions.

Thank you, Senator.

[The statement follows:]

PREPARED STATEMENT OF FRED BOTT

Senator Dorgan and subcommittee members, thank you for the opportunity to speak with you today regarding the current challenges facing the city of Devils Lake and the potential implications related to rising water levels within the lake. My name is Fred Bott. I am the president of the Devils Lake City Commission.

First and foremost, I would like to thank you for the ongoing support you have provided to our community throughout the years of flooding. The dike protecting the city, the roads leading to our great community, and the development of our new

drinking water supply project would not have been possible without your unrelenting support.

As you are aware, the city of Devils Lake has faced a multitude of challenges resulting from fluctuating lake levels. Today I would like to discuss three items with you: the importance of our city within the area, our ongoing drinking water supply project, and the Devils Lake levee system.

CITY'S REGIONAL IMPORTANCE

Devils Lake is the 11th largest city in North Dakota. The city's 2000 Census population was 7,222 residents. Our public schools have 1,649 students. Our private elementary school has 140 students. Our medical facilities consist of 2 clinics, which saw over 54,000 patients last year. Mercy Hospital, our local hospital, had 1,632 patients last year and its emergency room saw 10,273 patients. We have three nursing and retirement homes. Our regional airport had 3,226 departures last year. Lake Region State College, a comprehensive 2 year college and vocational school serving nearly 1,700 students, and the North Dakota School for the Deaf are also located in Devils Lake. Finally, the size of the work force in Devils Lake for which data is available numbered 5,422.

Five miles to the south of Devils Lake is the Spirit Lake Nation which is home to approximately 6,500 people. Spirit Lake relies almost entirely on the city of Devils Lake for its retail needs. Also just to the south of the city is Camp Grafton, a National Guard training facility, which employs 220 people year round. Camp Grafton is in the process of implementing tens of millions of dollars worth of improvements and relies heavily on the local airport for transportation of students. Last year alone Camp Grafton trained nearly 3,200 regular army and reserve component soldiers.

With the closest regional center being 90 miles away, the city of Devils Lake plays a vital role in the local economy. North Dakota State Sales tax reports show Devils Lake to have the sixth highest taxable sales per capita in the State. This indicates a strong regional shopping presence in the city. It would be an extreme hardship if area residents, including the Spirit Lake Tribe, had to travel 90 miles for shopping access.

DRINKING WATER SUPPLY PROJECT

The city of Devils Lake continues to proceed with the development of our Emergency Water Source Replacement Project. The project was initiated several years ago to address the precarious situation created by the lake inundating 6 miles of our existing supply line that has been in service 47 years. A failure within the inundated portion of the pipeline could leave the city without an adequate drinking water supply. The project will also allow the city to comply with the new Safe Drinking Water Act (SDWA) standards for arsenic. The current city supply is nearly 3.5 times the allowable limit and we are operating under an administrative consent agreement with the North Dakota Department of Health. This agreement states that the city will continue to work toward development of our new supply and imposes daily fines if the system is not operational by March 31.

In 2007 the city completed installation of 32.5 miles of pipeline to connect the city to our new water source. Work on our well field has been ongoing since last fall. We hope to be able to supply water from the new source to city residents by the end of March of this year. The city is currently working on the design of a water treatment facility with hopes of awarding bids for construction this summer. Once operational, the treatment plant will remove iron and manganese from our drinking water and we will no longer have to add chemicals to mask their effects.

The total water supply project is expected to cost nearly $18 million. With your help, Senator, the city has secured nearly $7.5 million in Federal grants, including $5.9 million from the U.S. Army Corps of Engineers and $1.6 million from the EPA. The city has also secured nearly $4.5 million in grant funds from the North Dakota State Water Commission. In an effort to ensure that water rates remain affordable to city residents, we have requested an additional $1.6 million in funds from your office to assist in completing this much-needed project. Any additional aid you can provide will decrease the local share required and the community will see a direct benefit in lower water bills.

LEVEE PROJECT

My personal file labeled "Corps and Dike Project" has a beginning date of February 17, 1994. The lake elevation at that time was 1,428 feet. The first document in that file on that date is a copy of a letter sent by Senator Byron Dorgan to Colonel James T. Scott, District Engineer, St. Paul District. The letter concerned poten-

tial spring flooding. The second document within the file is dated March 3, 1994, and is a reply to Senator Dorgan from Colonel John Schaufelberger, Division Engineer, Omaha District, concerning spring flooding. Two other documents within the file include the city's Emergency Declaration dated June 17, 1996, and the city's letter to Governor Shafer asking him to secure assistance from the U.S. Army Corps of Engineers to raise and extend the existing flood protection levee for the city of Devils Lake dated June 21, 1996. Our hope was that this would be our only request. We never expected that nearly 13 years later, we would be making yet another request to protect the city from the flood emergency caused by the waters of Devils Lake.

As you will hear today from representatives of the National Weather Service, it appears there is a significant chance the lake will experience a dramatic rise this spring. This is of great concern to the city because the existing levee, with a top elevation of 1,460 feet, is already near the fringe for meeting Corps dam safety criteria and FEMA floodplain regulations. Increasing lake levels will exacerbate this problem and ultimately require additional protection measures to be implemented. Local officials have met several times with representatives from the Corps regarding this issue, and the Corps has initiated the planning process for potential measures to be taken to address increasing lake elevations.

Currently, approximately $54 million has been invested in the levee system protecting our area. Preliminary estimates for future levee work range in excess of $73 million for a 5 foot raise and nearly $150 million for a 10 foot "ultimate" raise. This amount will make it extremely difficult to fund at the local level and I hope that we are able to work with State and Federal officials to find a cost effective alternative should the lake continue to rise. In the coming months I suspect a preferred protection alternative will be chosen that will have cost implications. I ask that you continue to support measures necessary to protect the city of Devils Lake.

Again, thank you for the opportunity to speak today. We appreciate that you continue to understand the great challenges that lie ahead of us and hope that we are able to work together to find workable solutions.

Senator DORGAN. Mayor Bott, thank you very much. Time flies, I guess. But, I was just thinking, the letter that you found in your files that I sent to the Corps, that's 15 years ago.

So, as I indicated at the start of that, this has been lake flooding that is chronic; comes and stays, and now apparently is set to substantially increase.

The North Dakota State water engineer, Dale Frink, Mr. Frink, please proceed.

STATEMENT OF DALE L. FRINK, STATE ENGINEER, NORTH DAKOTA WATER COMMISSION

Mr. FRINK. Okay. Thank you, Mr. Chairman, and thank you for the opportunity to discuss both Devils Lake and hear some more about the Red River Valley flooding.

If—those that are following my testimony, I am going to skip a couple of paragraphs.

The National Weather Service's 50 percent chance forecast is for a 4 foot increase in Devils Lake in 2009. If this occurs, widespread damages will occur around the lake.

Devils Lake currently has a surface area of 140,000 acres, an increase of 86,000 acres since 1993. If the lake rises 4 feet, another 33,000 acres will be lost, and many of the 33,000 acres are prime farmland. Since 1993, approximately $500 million has been spent raising roads, sometimes several times, relocating roads, moving homes and buildings, building dikes, especially around the city of Devils Lake, and relocating and modifying water and sewer systems. This does not include the abandoned infrastructure or the value of the flooded farmlands.

A pressing concern is the levee that Mayor Botts has talked about, the levee system that now protects the city of Devils Lake.

The city of Devils Lake and the Army Corps of Engineers are present today and address this in a little more detail, but there are a couple of points that I do want to talk about.

The cost of these various scenarios is in the—from what I understand, in the $72 million to $100 million range. A major concern is how the cost of this recommended project will be shared. The current dike was built with a 75/25 cost share by the Corps of Engineers. In addition, the project will have significant annual operation and maintenance costs. Due to the terrible economic impact in the last 15 years, the city of Devils Lake and the region have very limited ability to cost-share.

Another major concern is Camp Grafton. Camp Grafton used to be considered a North Dakota Army National Guard training site, but it is becoming a national military training center. The Camp Grafton Training Center employs over 200 personnel that support the North Dakota National Guard's role as an operational force in the global war on terror. The 164th Engineer—or Regional Training Institute is located on this installation, and this institute trains over 3,100 reserve and active component soldiers annually in the engineering/military skill sets. The training center has over $193 million worth of infrastructure and provides an annual economic impact to the region of $17 million.

Camp Grafton is literally surrounded by Devils Lake, and has lost considerable acreage to the lake. Highway 20/57 provides the main access to the training site, and efforts are underway to rebuild the Acorn Ridge portion of this road to act as a dam. This alternative was found to be the most cost-effective option for this portion of the project. The current project has only enough funds to rebuild the road to current elevation of 1,455 feet. And based on the Weather Service's projected lake level, additional Federal funds should be allocated to this project, because of—they will get in trouble at anything above that level.

Major expenditures will be required to raise roadways if the lake levels continue to rise. It is estimated to cost about $279 million to raise all State highways impacted by the rising water to elevation 1,465 feet. This does not include the cost to raise county and BIA roads that will also be impacted.

In addition, it's estimated to cost about $67 million to raise railroad grades to 1,465 feet, and this is provided by North Dakota DOT.

I'll skip the next paragraph.

The flood in Devils Lake is far different from the flooding that occurs near rivers that will rise then fall to normal levels. When a home or business is flooded by Devils Lake, the water does not recede; the structure is lost for good. It should be noted that properties several feet above the actual lake level are in jeopardy as a result of wave action, saturated ground, and erosion.

Fifteen years of flooding have taken a serious toll on Devils Lake, with some 600 structures being impacted, and 450 of these were homes. FEMA has engaged in the flood-fight process by processing over 1,200 insurance claims amounting to $33 million. With the forecast of new record highs, FEMA and the local emergency managers are encouraged—are encouraging the continuous purchase of

flood insurance. FEMA has a significant presence with other programs.

And I'll skip the next two paragraphs.

Communities adjacent to Devils Lake have all suffered greatly over the last 15 years. The city of Churchs Ferry was bought out by FEMA in 2000. The city of Minnewaukan, a small county seat lying on the western edge of Devils Lake, is now in jeopardy of the same fate. U.S. Highway 281 used to go through their community. It now has been rerouted about a mile west, to get around the lake.

Lake water is lapping at Minnewaukan School and in many homes. The original city sewage lagoons were flooded and replaced in the early 1990s. The projected lake level threatens their water and sewage systems, with the likelihood that manholes will be flooded this year.

The Corps has investigated the option of building levees to protect the town, but feasibility is a major issue. Clearly, the city of Minnewaukan will have difficult decisions to make as the lake rises.

PREPARED STATEMENT

In addition to the larger problems, there are numerous smaller areas that are experiencing problems, such as Stump Lake Park, in Nelson County, boat ramps all around the lake, campgrounds, and various lake cabin sites around the lake. Groundwater levels continue to rise, which will create significant problems for any structure with a basement.

In closing, I'd like to thank you for this hearing. I look forward to working with you on this important issue.

[The statement follows:]

PREPARED STATEMENT OF DALE L. FRINK

Chairman Dorgan and members of the subcommittee on Energy and Water Development, thank you for the opportunity and privilege to provide an update on flooding problems that continue to plague the Devils Lake region of North Dakota. Last March, it was my pleasure to provide your subcommittee a summary of flood related issues that have impacted the Devils Lake area over the past decade-and-a-half, and highlight actions the State has taken to mitigate damages. Unfortunately, based on the latest report from the National Weather Service's North Central Forecast Center, it appears flooding will worsen again this year. Above average rainfall last fall, coupled with significant snow pack across the basin this winter, indicates that Devils Lake will likely experience a new record high lake level in 2009.

The National Weather Service's 50 percent chance forecast is a 4 foot increase for Devils Lake in 2009. If this occurs, widespread damages will occur around the lake. Devils Lake has a current surface area of 140,000 acres, an increase of 86,000 acres since 1993. If the lake rises 4 feet to 1,451 feet msl, another 33,000 acres will be lost. Also, many of the 33,000 acres are prime farm land.

Since 1993, approximately $500 million has been spent raising roads, some several times, relocating roads, moving homes and buildings, building dikes especially around the city of Devils Lake, and relocating and modifying water and sewer systems. This does not include the abandoned infrastructure or the value of the flooded lands.

Of pressing concern is the levee system that now protects the city of Devils Lake. Representatives from the city of Devils Lake and the U.S. Army Corps of Engineers are present today and will address this issue in detail. We are all currently involved in the Corps' feasibility study to examine flood protection measures necessary to address future rises in Devils Lake water levels. The Corps will explain their efforts thus far, including their cost estimates for modification to the current levee system. Preliminary cost estimates have been presented for three levee alignment scenarios. These scenarios range in cost from $72 million to about $100 million. A major concern is how the cost of the recommended project will be shared. The current dike

was built with a 75/25 percent Federal/non-Federal cost share by the Corps of Engineers. In addition, the project will have a significant annual operation and maintenance cost. Due to the terrible economic impact 15 years of flooding has had on the city of Devils Lake and the region, the local ability to pay is severely limited.

Another area of concern is Camp Grafton—a major North Dakota Army National Guard training site. The Camp Grafton Training Center employs over 200 personnel that support the North Dakota National Guard's role as an operational force in the Global War on Terror. The 164th Regional Training Institute (RTI) is located on this installation. The RTI trains over 3,100 reserve and active component soldiers annually in the engineering military skill sets. The training center has over $193 million worth of infrastructure and provides an annual economic impact of $17 million on the local economy.

Camp Grafton is literally surrounded by Devils Lake and has lost considerable acreage to Devils Lake. Highway 20 and 75 provides the main access to the Camp Grafton Training Center. Efforts are underway to rebuild the Acorn Ridge portion of this road to act as a dam. This alternative was found to be the most cost effective option for this portion of the Roads Acting As Dams project. The current project has only enough funds to rebuild the road to its current elevation of 1,455 feet. Based on the National Weather Service's projected lake levels, additional Federal funding should be allocated to the Acorn Ridge portion of the Roads Acting As Dams project to ensure adequate protection is provided. Without this additional protection, many of the RTI training centers that are required for accreditation would be inundated with water.

Major expenditures will be required to raise roadways if the lake level continues to rise. It is estimated to cost about $279 million to raise all State highways impacted by rising water to an elevation of 1,465 feet msl. This does not include the cost to raise county and BIA roads that will also be impacted. In addition, it is estimated to cost about $67.8 million to raise railroad grades to 1,465 feet msl.

As Devils Lake has sprawled across the landscape, many miles of township, county, State, and Federal roadways have been impacted. Many local road segments have had to be abandoned while most State and Federal roads have been raised or relocated. Road closures and construction have been very disruptive for personal travel, commerce, and especially for emergency operations. The forecasted lake elevation will undoubtedly pose additional burdens on the local transportation systems. The representative from the Spirit Lake Nation will brief you on road and other issues within their boundaries. We anticipate that non-reservation roads in several areas will need additional work in 2009. In the past, the solution has been to raise the road grade or re-route. Some of the raised roads became barriers, essentially dikes, protecting land, homes, and commercial properties from Devils Lake. Highway 20/57 south of Devils Lake near Acorn Ridge is particularly problematic since that road now protects areas of Camp Grafton and several residential properties. The North Dakota Department of Transportation, U.S. Army Corps of Engineers, North Dakota National Guard, and the North Dakota State Water Commission have been considering solutions to maintaining this important transportation conduit to protect the Camp Grafton training facilities.

The flood at Devils Lake is far different from the flooding that occurs near rivers that will rise then fall to normal levels. When a home or business is flooded by Devils Lake, the water does not recede—the structure is lost for good. It should be noted that properties several feet above the actual lake level are in jeopardy as a result of wave action, saturated ground, and erosion. Fifteen years of flooding has taken a serious toll on development around Devils Lake with some 600 structures being impacted—450 of those were homes. FEMA has been engaged in the flood fight processing almost 1,200 insurance claims accounting for about $32.5 million in damages. With the forecast of a new record high, FEMA and local emergency managers are encouraging the continued purchase of flood insurance. FEMA has a significant presence with its other programs as well.

As a result of the unique circumstance at Devils Lake, FEMA's flood insurance policies were modified in 1999 to provide for continuous lake flooding hazards. This has been very beneficial in that buildings threatened by the rising lake can be moved before they are actually inundated. The flood insurance claims process is also beneficial in that it operates completely in the private sector and land remains in private ownership. Local governments monitor remaining vacant property so that any future development recognizes and avoids future flood threats.

In the Lakewood area alone, almost 100 homes valued at more than $14 million lie below elevation 1,455. If the Corps current embankments aren't modified, these homes and several commercial or public structures, and the infrastructure that support them, are in jeopardy. Corps representatives will talk about the Devils Lake

embankment feasibility study and what they believe needs to be done to protect this area.

Communities adjacent to Devils Lake have all suffered greatly over the past 15 years. The city of Churchs Ferry was bought out by FEMA in 2000. The city of Minnewaukan, a small county seat town lying on the western edge of Devils Lake, is now in jeopardy of the same fate. U.S. Highway 281 used to go through their community but has been rerouted about a mile to the west to get away from the lake. Lake water is lapping at their school and many homes. The original city sewage lagoons were flooded and replaced in the early 1990s. The projected lake level threatens their water and sewage system with the likelihood that man-holes will be flooded this spring. The Corps has investigated the option of building levees to protect the town, but feasibility is an issue. The city of Minnewaukan will have difficult decisions to make as the lake rises.

In addition to the larger problem areas, there are numerous smaller areas that are experiencing problems such as Stump Lake park in Nelson county, boat ramps, camp ground areas, and various lake cabin sites all around the lake. Groundwater levels continue to rise with the lake creating significant problems for any structure with a basement.

In closing, thank you for holding this hearing on Devils Lake flooding. I look forward to working with you on this very important issue.

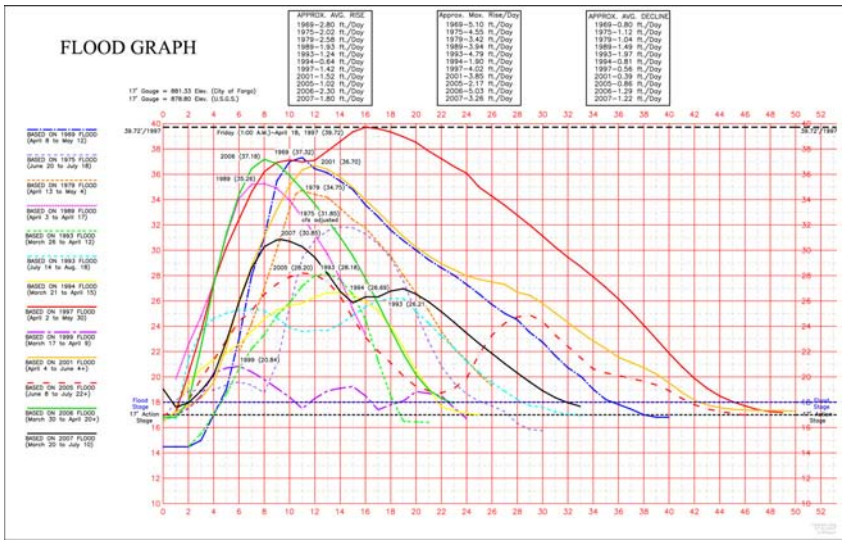
Senator DORGAN. Mr. Frink, thank you very much.

DISCUSSION ON RED RIVER VALLEY

Let me begin asking some questions about the Red River Valley, then I'm going to ask questions about Devils Lake, although, Colonel, I think, in your testimony, and Mr. Dümmer, as well, you indicate that, in many ways, the two are joined, in terms of the amount of moisture that has been piling up, and the potential for flooding as a result of it.

Colonel Christensen, we had asked you to come and talk about Devils Lake. You did not mention the Red River Valley. But, Mr. Dümmer talked about the Red River Valley some.

I have the chart that Mayor Walaker brought, that shows the flood events. The top red line shows the 1997 event. There is a green line that shows the 2006 flood event. Those appear to me to be the largest flood and the third largest flood, perhaps, if I'm reading this chart right.



Mr. Dümmer, in terms of the Red River Valley and the water that has to move through our State by the Red River, what kind of expectations should those communities and the people who live there have as a comparison to some of the previous flooding? When you say "major"—you used the term—I believe the Weather Service used the term "major flood threat." What does that mean? What's "major" mean? Is it a flood threat equivalent to the 1996, the 1997 or 2006 flood threat? What are you estimating when you say "major flood threat?"

Mr. DÜMMER. When we say "major flood threat," those are different levels. We have a minor flood threat, moderate, and major. And what the National Weather Service does is, we work with our local customers and partners—in this case, for Fargo, we work with Fargo city officials and county officials to help them assess what level this should be set at.

When we typically say "major flood threat," that's when it's having major impacts on the city itself with regards to a flood fight. Typically—I don't know the exact level that is at Fargo offhand right now, but when you get to a major flood level, or major flooding, typically you can have buildings start to be inundated and more major roads become impassable due to high water.

Senator DORGAN. I think, mayor, the three most significant floods, if I read this graph correctly, well, the most significant, of course, is 1997, then 2006—or 1969. Are those the three largest flood events in the Red River?

Mr. WALAKER. In 100 years——

Senator DORGAN. In what——

Mr. WALAKER [continuing]. Of record.

Senator DORGAN. Right.

Mr. WALAKER. There's some process in 1897 that—we're approximately the same level—and so forth. What he's talking about is the flood levels. Basically, flood stage is 18 feet above. Okay? At 31 feet, we have to construct a dike to protect city hall. We have to

put the earthen dike on Second Street, from the railroad tracks down to First Avenue. Okay? If it gets above 34, then we're talking about significant—every foot that the river goes up creates more and more investment.

Now, we have to make decisions sometime, probably in February, whether we're going to bring in the deepwater well pumps to protect our sanitary and our storm sewer. If it gets above 34 feet, you know, the 90—the $64,000 question, if you can remember that story on television, is, where is it going to go? You know, and that's the big question, and so forth. These probabilities bring up the apprehension of the general public, but what people that are in the system want to know is, where is it going to be? There are too many variable factors, at this time, to determine that.

But, my concern is, you know, the pumps, the earthen dike, and Second Street. Those are the two immediate difficult decisions that we have to make, because they're very expensive.

Senator DORGAN. So, when the Weather Service describes a potential major flood threat, that is able to trigger——

Mr. WALAKER. Absolutely.

Senator DORGAN [continuing]. Certain decisions and——

Mr. WALAKER. Yes.

Senator DORGAN [continuing]. Actions by the city now.

Mr. WALAKER. Yes, absolutely. And we're going to—we're going to go ahead, and so forth, and we have people that are meeting on a 2-week period, and then that'll probably go to a weekly period, here shortly, on what's going to be done.

We got a half-inch of rain there this weekend. The drains are different than 1997; they're open. We have 2 or 3 feet of water running in the drains right now. All of that is good. All of that is—you know, gets rid of some of the—but, you know, it's a—it's not a simple process.

You know, the probability—I was in Colorado when—this came out of the Federal offices in Boulder, and they talked about this—probabilities and so forth, in—you know, did that help us? You know, it's good for the public to make opportunities to be successful. They have to be aware of what could happen, you know. But, what we need is more precise numbers, and we won't get those until the runoff starts, and so forth.

So—now, are we concerned about spring? Yes. Are we making preparations? Yes. The long term on this whole project, as far as I'm concerned, is that we need some assistance to proceed with protecting our entire city. Nothing would make me more—feel better if we could just sit in city hall and watch the river go by. I mean, that's the ultimate goal. And to get there, Wahpeton-Breckenridge are pretty good shape right now, and Grand Forks is in great shape, and all of the cities north of the Canadian border are—they lost one in 1997, and they've improved all the holes on the south side of Winnipeg, and so forth. And if you haven't had a chance to go out there, it's amazing what they did after the—they cannot—they're not so concerned about the 1997 flood, they're concerned about the 1826 and 1825 flood. And so——

Senator DORGAN. Right.

Colonel, in our State—Wahpeton-Breckenridge, Fargo-Moorhead, Grand Forks-East Grand Forks, and the others north—give me

your assessment of where we are with respect to the capability to move that water through in a major flooding event.

Colonel CHRISTENSEN. Sir, I think a lot of that has been talked about, sir, by my contemporaries here. We start with Grand Forks-East Grand Forks. We have finished the significant portion of that project. It is now certified at the 100-level of protection. We feel good about that. We are continuing to work with Fargo in their planning efforts, in the Fargo-Moorhead area, in the Ada area. If we go down to Breckenridge-Wahpeton, the diversion channel at Breckenridge has been completed and we're continuing to work on the in-city levees there.

And we are scheduling flood coordination meetings with the local communities. We have one coming up in Fargo, on the 25th of this month, making sure that our sandbags and pumps and everything are available and strategically located throughout the area. And we stand ready to assist in any way possible.

Senator DORGAN. Mr. Frink, is that your assessment, as well?

Mr. FRINK. Yes, it is, and just a couple of other thoughts on Fargo.

Prior to 1997, I always considered Fargo to have a bigger—larger risk than Grand Forks. In 1997, I think, there are a couple of things that happened. The timing was very bad for Grand Forks. Fargo got a little bit lucky. The other factor is that Fargo has gotten very good at building dikes, and it—part of its practice. But, long term, you're going to lose. And, you know, the Corps has got a major study, and, I think, at some point, we need to get some—a permanent flood-control project for them. It's—it just has to happen. And, you know, I've been the State engineer for 8 years, and I think I've seen a dike out in front of city hall maybe three times, four times. And, you know, it's—you just—you just—we just need to move and get a—something permanent for them.

For the current situation right now, it is not as bad or—as it was in 1997, but that water—the upper—the watershed south of Fargo is very, very wet. We're moving into that period where we're going to get some very wet blizzards. They're—and they're clearly in jeopardy right now. And, you know, I know they're prepared to build dikes again, but, at some point, we need a—you need a permanent solution for them.

Senator DORGAN. Yes, I think all of us agree that there needs to be that type of permanent solution. I think—the mayor said it in his testimony—following the 1997 flood, I think the understanding was, the more vulnerable portion of the valley was in Grand Forks, and so, well over $400 million was moved into that area. They now have first-rate protection. And Fargo, of course, has fought a valiant battle for a long, long time.

I think you're right, as well, all of us have seen these earthen dikes and seen the substantial activity, when Fargo gets busy, to make sure they can protect the city. But, I agree with the mayor and with you, that ultimately there needs to be the kind of permanent protection that will not require them to build those earthen dikes outside of city hall, and to be able to protect all of the city of Fargo.

TOPSOIL SATURATION OF THE REGION

Mr. Dümmer, one of the things that you said that was interesting to me is you measure topsoil and the amount of moisture in the topsoil. You indicated that the 8 inches of topsoil in the entire region is largely soaked. Is that correct?

Mr. DÜMMER. Yes, that is correct. Really, in the top 8 inches, it's almost solid water within there, so, when the—we froze, it almost became frozen—instead of frozen soil, it's almost frozen ice within that top inch—8 inches, because there was so much moisture in that soil profile.

Senator DORGAN. That means, as the snowpack and other rains come, with blizzards and so on, there's no place for that to soak into the soil. It's—that's going to remain on top, isn't it?

Mr. DÜMMER. That's correct. It would be runoff.

Senator DORGAN. And that contributes to your estimates of what is going to happen with respect to flooding.

Mr. DÜMMER. That's correct.

DEVILS LAKE FLOODING PROJECTIONS

Senator DORGAN. Let me talk about Devils Lake, just for a few moments, because, you know, the projections in Devils Lake are more certain than your suggestions about the Red River Valley and flooding in the Red River itself. Your projections about Devils Lake are projections that say 98 percent certainty we're going to exceed the record level of Devils Lake. The mayor just described that we've been dealing with this for 15 years now. So that's a flood that comes and stays, doesn't leave. Now we had several years of some tranquility there, but at least part of that, Mayor Bott, was because that lake ran off into Stump Lake. Stump Lake is now full, there's no place for it to go anymore towards that direction. Stump Lake is filled up. So, whatever comes in from that Basin into Devils Lake, that's just Devils Lake flooding, as we look at the future.

But, you're more certain about these predictions, and what you are saying is give me the 2 percent chance. And the reason I ask you for that is, we have had, in our experience with Devils Lake, I think, 3 or 4 years in which we've had the 1 and 2 percent chance actually realized, which—you know, you think 2 percent, well, that's a pretty small percentage, but we've actually seen it in Devils Lake on several occasions.

Mr. DÜMMER. All right, currently our predictions—we're predicting the 2 percent chance that Devils Lake will reach 1,454 feet; that is 1 foot below what the Corps of Engineers has established as the level of protection.

Senator DORGAN. Colonel, at 1,454 feet—let's not always assume the worst, but, for this discussion, let me assume that we get to 1,453–1,454 feet. You have a dike or, a levee that provides protection at 1,455 feet, plus 5 foot of freeboard. Tell me about your trigger levels and what your thinking is of how quickly you have to move if this lake would move to 1,454 feet in this year.

Colonel CHRISTENSEN. Sir, that 2 percent is a low probability, but I understand what you're saying, that it seems to be highly likely in this area of the world.

Essentially, it will take 2 to 3 years to complete the project, if we initiate it this fall. And I think if it gets up to the 2 percent prediction, we need to start, at the latest, this fall, to continue building.

Senator DORGAN. What happens with dike protection if you're into the freeboard? In other words, say, you're at 1,456 feet.

Colonel CHRISTENSEN. There's always danger that the wind action and the wave action will overtop that levee and start eroding the levee from the other side. So, there is danger.

Senator DORGAN. What do you estimate the cost would be to take the levee system, the broad levee system that protects Devils Lake and related properties—I think you talk about taking it to 1,465 feet?

Colonel CHRISTENSEN. Yes, sir.

Senator DORGAN. What do you estimate the total cost of that to be?

Colonel CHRISTENSEN. To take the levees to 1,465 feet, it would be approximately $70 million to $105 million.

Senator DORGAN. So, roughly $80 million.

Colonel CHRISTENSEN. Seventy million to $105 million.

Senator DORGAN. Oh, I'm sorry. Okay.

Colonel CHRISTENSEN. Yes, sir.

Senator DORGAN. Okay, $70 million——

Colonel CHRISTENSEN. To $105 million——

Senator DORGAN. Okay.

Colonel CHRISTENSEN [continuing]. Depending on the alignments.

Senator DORGAN. Seventy million to $105 million, all right.

Traditionally, what is the State and local share on that project?

Colonel CHRISTENSEN. I believe, on this project, it was 75/25 for the previous build, based upon the Flood Control and Coastal Emergency cost-sharing agreement.

Senator DORGAN. And that would build the levees that currently protect the city of Devils Lake, and related property in the surrounding area, but that is not anything that would protect, for example, the city of Minnewaukan. Is that correct?

Colonel CHRISTENSEN. That's correct, sir.

Senator DORGAN. And other areas that, I think, Mr. Frink mentioned. Having had some small experience with the Corps of Engineers, let's assume the higher number, for the moment, $100 million.

Now, I chair the subcommittee in Congress that funds the Corps of Engineers, so I have a little bit of acquaintance. And I'm not suggesting anything by this, but you know and I know that what happens is, these estimates are made, and then the projects are several years out, and pretty soon they increase in cost. $100 million for that levee portion. You have a number of other areas that are not resolved, in Minnewaukan and so on. And then you have the very large area of roads as dikes. And I think Mr. Frink mentioned some of that exists at Camp Grafton, a substantial amount exists with respect to the Indian reservation. Does anyone have an estimate of what it would cost to go in and—let's assume this lake goes to 1,453 feet, pretty reasonable estimate that it might get up to 1,452 or 1,453? At that point, we've got to do a lot of work on an emergency basis on roads to keep traffic moving and keep the

economy working in the Devils Lake region. Are there any estimates about what the aggregate costs of dealing with those roads would be? Mr. Frink, do you or anyone else have any information about that?

Mr. FRINK. Senator Dorgan, I don't have the numbers with—they do exist, and we can get them. I was relying on Chairman Pearson to be here today.

But, the costs of the roads are very, very significant on the reservation. The numbers in my testimony are—represent off the reservations, primarily. So——

Senator DORGAN. Do you know the potential impact if we go to 1,452 feet, at that level—is there potential impact on the railroads? You know, we had a problem with Amtrak and the freight railroads, given the line that was running east and west. I know you indicate, in your testimony, there was some cost. But——

Mr. FRINK. Right.

Senator DORGAN [continuing]. Will that have to be rebuilt?

Mr. FRINK. There are some real significant issues on that railroad. At Churchs Ferry, where the line comes in there, there is some concern that that would be abandoned, and that the rail would be rerouted south. If that's the case, then you would—Devils Lake could lose their rail service. And that's the main line from Seattle all the way to Minneapolis, so it's a pretty—it would be a significant hit. The railroad could go south, and avoid the cost of trying to raise that rail line to 1,465 feet. So, that's a significant issue for the region up there.

Senator DORGAN. Mayor, I assume you all have talked about that some in your——

Mr. BOTT. Right. The concern would be, as Mr. Frink said, that it would go south, it would go what's referred to as the Surry Route. And that portion—whatever they needed to do, as far as moving grain into Devils Lake, they could—they could come that far, and then they could back up. And there is a concern about them doing that if they need to raise the road. And, of course, then the Amtrak service would be rerouted through that Surry Route; it wouldn't go through Devils Lake. And I don't know that it would go through Grand Forks then, either; but that, I'm not sure about.

Senator DORGAN. Well, tell me, if you can, what specific preparations are underway now by the cities and the States and also the Corps, in terms of activities you have an outline, I assume. Here we are getting close to mid-February, and this plays out over a period of the next 4 months or so, and then the threat is largely over after the 4 months. So, what kinds of things—if you will remind us, Colonel Christensen, is the Corps involved in right now in both areas, in terms of the planning process and potential execution of assistance that would be needed, both in Red River Valley flooding and also Devils Lake?

Colonel CHRISTENSEN. Well, sir, as I mentioned before, we do have a flood coordination meeting set up on February 25, with Federal, State, and local entities in Fargo, to figure out the way ahead and how are we going to attack the potential flooding in Fargo.

We also had a similar meeting on December 11, with the city officials in Devils Lake and Federal and State and local officials, to figure out how we're going to deal with any potential flooding in

the Devils Lake area. We've had numerous public meetings in Devils Lake this past year to figure out what the best alignments are. We haven't reached a final decision on what those optimal alignments are. We are still working with the city on that. However, we can begin construction, because a lot of the potential future levee system will be on the current alignment as it is, with——

Senator DORGAN. Right.

Colonel CHRISTENSEN [continuing]. Tiebacks a little bit later. So, we are prepared to accelerate the design process, and we believe we can be ready for construction this fall.

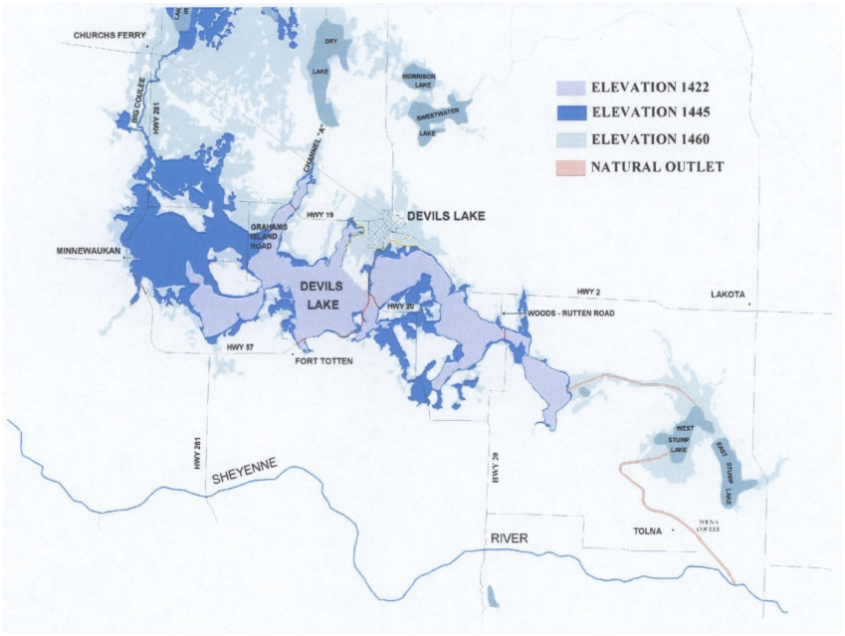
Senator DORGAN. Can you tell us if—assuming you do all that is necessary to be done, within your power, to assist the Devils Lake region, for example, what areas would remain vulnerable?

Colonel CHRISTENSEN. We've mentioned many of those areas already, sir. It's the Spirit Lake Nation. We have concerns on the temporary emergency levees we put in awhile back. The Federal Highway Administration is working with the Spirit Lake Nation to build the roads acting as water barriers. Construction is supposed to begin this spring. The question is whether they can stay ahead of the rising water. There is also concern at Minnewaukan with the sanitary system, what they have there, and some of the residents in the low-lying areas. There is concern that—depending on what alignment is chosen in Creel Township. There is concern in Stump Lake Park, as mentioned before. And there is concern at Camp Grafton.

Senator DORGAN. Would you be willing to give me a white paper on that so that we have some understanding of what lays outside of what the protective actions might be, so that we can pay some particular attention to that, as well?

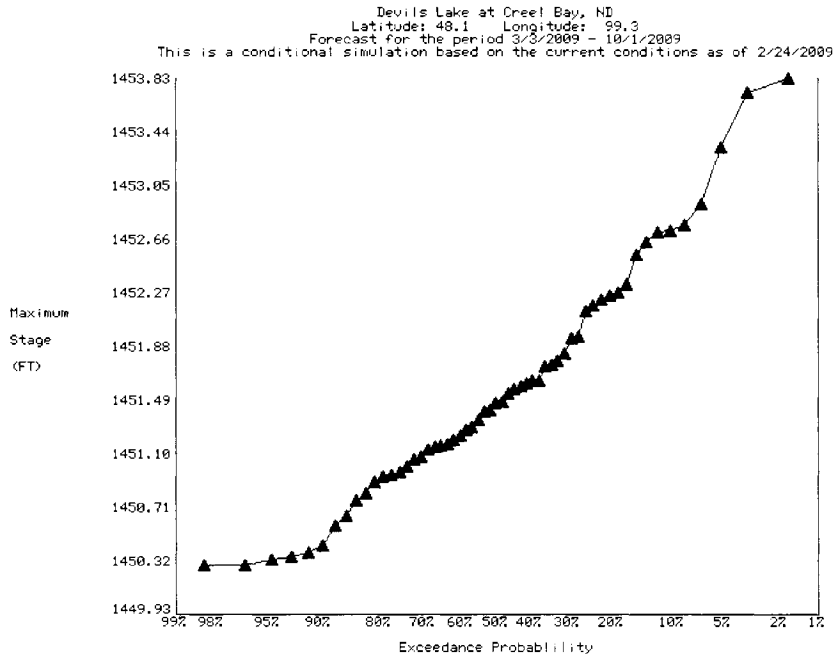
Colonel CHRISTENSEN. Certainly, sir.

[The information follows:]



BACKGROUND

Devils Lake is currently at elevation 1,447.2, after rising over 25 feet in the past 17 years. Between 2004 and 2007, the lake rose to an elevation of over 1,449. In 2001, Devils Lake began flowing into Stump Lake and the two lakes have now equalized and act as one system. The combined lakes are at a record volume. In the latest forecast released February 27, 2009 the National Weather Service forecast a 99 percent likelihood the water level at Devils Lake will exceed 1,450.3 feet, a 20 percent possibility the water level at Devils Lake will exceed 1,452.2 feet, and a 2 percent possibility the water level will exceed 1,453.8 feet. At an elevation of 1,459 water will flow uncontrolled through its natural outlet, Tolna Coulee, into the Sheyenne River and into Canada.



In 2007, $5 million was provided as part of the supplemental appropriation to determine what to do next should the lake continue to rise. As part of this Flood Damage Reduction Project, coordination has been ongoing with the city of Devils Lake, the Spirit Lake Nation, the city of Minnewaukan, Camp Grafton, and in general with the North Dakota State Water Commission. Each impacted area will be discussed below.

CITY OF DEVILS LAKE

With a population of 6,700, the city of Devils Lake is the 11th largest city in North Dakota, and serves an even greater region of the surrounding area. The Spirit Lake Indian Tribe, located on the south side of the lake has 6,000 members that rely on the city of Devils Lake for many of their services. The nearest cities large enough to provide needed services include Minot, Jamestown, and Grand Forks which range from 90–120 miles away. The Canadian border lies just 60 miles to the north. The city of Devils Lake is home to the Lake Region State College, the North Dakota School for the Deaf, and the 25-bed Mercy Hospital. Transportation needs are served by Amtrak and the Northwest Airlink, which provides twice daily flights out of the Regional Airport.

Should the lake rise to an elevation of 1,451.5 (50 percent probability), the city embankment would not meet dam safety criteria hydraulically and the letter of reasonable assurance that was sent to FEMA stating the embankment system can contain the 1 percent event would no longer be applicable and could require the residents behind the embankment to purchase flood insurance. At an elevation of 1,452 (30 percent probability) 67 structures would be inundated. Additional structures may be impacted due to flooded basements, inaccessibility, or damaged sewer lines. Currently the airport and city sewage treatment system are being protected by the embankment.

A series of public meetings have been held to discuss the best course of action should the lake continue to rise and alternatives have been evaluated and screened. The decision was made that the best course of action was to raise and extend the existing embankments. Since the National Weather Service forecast for unprecedented lake level increases was released, a two prong approach is recommended. This would include continued discussions on the alternative alignments still under consideration for the tie backs embankments while at the same time accelerating the design on the most critical reach of the existing embankment. The challenge is to begin construction soon enough to stay ahead of the possible future years of flooding. While the existing embankments will contain the high lake levels projected for this year, the risk of exceeding those elevations increases each year.

Rather than using specific lake levels as trigger points as has been done in the past, the cumulative exceedence probability is now being used for planning purposes. The cumulative exceedence probability is the probability of exceeding a given elevation during a given number of years. Based on the USGS long term lake level forecasts, there is a 17 percent probability that the current level of protection would

be exceeded between 2009 and 2013. From a risk management perspective, it would be desirable to keep the risk down to 1 percent or less. Since it will take 2 to 3 years of construction to complete a raise of the embankments, it is important that construction be initiated soon.

CITY OF MINNEWAUKAN

Minnewaukan, a small community with a population of 400, is located along the northwest shoreline of Devils Lake and recently celebrated their 125th anniversary. It is also the county seat for Benson County, employing 75 people. The Courthouse, constructed in 1901, is listed on the National Register of Historic Places. Minnewaukan's school system serves grades K–12 and employs over 50 people. At a lake elevation of 1,451, 50 homes could begin to experience basement flooding. First floor flooding begins at elevation 1,453.8.

The city of Minnewaukan's most pressing concern with the rising lake levels and rising water table is infiltration and subsequent failure of their sewer system via unlined sewer lines; and manholes and/or lift stations that are below the forecasted lake levels. Currently there are 10 manholes below an elevation of 1,455 and 5 below an elevation of 1,453. The lift station closest to the lake and at the lowest elevation is their master lift station. They have 3,500 feet of clay pipe that remains to be slip-lined to prevent infiltration. City leaders have expressed an interest in addressing this issue through the section 594 North Dakota Environmental Infrastructure Program.

In previous discussions with Minnewaukan, they have stated they are not interested in pursuing a permanent flood control project due to cost share requirements and long-term operation and maintenance costs. At the most recent public meeting, held February 25, 2009 there was much concern expressed that the city sewer system could fail leaving homes too high to be bought out under FEMA's flood insurance program uninhabitable nonetheless. There were also concerns about basement infiltration from the rising lake, which is also not covered by flood insurance. City officials would like to identify a buy-out program should their sewage system fail but to date no programs have been identified that fit this situation.

SPIRIT LAKE NATION AND ROADS ACTING AS DAMS (RAAD)

During flooding in the late 1990s, a number of culverts under roadways were plugged to prevent the floodwaters from spreading. What started out as a short term solution has now created a situation where several roads are acting as dams although they were not designed or constructed to hold back a head of water. In addition, a series of emergency levees, with assistance from the Corps of Engineers, were constructed over the past 10 years to protect public infrastructure including roads and State Highways. The levees were constructed to allow the tribe time to develop a permanent solution. With two exceptions, the levees and roads acting as dams are all dependent on each other. That is, if one structure is overtopped, all the remaining area will be inundated with lake water. At the lake level of 1,449, this area includes 116 homes, 3 businesses, and 1,916 acres which could be impacted directly by floodwaters or have their utilities and access impacted. There is a 70–85 percent probability that the two lowest levees will be overtopped this year, based on the National Weather Service forecasts.

Seventy million dollars has been authorized for the Federal Highway Administration (FHWA) to complete a permanent project which will correct the roads that are acting as dams and replace the temporary emergency levees. These funds were earmarked in the 2005 Transportation bill, "Safe, Accountable, Flexible, Efficient, Transportation Equity Act—A Legacy for Users," and were specified that up to a maximum of $10 million would be available over several years up to the limit of $70 million. To date, $40 million has been provided. Other limited sources of funding have been identified, specifically for the roadwork itself. However, best estimates by the FHWA indicate that $120 million is needed to construct protection to an elevation 1,455 and the permanent project is not expected to be constructed before the high water is experienced this spring.

At a meeting on February 25, 2009 with the tribe, BIA, and the FHWA, the FHWA presented the possibility of accelerating some of the work (driving sheetpile, constructing a cofferdam) that would provide some temporary protection from the rising lake. The tribe is expected to request assistance from the Corps of Engineers to raise the emergency levees and help with any other areas not able to be raised by the FHWA or BIA. However, there are concerns that continuing to raise the emergency levees will increase the risk to residents in the area since they were not constructed as dams but as temporary structures during a flood flight. With an increased head of water across the temporary structure comes increased risk of failure. The tribe has indicated they cannot cost share in more permanent measures for the emergency levees. A serious concern is that there may not be time to take action given the short time between spring thaw and when the lake is forecast to exceed the emergency levees capacity in June or July.

NELSON COUNTY/STUMP LAKE

Stump Lake has steadily encroached on Nelson County, inundating over 7,000 acres of agricultural lands. To date, over 20 acres of wooded parkland has been flooded and at an elevation of 1,453, the loss will total nearly 24 acres. According to the Emergency Manager from Nelson County, their primary concern is the road system and the Nelson County Park and Campground. The park has approximately 100 campsites, a large historic pavilion, playground, open-walled shelter, café and restroom/shower facility. Much of the park land, along with the restrooms and café will be directly impacted by increased lake levels. The restroom/shower facility will be impacted by lake levels of 1,450 feet. The café will be impacted at elevation 1,452.

CAMP GRAFTON

Camp Grafton is a major North Dakota Army National Guard training site and employs over 200 personnel. The 164th Regional Training Institute is located on this installation and trains over 3,100 reserve and active component soldiers annually.

The training center has over $193 million worth of infrastructure and provides an annual economic impact of $17 million on the local economy. At an elevation of 1,452, Camp officials have identified $20.6 million in infrastructure that will be impacted. Camp Grafton is also concerned about the number of acres used for training exercises that will be lost to the lake as it continues to rise.

TIMING OF NEW FORECASTS

Senator DORGAN. Mr. Dümmer, how periodic will your new forecasts be as we lead up to this potential spring event? When do you expect to continue to evaluate and issue additional guidance?

Mr. DÜMMER. Typically, what we have with our long-term outlooks is, they're issued once a month, toward the end of the month, so end of this—February, the last week of February, so in about—roughly, about 2 weeks for our long-term outlooks. If things change significantly, meaning we get a tremendous amount of snow in that area, we can always do an analysis in short order, upon request. And then, like I had mentioned in my testimony, when the runoff starts occurring in the spring, and the river starts—the rivers and lakes start rising, then we'll transition into a daily operation and provide a daily forecast.

Senator DORGAN. If it snowed 23 days in 1 month, I think, as you indicated in December—is that correct?

Mr. DÜMMER. That's correct.

Senator DORGAN. I mean the tourism department wouldn't want us to advertise that, necessarily. But, if it snowed 23 days in one month in December would that predict anything about an extraordinary snowfall in the following spring? In other words, are we in a season or a time of excessive moisture?

Mr. DÜMMER. Currently, our models, they take into account all the range of possibilities. This—of course, December was a very stormy month. We did break, as I mentioned, many records on that. And if that were to occur again, we believe—later on, in the next couple of months—we believe our predictions reflect that, with the varying probabilities.

Senator DORGAN. Mayor Walaker, because you've been through this many times, I would understand that, when a forecast comes out that says, "Uh-oh, we might have some trouble here, we might set ourselves up for a flooding event," the last thing you want is for anybody to be panicked about it. The issue is, you want people to be aware of it and then to have enough information for the folks in the city to begin making preparations, working with the Corps and all the things that you do. Is that a fair assessment of how a mayor would view this?

Mr. WALAKER. In 1997, early in January—I've always had a close relationship with the people in Chanhassen; I've always had a close relationship with the people in National Weather Service forecast group up in Grand Forks. Early in January 1997, we were given this, "We have a prediction that we think that we may exceed floods of record." So, that's when we ordered our first pumps and so forth. If the river is not going to go over 31 feet, we don't, so forth. So, you know, we pay very close attention. We have their phone number and so forth, and we also have a book of operations and triggers and so forth, as to what's happening.

We used to have 5 to 7 days prior to anything happening, and we could start constructing the dike on Second Street. Things have

changed a little bit. There seems to be more and more process of expediency, as far as the river is concerned. It seems like it's coming at us faster. Is it because we're getting older? I hope not. But, as far as—we take it very, very carefully, as far as, you know, the boy with the finger in the dike, and all that stuff, trying to put out good information. And we have done that, based on the best information we can put together.

And that's what we'll continue to do. We will continue to monitor this very, very closely. Our people are going to be meeting. We—like I said, we're going to change the frequency. That's going to come up sooner. But, I mean, the long term of this is to understand, very simply, that we need to do something long term. Okay? We need to start the planning. We need to work with the Corps of Engineers to not only take care of everything south of Fargo, but to start working on a plan with both Moorhead and the city of Fargo on the north side. I mean, that's the ultimate goal.

Our city engineer, Mark Bittner, is—we have done more improvements to the city of Fargo since 1997 than we did in the previous 15–20 years, and we did something every year, and so forth. So, we have a very good area engineer, from the Corps of Engineers, whose office is in Fargo. I mean, he's the area engineer. He's the guy that gets his boots on, and so forth, and deals directly with the Colonel. And they have some emergency funding, and we can start—we have to provide the fill and so forth, but they could start that if they see an ominous threat, so forth.

So, are we prepared? I would say yes. Am I optimistic? I would say yes. But, what you're talking about is something that could happen, and we don't want that to happen, by any stretch of the imagination. And we want to—but, we want to continue on. You know, we want to see our south-side flood protection start to move a little faster. And we would love to see that in place. And the downtown area, they're doing a study on the downtown, which is including the north side, a whole comprehensive plan of the flood. We have removed all of our temporary dikes. The city of East Grand Forks used to say—the mayor used to say, "We need—another flood, we need to raise our dikes," so they would build temporary dikes. Well, that's not the answer, because they get very soft. If they're not engineered, they get very soft. So, what you need is permanent flood protection, so forth. They stand up much, much better than temporary measures, so forth. So, we've gotten rid of those. We're getting rid of the last one, here shortly. And we got rid of the one that protected the hospital on the south side. That was done after 1997.

So, no, things are—I can't give you 100-percent assurance, but—I'm confident that we will be successful in 2009, but I can't speak for 2010 and 2011. Just like Mr. Frink said, sooner or later we're going to go back to 1826, and we're going to have an event, no matter what we do, we can't stop and be protected. What we've been doing is concentrating in the last few years on is giving everybody an opportunity to be successful, everybody on the same plate. We have an awful lot of homes that were built in Fargo that were built prior to any floodplain administration. We've removed the majority of those. We don't have any walkout basements anymore along the Red River and so forth, no matter how wonderful they were to the

occupants; they're all gone, so forth. So, we are better today than we were. We would like to be a lot better in the future.

Senator DORGAN. And you have a first-rate staff that's been around in Fargo for a long, long while that——

Mr. WALAKER. Well, they're changing.

Senator DORGAN [continuing]. That has——

Mr. WALAKER. They're——

Senator DORGAN [continuing]. That has——

Mr. WALAKER. They're changing, Senator. I mean, as we all get a little older. I mean, we have new staff, but we still have some of the people that have been there through the fights.

Senator DORGAN. Well, you've got a couple behind you that have been——

Mr. WALAKER. Yes.

Senator DORGAN [continuing]. In a lot of those——

Mr. WALAKER. Absolutely.

Senator DORGAN [continuing]. Fights.

Mr. WALAKER. Absolutely.

Senator DORGAN. So let me just say, as well, that—because I chair the appropriations panel that funds the Corps of Engineers, when we get a comprehensive plan, flood protection for Fargo, permanent flood protection—I'm very anxious to work with you and the city of Moorhead, and to proceed to get it done. So, I agree with you that that is a necessary project in our future.

Mr. WALAKER. Thank you.

Senator DORGAN. Mayor Bott, the same question, I guess. And there's a slight difference here, in the sense that, at least we believe, based on what the Weather Service says, we're going to see record levels in Devils Lake. That's not the case with the Red River Valley. There, it's prospect of, perhaps, major flooding, maybe not. In Devils Lake, we know now that there's an overwhelming opportunity, or overwhelming chance that we're going to see record levels, probably up into the 1,450s. And so, you know, as mayor—and I think Mr. Frink and others know—that we have to begin working with the Corps to address the permanent structures that we have to change.

Tell me the financial situation in your city, because your city has been involved in flood fights now, for a long while, that has required participation of the city and the State for certain matches. What's the financial condition of your city?

Mr. BOTT. Well, the intention, Senator, for the city—the first time the dike was raised, back in the mid-1990s, the State of North Dakota and the city of Devils Lake split the local match. And then, after that we informed the State that we just couldn't provide any more local funding.

This time, we are looking at providing some local funding; redirect some resources, at least with the initial work that may be done with the levee. But, again, the amount of funding that we have available is limited, but we feel that, you know, we can't rely on someone doing the 100 percent that we need to do as much as we can, and we're just going to have to make decisions that infrastructure work, for example, that could be done within the city is probably going to have to be put on hold, and people aren't going to appreciate that, but we're going to do what we can, financially. We're

also different this time from the original dike raised. We're working with the county and the township, rural utilities and the Basin board, because all of the additional work that will be done will be literally outside the reach of the city of Devils Lake, it'll be outside of our 2 mile extraterritorial. So, we felt we needed to work with these entities that have some control and some presence in those areas, because they're far beyond our reach, so we're working with them. But, that doesn't negate the point, we are the local sponsor. It is the community's responsibility to come up with that local match, and that's what we're working on. Local and Federal match, I should say.

Senator DORGAN. I should say that you two have some really great help in the city that's had a lot of experience, now for a long while, in addressing these issues. Myra Pearson, the chairwoman of the Spirit Lake Nation, was not able to be here because of travel difficulties today, but they, at Spirit Lake Nation, face really significant challenges, as you know. They, because of the road issues, can be completely cut off from the normal commerce in Devils Lake. I don't know who—whether it was Mr. Frink or—maybe it was you, Mayor Bott— someone described the amount of commerce that the Spirit Lake Nation relies on by going to Devils Lake. And if that's cut off because they don't have access, because of flooding that inundates these roads, that's a very serious problem for an economy on the reservation that is very fragile, in any event. So, all of us—even though Myra Pearson, the chairwoman, couldn't be here, all of us need to reach out and do all that we can to work with Spirit Lake Nation. This is very important to them. It's important to the city of Devils Lake, just as important to the Spirit Lake Nation, and we need to work very closely with them and the chairwoman and the tribal council.

Mr. Frink, whenever we pass the Economic Recovery Act, presuming we do—and I think we will—it will include, likely, $4.4 to $4.6 billion for the Corps of Engineers, it'll include probably $1 billion, slightly more, for the Bureau of Reclamation. It'll include some water money. But, you're the only one that shows up at this table with a lot of money. The State has a very significant surplus, and I know the State legislature is working through that at the moment. Tell me the position that you feel like you're in to be able to also, from the State standpoint, address some of these needs. I know that you've already done some, and will continue to do more. But, our State is blessed, in many ways, with not having the kind of huge budget deficits that Minnesota or California or so many others have. I know that the State legislature is now meeting; can you describe to me what you think might happen with respect to funding for water projects that you'll have to be involved in, especially now, flood fights, as well?

Mr. FRINK. Senator Dorgan, you are right, North Dakota is in better shape than most other States. We—however, you know, when you have a national economy like this, North Dakota cannot remain an island. It's—it does have impacts. We're seeing layoffs. And so, there will be, certainly, impacts.

An important part of the water—of the State Water Commission budget includes a certain amount of money from our resources trust fund, and that's the money that goes to support water

projects statewide. It's all dependent on oil revenues. And oil revenues are very low, and dropping. And so, that makes—you know, that amount of money, it started out, in November that the amount of money available was about $100 million for State projects that we could cost share. That is now down to $70 million, and if you—if the oil prices stay where they are, that could actually drop down to $30 million or $40 million. And so, that's all that would be available.

And if you look at the water projects that we have on—you know, on the front burner; you've got Devils Lake, you've got the Fargo South Flood Control Project, and you've got Southwest. That $20 or $30 million is going to get spread very, very thin.

Senator DORGAN. I don't know whether you have an emergency pot of money, but given what we have heard recently now, of potential major flooding on the Red and almost certain flooding above highest levels at Devils Lake, you might want to at least go back to the legislature—I've talked to Governor Hoeven about this, as well, but it might be useful to put together a small emergency fund of some type, or perhaps not so small, to be available—I mean, the Federal Government is obviously going to have to come in with the Corps and other agencies, but I know the State will want to do that, too. I'll visit with Governor Hoeven about that.

And I appreciate the work that the State has done. The two mayors know—it's always been a team fight. I mean, the major fights back home, of course, with mayors walking the dikes and so on. But, the Federal Government, State government, and the cities, and the Corps of Engineers, and the Weather Service, all the Federal agencies, have to be involved, and have been very actively involved.

I say that, only because our history is a history unlike most other parts of the country. I mean, the fact is, we have the only lake flooding in the United States that has been pretty devastating to a region, and we've spent a lot of money—hundreds and hundreds of millions of dollars over the last 10, 12, 14 years, to try to address that. And it's getting worse, not better, according to the predictions. We're the State that had the 1997 flood experience. It was extraordinary. The circumstance of an entire city being evacuated, the largest since the Civil War; in the middle of an evacuation, a city that stood stark empty in the middle of a city that's been evacuated, there's a fire consuming major city buildings. I mean all of that. The country remembers that, as well, because it was so nearly unbelievable.

As a result of that, all of us want to be very careful as we take a look at estimates and be on the right side of preparedness to make certain that, when things might happen that are going to cause us a repeat of some of the things we've seen in the past, we want to be able to be prepared to fight it as completely and fully as we can.

I want to, as I close, especially thank the two mayors.

And, Mayor Walaker, I know you will pass my regards to the mayor of Wahpeton the mayor of Grand Forks and the other communities on the Red River.

To Colonel Christensen and the Corps of Engineers thanks for your work.

And to the Weather Service, keep telling us what you think is going to happen, and be as close as you can.

And to Dale Frink, thank you for the work that the water commission does, and please thank the Governor for me, as well.

Mr. FRINK. Thank you.

Senator DORGAN. Let me thank you for traveling to the hearing, and we will stay in close touch on this matter, and hopefully, in 4 or 5 months, we can have an informal visit and believe that we got through all of this, and it was much less than we expected would happen. That would be the best of all news.

Anyone have anything else you wish to add before you leave?

Mr. BOTT. Senator, I think I need to add something about the Corps of Engineers and how much we rely on them and how confident we are in them. I think there are many people in Devils Lake who thinks there definitely is a division of the U.S. Army Corps of Engineers in Devils Lake, because they're there so often. And a lot of optimism and the confidence that we have is because we know we have the—whatever support and whatever they need to do to help us, they're there to do that. So, I do want to publicly thank them. They're always there.

Senator DORGAN. Well, Colonel, are you glad you stayed long enough to hear that?

Colonel CHRISTENSEN. I am, sir, and I thank the mayor for those comments. And we feel the same way about Devils Lake and Fargo, as well.

Senator DORGAN. The Corps has many lives and many different extremities. And I have been, in the past, highly critical of the Corps of Engineers—extremely so—and, on other occasions, enormously positive, and especially in the area of flood fights. If you're going to suit up to go with somebody for a flood fight, you want the Corps of Engineers, because it's a terrific organization to have as a partner in fighting floods. So, Colonel Christensen, thank you.

CONCLUSION OF HEARING

Senator DORGAN. This hearing is recessed.

[Whereupon, at 11:05 a.m., Wednesday, February 11, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

MATERIAL SUBMITTED SUBSEQUENT TO THE HEARINGS

[CLERK'S NOTE.—The following testimonies were received by the Subcommittee on Energy and Water Development subsequent to the hearing for inclusion in the record.]

LETTER FROM CURTIS A. YRI

MAYOR,
CITY OF MINNEWAUKAN,
Minnewaukan, ND, February 6, 2009.

Senator BYRON L. DORGAN,
United States Senate,
Washington, DC 20510.

DEAR SENATOR DORGAN: The citizens of Minnewaukan face some difficult days ahead, but with some help we feel the town is not done for yet. In the 10,000 years since Devils Lake was formed by the glaciers, there have been many times that the lake has overflowed into Stump Lake. But geologists believe there have only been about three occasions when the lake rose high enough to flow into the Sheyenne River. Devils Lake may stop rising after this year. Or it may not. Nobody knows. When it comes to Devils Lake, almost everything is a guess.

As a people we choose to live as though the water of Devils Lake is a wonderful neighbor. As a governing body, we must act as though it is not. This letter is being respectfully submitted to you by the governing body of the city of Minnewaukan.

With the latest lake level forecast by the National Weather Service, we find we must take proactive steps to deal with the potential rising water of Devils Lake. We find ground saturation and the rising water table to be of utmost concern. Should the lake rise to 1,450 feet or higher, our sewer system will be compromised and we need to take steps now to complete the relining of our sewer lines and sealing or raising of manholes, We believe diking our lift stations will also be necessary to save our sewer system.

In addition we feel many houses could be saved if funding is available to fill in basements and build mechanical rooms at ground level to house furnaces, hot water heaters, etc.

We believe it is important for a buyout program to be in place in case our sewer system fails. It will take time to put this program together and if the sewer system fails, the population of the entire town will be virtually homeless. The buyout program would be accessed if and when the sewer fails or when the lake threatens to flood the town overland.

Our city is the county seat for Benson County. The county employs approximately 75 people; the school over 50 people and there are a number of smaller businesses, all important to our area. We have buildings on the National Historic Registry. In a recent survey completed in the city of Minnewaukan and fire district, we discovered a poverty level exceeding 58 percent.

A considerable amount of money has been spent on building and maintaining our infrastructure. Our city recently celebrated its 125th anniversary. Residents rose to the occasion by improving their property and the town in general. We are currently working to build a community center and fire hall. We are actively seeking ways to keep our city viable and thriving. We cannot, however, do this without your help. We respectfully request your support in seeing these projects to fruition and keeping our city viable.

Respectfully yours,

CURTIS A. YRI,
Mayor, City of Minnewaukan.

LETTER FROM GARY L. PEARSON, D.V.M.

FEBRUARY 10, 2009.

Honorable SENATOR BYRON DORGAN,
Chairman, Senate Subcommittee on Energy and Water Development, Room 186 Dirksen Senate Office Building, Senate Appropriations Committee, United States Senate, Washington, DC 20510.

DEAR SENATOR DORGAN: This letter and its attachments are submitted as outside witness testimony for the record of the Senate Subcommittee on Energy and Water Development's February 11, 2009, hearing on "Determining what action must be taken to protect residents of the Devils Lake region from rising waters."

Because neither the facts nor the issues associated with the recent rise in the level of Devils Lake have changed significantly or been addressed substantively in the last year, I am resubmitting the attached outside witness testimony that I submitted a year ago in conjunction with the Senate Subcommittee on Energy and Water Development's March 25, 2008, field hearing on flooding at Devils Lake.

The impetus for this year's hearing appears to be the National Weather Service's projection, reported by the Associated Press on January 21, 2009, of a 90 percent chance that Devils Lake will rise 3 feet this year and reach an elevation of 1,450 feet, which is 9.6 inches higher than the 2006 record of 1,449.2 feet. However, it is important to recognize that this is neither disastrous nor unexpected. As was pointed out in my attached testimony submitted for the subcommittee's March 25, 2008, field hearing regarding a report on Devils Lake water levels prepared by Mr. Aldo Vecchia of the U.S. Geological Survey:

". . . according to Mr. Vecchia's report, there is a 50 percent chance that the lake will not rise above 1,450 feet over the next 32 years, a 90 percent chance that it will not rise above 1,453.8 feet, and a 95 percent chance that it will not rise above 1,455.7 feet. As he points out, elevation 1,450 feet would be less than a foot higher than 2 years ago, and elevation 1,453.8 feet would be only 4 feet higher."

Consequently, the National Weather Service's January 23, 2009, projection of a 90 percent chance that Devils Lake will reach an elevation of 1,450 feet this year is entirely consistent with what Mr. Vecchia told the subcommittee a year ago. Nothing has changed.

As I pointed out in my attached testimony for that same hearing:

"Moreover, should Devils Lake/Stump Lake continue to rise, increased evaporation (which averages 2.5 feet annually at Devil Lake) from the expanding surface area will soon off-set any increases in the current precipitation levels."

The recent projection by the National Weather Service does nothing to refute either Mr. Vecchia's testimony presented at the subcommittee's March 25, 2008, hearing nor my outside witness testimony submitted for the record of that hearing.

If the subcommittee really is concerned about the people at Devils Lake and is genuinely interested in taking action to protect the residents of the Devils Lake region from rising waters, I would submit that, instead of continuing to spend additional tens of millions of taxpayer dollars simply to accommodate the rising lake, the subcommittee should recognize and address the one action that could be taken to reduce the amount of water that reaches the lake and causes it to rise.

In my March 25, 2008 testimony, I pointed out that much of the 317,000 acre-feet average annual inflows to Devils Lake from 1993 to 2000 was the direct result of the drainage of 358,000 acres of wetlands in the Devils Lake Basin. Attached and included for the record with this letter is a copy of the May 6, 2002, Comments of the National Wildlife Federation on the U.S. Army Corps of Engineers' February 2002 Draft Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement, which document the sordid history of rampant wetland drainage in the Devils Lake Basin over the past half-century; the abysmal failure of the North Dakota State Water Commission, the State Engineer and local water boards to enforce drainage laws and manage water responsibly in the basin; the contribution of wetland drainage to the rise of Devils Lake over the past 16 years; and the potential for wetland restoration and upper basin storage to reduce the level of Devils Lake.

I would recommend that the subcommittee address the one primary contributor to the rise in the level of Devils Lake that it can by directing appropriate Federal agencies with expertise in wetland hydrology and wetland restoration, such as the U.S. Environmental Protection Agency, the U.S. Department of Agriculture's Natural Resources Conservation Service, the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers, to develop and implement a comprehensive, effective and scientifically sound wetland restoration program for the Devils Lake Basin.

Pumping more Federal taxpayer dollars into accommodating an incremental rise in the level Devils Lake may be a boon to the local economy. But, with the Nation's taxpayers facing an astronomical and escalating Federal deficit, it is time for the subcommittee to begin treating the cause instead of just the symptoms—to begin putting out the fire instead of simply continuing to throw water on the fire bell.

Sincerely,

GARY L. PEARSON, D.V.M.

PREPARED STATEMENT OF GARY L. PEARSON, D.V.M.

The following information is submitted to address issues relating to flooding at Devils Lake, North Dakota, that either were not addressed or were incompletely or incorrectly addressed by the invited witnesses at subcommittee Chairman Senator Byron Dorgan's March 25, 2008 field hearing at Devils Lake.

THE RISE OF DEVILS LAKE

Two witnesses, Aldo Vecchia of the U.S. Geological Survey, and North Dakota State Engineer Dale Frink, testified at the March 25, 2008 field hearing that Devils Lake has risen 25 feet since 1992, one, Devils Lake Outlet Downstream Acceptance Coordinator Joe Belford, testified that the lake has risen over 25 feet since 1993, and one, Devils Lake Basin Joint Water Resource Board Manager Michael Connor testified that the lake has risen 26 feet since 1993. Mr. Frink testified that Devils Lake currently is at an elevation of approximately 1,447 feet.

None of the witnesses mentioned that Devils Lake had been at elevation 1,428.8 feet in 1987, before a severe 4 year drought (during which the State of North Dakota aggressively advocated for an inlet to deliver Missouri River water to raise the lake) had lowered the level to elevation 1,422.74 feet on April 1, 1993. Consequently, none of the witnesses acknowledged in their testimony that the lake actually is only 18.2 feet higher today than it was in 1987.

It should also be noted that none of the witnesses mentioned that the target elevation for Devils Lake where operation of the North Dakota State Water Commission's Devils Lake outlet would be suspended is 1,445 feet, which is only 2 feet below the lake's current elevation. Consequently, none of the witnesses explained why a lake elevation of 1,447 feet represents an unacceptable threat when the State's target elevation for the lake is only 2 feet lower.

DAMAGES RESULTING FROM FLOODING AT DEVILS LAKE

State Engineer Dale Frink testified that:

"The city of Churchs Ferry has been bought out by the Federal Emergency Management Agency (FEMA), hundreds of other homes have been destroyed, roads and dikes have been raised, re-routed and, in some cases, abandoned, and utilities have been rerouted."

And Joe Belford testified that:

"Since 1993, the lake's ever-expanding waters have, in fits and starts, swallowed up homes, roads, private and public land, and utilities. Losing one's home is a tragedy, and sadly, hundreds of homes have been lost, relocated or burned to prevent hazards to the lake."

Mr. Belford neglected to tell the subcommittee that his own business, Joe's Corner Market, is built on the bed of Devils Lake below the site where the side-wheel steamer, the Minne H., docked in the mid-1800s. Consequently, neither he nor Mr. Frink told the subcommittee that much of the "flooding problem" at Devils Lake is man-made and the result of the imprudent and unregulated encroachment of development on the lake bed.

Neither Mr. Frink nor Mr. Belford told the subcommittee that, according to the U.S. Army Corps of Engineers, most of the 400 homes affected by the rising level of Devils Lake were not lost, abandoned or burned but were relocated—largely at public expense. For example, by the fall of 1997, the National Flood Insurance Program had paid over $14 million in claims on some 300 homes around Devils Lake that had been relocated and on which the owners had paid insurance premiums totaling only $900,000—a $13.1 million bailout by U.S. taxpayers. In fact, some homeowners filed claims and received payments for moving their homes or businesses twice, because they had not moved them far enough from the lake the first time.

In the spring of 2000, the Federal Emergency Management Agency spent $3.5 million to buy out the town of Churchs Ferry, a small town of 113 people and 43

homes at the northwest side of Devils Lake—equivalent to $31,000 per person. FEMA reportedly paid approximately $45,000 apiece for three 20-year-old mobile homes, plus relocation incentives up to $22,500 and averaging $14,466. One Churchs Ferry resident reportedly exulted:

"I'm getting into a gorgeous house . . . a step up. There's a lot of excitement . . . I've always dreamed of having a house like this. The (buyout) price we got for our house was great . . . wonderful and that's all I can say about that. But we wouldn't have been able to do this without the buyouts."

Eight years later Churchs Ferry still has not been flooded and people continue to live in the town.

It is not surprising, therefore, that when local officials were seeking $70,000 in Community Development Block Grants and economic development funds in 2000, they were hard pressed to show that the rise of the lake had adversely impacted the area. As Devils Lake Economic Director Jim Dahlen explained:

"The challenge we have is statistically the (flooding) impact doesn't show up real well in areas of taxable sales and services. Our unemployment rate is very low, well below the national average. And the average wage continues to rise. It's a hard thing to show what impact the flooding's had."

CONTINUATION OF THE WET CYCLE

Both Mr. Vecchia and Mr. Frink alluded in their testimony to the Devils Lake area being in a wet cycle that began in 1993, and expressed concern about the wet cycle continuing. However, National Weather Service data show that the "wet cycle" in the Devils Lake Basin ended in 2001. In fact, on the day of the March 25, 2008, subcommittee hearing in Devils Lake, an Associated Press story ran in North Dakota quoting a National Weather Service official as saying:

"The whole State is still in drought. The western third is under severe drought, the central is moderate drought, and the eastern half is abnormally dry, or the wettest of the dry."

This is reflected in the elevations of Devils Lake, which rose to elevation 1,447 feet in 1999 and have fluctuated between 1,447 feet and 1,449 feet since then. Mr. Belford testified that Devils Lake overflows to Stump Lake at elevation 1,447 feet, and that Stump Lake has a volume of 494,000 acre-feet and:

"Now that Stump Lake is at the same elevation as Devils Lake, there is nothing to prevent the lakes from rising together in the future."

However, according to the Corps of Engineers, inflows to Devils Lake averaged 317,000 acre-feet per year from 1993 to 2000. Consequently, the fact that it has taken 9 years since Devils Lake first reached elevation 1,447 feet for the overflows to raise Stump Lake to the same elevation simply provides further confirmation that the "wet cycle" had ended by 2001. Moreover, should Devils Lake/Stump Lake continue to rise, increased evaporation (which averages 2.5 feet annually at Devils Lake) from the expanding surface area will soon off-set any increases in current precipitation levels.

Mr. Frink testified that the U.S. Geological Survey report prepared by Mr. Vecchia states that there is a 72 percent chance that the "wet cycle" will last for another 10 years. However, Mr. Vecchia's report also states that:

"The generated traces were used to compute cumulative flood elevations for 2008–2040 by computing the elevations that have a fixed probability of being exceeded sometime between now and a given future year. For example, there is about a 1 percent chance of Devils Lake exceeding 1,459.9 feet (0.9 foot above the natural spill elevation), a 5 percent chance of exceeding 1,455.7 feet, and a 10 percent chance of exceeding 1,453.8 feet sometime between 2008 and 2015. Although the risk of much higher lake levels in future years is relatively high, there also is about a 50 percent chance the lake will not exceed 1,450 feet (less than 1 foot above the historical record level of 1,449.2 feet set in 2006) anytime during 2008–2040."

Consequently, according to Mr. Vecchia's report, there is a 50 percent chance that the lake will not rise above 1,450 feet over the next 32 years, a 90 percent chance that it will not rise above 1,453.8 feet, and a 95 percent chance it will not rise above 1,455.7 feet. As he points out, elevation 1,450 feet would be less than a foot higher than 2 years ago, and elevation 1,453.8 feet would be only 4 feet higher.

MEASURES TO DEAL WITH FLOODING AT DEVILS LAKE

Mr. Frink testified that "over $500 million have been spent fighting the Devils Lake flood." What he did not tell the subcommittee is that most of that (nearly $400 million by 2004) was Federal funds and that it was an economic bonanza for the Devils Lake area.

Mr. Frink testified that:

"In-basin water management efforts include the Extended Storage Acreage Program (ESAP), which pays landowners to store water in the basin; the irrigation test project, which uses water in the basin to irrigate crops and increase the evaporation of water in the basin reducing the inflow to Devils Lake; and, storing additional water in Sweetwater and Morrison Lakes. The State's emergency outlet has been completed and will discharge the maximum amount of water allowed by the permits governing its operation."

What Mr. Frink did not tell the subcommittee is:

—From 1996 to 1999 when inflows to Devils Lake were averaging 317,000 acre-feet per year, the North Dakota State Water Commission's Available Storage Acreage Program (ASAP) stored an average of only 17,345 acre-feet of water annually. By 2005, the revised ESAP was storing an average of only 800 acre-feet per year, and the State Water Commission is ending the program this year.

—Mr. Connor acknowledged in his testimony that the 1,000-acre irrigation test project is being financed primarily with Federal taxpayer dollars, and that additional Federal funding will be necessary to pay for the proposed $4,350,000 expansion to a 4,000-acre Pilot Project. He said that 8 inches of water were applied in 2006 and 3 inches in 2007, but he neglected to mention that no irrigation water was applied in 2005 because there was too much rain—a common occurrence in years when the lake was rising. If the entire 4,000-acre Pilot Project were able to apply 8 inches of water, it would utilize a total of 2,668 acre-feet water per year. That would be equivalent to a 0.019 foot reduction in the level of the 140,000-acre Devils Lake—less than a quarter of an inch. If the Pilot Project were able to apply only 3 inches of water, it would reduce the level of the lake by 0.086 inch.

—Since operation began in 2005, the State Water Commission's $28 million Devils Lake outlet (with annual operation and maintenance costs of over $250,000) has removed a total of 336.6 acre-feet of water from Devils Lake. This is equivalent to a reduction in the level of the lake of 0.0024 foot or 0.29 inch—less than a tenth of an inch a year. Mr. Frink also neglected to tell the subcommittee that documents from the Corps of Engineers prove that he knew before the outlet was built that it would be worthless.

WETLAND DRAINAGE IN THE DEVILS LAKE BASIN

The 1911–1912 Final Biennial Report of the North Dakota State Engineer pointed out that:

"The drainage area of Devils Lake is nearly 2,000 square miles [subsequently determined to be 3,814 square miles], but the land lies so nearly level, and there are so many marshes, meadows, small ponds and lakes which arrest the flow of water and from which it evaporates that it is not likely that the run-off from more than 700 square miles of the total area ever reaches the lake."

Data from the State of North Dakota show that 358,000 acres of the original 569,000 acres of wetlands in the Devils Lake Basin had been drained by 1998. A 1983 report co-authored by now-North Dakota State Engineer Dale Frink determined that natural wetlands in the Devils Lake Basin hold an average of 11.8 inches of water in a 10 year run-off, 15.7 inches in a 50 year run-off, and 18.5 inches in a 100 year runoff. Because wetlands lose water by evaporation (which averages 30 inches per year in the Devils Lake Basin), evapo-transpiration and seepage, much of that storage capacity is renewed and available every year. Consequently, it is clear that much of the average 317,000 acre-feet of inflows to Devils Lake from 1993 to 2000 was the direct result of wetland drainage in the Devils Lake Basin.

Despite the fact that a 1979 U.S. General Accounting Office report to the Congress cited the Devils Lake Basin as a specific example where wetland drainage resulted in severe flooding in lower portions of the watershed, not a single one of the invited witnesses at the March 25, 2008, field hearing even mentioned the rampant and unregulated wetland drainage that has occurred for decades—and continues to occur—in the Devils Lake Basin. Nor did any of them discuss how much past and future flooding and flood damages could have been prevented if some of the $500

million of mostly U.S. taxpayer dollars had been used to restore drained wetlands in the Devils Lake Basin.

The argument that wetland restoration would adversely affect the agricultural economy of the area is specious because many of those drained wetland basins cannot be farmed in wet years anyway. Besides, any adverse impact of wetland restoration on the agricultural economy has to be weighed against the adverse impacts of wetland drainage on other components of the economy, including U.S. taxpayers.

CONCLUSION

The Subcommittee on Energy and Water Development should step forward and fulfill its responsibilities to the Congress and to the public by exposing the fallacies upon which the alleged "flooding problem" at Devils Lake is based, and it should then take decisive steps to end this 15 year raid on the Federal Treasury that has been carried out under the guise of disaster relief at Devils Lake.

COMMENTS OF THE NATIONAL WILDLIFE FEDERATION ON THE U.S. ARMY CORPS OF ENGINEERS' FEBRUARY 2002 DRAFT DEVILS LAKE, NORTH DAKOTA, INTEGRATED PLANNING REPORT AND ENVIRONMENTAL IMPACT STATEMENT

Prepared by Gary L. Pearson, 1305 Business Loop East, Jamestown, North Dakota 58401 and David R. Conrad, National Wildlife Federation, 1400 Sixteenth Street, N.W. Washington, DC 20036–2266, May 6, 2002.

INTRODUCTION

Devils Lake in northeastern North Dakota is located in a 3,814 square-mile closed sub-basin of the Red River of the North Basin, which is part of the Hudson Bay Drainage Basin. The Sheyenne River passes eastward near the southern boundary of the basin before looping 400 miles south, east and then north again to join the Red River of the North at Fargo, North Dakota. The Red River of the North then flows north into Canada where it empties into Lake Winnipeg at Winnipeg, Manitoba.

The geologic record shows that, since Devils Lake was formed 10,000 years ago by the Wisconsin Glacier, its level has fluctuated widely over a range of some 65 feet, from dry at 1,394 feet above mean sea level (msl) to overflowing to the Sheyenne River at 1,459 feet. At elevation 1,446.6 feet, Devils Lake overflows to the east through the Jerusalem Spillway to West Stump Lake and East Stump Lake before the combined lakes then rise to overflow from West Stump Lake to the Sheyenne River through the Tolna Coulee. At its overflow elevation of 1,459 feet, Devils Lake has a surface area of approximately 300,000 acres.

The lake last was at its current elevation of 1,447 feet at the time white settlers arrived in the area in the early 1800s. The lake supported a thriving commercial and sport northern pike fishery and a small side-wheel steamer, the Minnie H, operated between the town of Devils Lake and Churchs Ferry at the northwestern end of the lake. The ferry docked near a large rock that remains near current downtown Devils Lake. The lake had declined to elevation 1,438 feet by the time its level first was officially recorded in 1867, and by 1889 the northern pike fishery disappeared when the lake dropped to 1,424 feet. The lake continued to decline to its modern day low of 1,401 feet in 1940, after which it began an erratic rise to elevation 1,423 feet by 1992. However, by 1975 Devils Lake had risen to 1,425 feet, and developments which had been encroaching on the bed of the lake as it had receded already were being threatened by the rising water. By 1983, the State was petitioning the U.S. Army Corps of Engineers (Corps) to construct an outlet from Devils Lake to the Sheyenne River.

The severe drought of 1988 to 1992 was followed by 7 years of unusually high levels of precipitation that resulted in the lake rising from 1,423 feet in 1992 to 1,448 feet in 2001. The lake currently is at 1,447 feet and is expected to drop another 2 feet this year. However, the dramatic rise of the lake starting in 1993 generated renewed pressure for the construction of an outlet to the Sheyenne River, and in 1996 the Corps released an "Emergency Outlet Plan, Devils Lake, North Dakota" that examined two outlet routes from West Bay of Devils Lake to the Sheyenne River (U.S. Army Corps of Engineers, 1996), and the Emergency Supplemental Appropriations Act of 1997 (Public Law 105–18) appropriated $5 million and directed the Corps to use the funds to:

". . . initiate and complete preconstruction engineering and design and the associated Environmental Impact Statement for an emergency outlet from Devils Lake,

North Dakota, to the Sheyenne River." (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001)

The Corps received an additional $6 million for preconstruction engineering and design of the outlet and the associated environmental impact statement in fiscal year 2000 ($2 million) and 2001 ($4 million) supplemental appropriations (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001).

A notice of availability of the February 2002 Draft Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement (DEIS) was published in the March 8, 2002, Federal Register. The following comments are submitted in response to that announcement for inclusion in the official record of public comments on the Draft Devils Lake, North Dakota, Integrated Planning Report and Environmental Impact Statement.

FLAWED SCOPING PROCESS

In their March 1998 joint "Devils Lake Emergency Outlet Newsletter", Issue #1, the Corps and the North Dakota State Water Commission (NDSWC) announced a series of "Public Scoping Meetings" where members of the public would have opportunities to (1) learn about scoping issues which already had been identified by local, State and Federal regulatory agencies and public officials, (2) identify issues which they felt were important, (3) help to prioritize the scoping issues that had been identified, and (4) submit comments on the proposed outlet from Devils Lake to the Sheyenne River (U.S. Army Corps of Engineers and North Dakota State Water Commission, 1998). However, by already having obtained lists of scoping issues from local, State and Federal officials before the public scoping process was announced and conducted, and by already having proposed a variety of outlet alternatives in six reports dating back over a period of 18 years before the scoping process was initiated, the Corps violated the guidelines for scoping of environmental documents prepared pursuant to the National Environmental Policy Act (NEPA) (Pearson, 1998). In addition, the scoping process utilized by the Corps in 1998 was designed to discourage and frustrate, rather than encourage and facilitate, public participation and involvement (Pearson, 1998).

In an attempt to bestow economic feasibility on the proposed outlet from Devils Lake and under pressure from the North Dakota congressional delegation, the purpose of an outlet was expanded in 2001 from reducing the damages from flooding at Devils Lake to include reducing the already low potential for a natural overflow to the Sheyenne River (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001).[1] Therefore, the Corps and the NDWSC announced in their March 2001 "Devils Lake Study Newsletter" that "new directions" had been set for the study and that a series of "supplemental public scoping meetings" would be held to (1) update the public on the current status of the study, (2) seek comments regarding the alternatives that the Corps would be carrying into the next phase of the study, and (3) "identify any new issues associated with those alternatives." However, because, the public was deprived of meaningful opportunities for input on the issues and alternatives that had been identified by local, State and Federal Government officials and presented in the initial 1998 scoping meetings, the restriction in these supplemental scoping meetings 3 years later to comments on "new issues regarding alternatives that the Corps would be carrying forward" (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001) simply perpetuated the systematic denial of meaningful participation by the public in the scoping process.

As one example of failure of the Corps' scoping process to incorporate public comments in a meaningful and substantive way, numerous comments were submitted by the public raising the issue of the contribution of wetland drainage in the Devils Lake Basin to the recent rise in the lake (See, e.g., Pearson, 2001), and the Corps even acknowledges in its Environmental Justice Analysis that:

[1] Wiche et al. (2000) had estimated the year before that the approximately 2 percent chance of the lake overflowing without the proposed 300 cubic feet per second (cfs) outlet would be reduced to less than 1 percent with the outlet. Examination of the data presented shows that, while there was a 1.82 percent chance that the lake would reach the overflow elevation of 1,459 feet mean sea level (msl) without the outlet, this consisted of a 1.32 percent chance that the lake would peak between 1,459.0 and 1,460.8 feet where peak flows would not be substantially greater than from a 300 cfs outlet, and only a 0.5 percent chance that it would exceed 1,460.8 feet where the peak flows would be substantially greater than from the outlet. The outlet would reduce the 1.32 percent chance of the lake peaking between 1,459.0 and 1,460.8 feet by 0.98 percent, and it would reduce the peak discharge if the lake peaked above 1,460.8 feet from 2,100 cfs to 1,100 cfs, but it would not significantly reduce the 0.5 percent chance of the lake exceeding 1,460.8 feet.

"Findings from this study revealed a noticeable lack of definitive information available from agency sources on a number of issues, such as . . . impacts to Devils Lake flooding of upper basin drainage." (DEIS Appendix C, p. C–102)

However, the DEIS does not include upper basin drainage among the areas of controversy or unresolved issues identified during the EIS process (DEIS p. 1–S–9–13). Similarly, although it includes such things as "rocketing and weather patterns" among issues to be summarized or not addressed, the DEIS makes no mention at all of upper basin drainage as being among the "issues identified during the scoping process" (DEIS Appendix C, pp. C–133–136).

This failure of the Corps' public scoping process is confirmed by its own Environmental Justice Analysis, which reported that:

"Data from this study indicate that a majority of respondents, from all groups, feel that their views either have not been heard, or have been heard, but not acted on. These findings call into question the effectiveness of the current public involvement process."(DEIS Appendix C, p. C–104).

and:

"Findings from this study indicate that many respondents felt that the scoping process did not allow for or welcome input from the public." (DEIS Appendix C, p. C–104)

This systematic exclusion of the public from meaningful participation in the NEPA process for the proposed Devils Lake outlet is further compounded by the abbreviated 60-day comment period for the DEIS and its appendices imposed by the Corps, which, after spending 5 years and $11,000,000 preparing these complex and confusing 3-inch documents (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001) while the lake was rising, now attempts to justify a patently inadequate public comment period under the transparent guise of "the urgency to make decisions about alternatives and construction" at a time when the lake level is expected to remain stable or decline (Associated Press, 2001a).

If for no other reason, this pervasive exclusion of the public from meaningful participation in the EIS process renders the DEIS inadequate in meeting the Corps' statutory responsibilities under NEPA. Consequently, the only avenue available to the Corps at this point for achieving compliance with the public participation and disclosure requirements of NEPA is to withdraw the DEIS and implement a proper EIS process designed to comply in good faith with both the spirit and the letter of the statute.

INAPPROPRIATE TIERING OF ENVIRONMENTAL IMPACT ANALYSIS

The DEIS states that:

"The primary purposes of this Integrated Report, in accordance with the authorizing legislation, are (1) to implement 'tiering' as provided in Council on Environmental Quality (CEQ) Regulation 15.28(b) and (2) to evaluate an outlet plan (proposed action being evaluated). Tiering procedures allow for supplemental EIS documentation." (DEIS p. 1–S–1)

However, the Corps' and NDSWC's March 1998 "Devils Lake Emergency Outlet Newsletter" discussing the 1997 Emergency Supplemental Appropriations Act (Public Law 105–18) and the 1998 Energy and Water Development Appropriations Act (Public Law 105–62) under which preparation of the EIS was authorized makes no mention of "tiering" of the EIS being authorized and states only that the project must be "in compliance with the National Environmental Policy Act" (U.S. Army Corps of Engineers and North Dakota State Water Commission, 1998). Similarly, their March 2001 "Devils Lake Study Newsletter" discussing "new directions" for the study states only that:

"The Corps will use its authority and funding to continue collecting data and evaluating alternatives to address the flooding problems at Devils Lake. This will include conducting the necessary environmental impact evaluations required by NEPA and the Boundary Waters Treaty of 1909." (U.S. Army Corps of Engineers and North Dakota State Water Commission, 2001)

Nevertheless, the "tiering" employed by the Corps in the DEIS still is not in compliance with Council on Environmental Quality Regulation 15.28(b). Under CEQ Regulation 15.28 Tiering:

"'Tiering' refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent

narrower statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when the sequence of statements is:

"(a) From a program, plan or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.

"(b) From an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe."

Because the proposed outlet from Devils Lake clearly is not a part of a program, plan or policy of greater scope but deals with a project at a specific site, the Corps makes no claim that tiering of the DEIS is provided under Regulation 15.28(a), but instead cites section 15.28(b) as its authority.

It is stated in DEIS Appendix C that:

"The final Integrated Report/EIS is scheduled for July 2002. The Record of Decision is to be signed by September 2002. Items to be completed include coordination with Canada and determination of compliance with the Boundary Waters Treaty of 1909." (DEIS Appendix C, p. C–136)

However, with the final EIS to be completed in 2 months and the record of decision to be signed in 4 months, it is clear that the DEIS is not an EIS on a specific action at an early stage and that the issues of its environmental impacts are ripe for consideration, so tiering of the DEIS is not appropriate under section 15.28(b), either.

The DEIS states that:

"Additional data acquisition and monitoring will be required to further define and evaluate the operational impacts of an outlet. Based on the results of these evaluations, supplemental National Environmental Policy Act (NEPA) documentation will be prepared as required." (DEIS p. 1–S–2)

Of course, it is not the impacts of construction, but the impacts of the operation of an outlet that are the most significant and the most important to compliance with NEPA and to the decision of whether or not the outlet should be built. It is precisely to assure that full information on the environmental impacts of proposed Federal actions is available to the public, to the Congress and to Federal agency officials before decisions are made that section 102(2)(C) of the National Environmental Policy Act requires that all agencies of the Federal Government shall—

"(C) include in every recommendation or report on proposals for legislation or other major Federal Actions significantly affecting the quality of the human environment, a *detailed* [emphasis added] statement by the responsible official on—

"(i) the environmental impact of the proposed action,

"(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

"(iii) alternatives to the proposed action,

"(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

"(v) any irreversible and irretrievable commitments of resources should it be implemented."

It is important to note that it is not just mitigation of the environmental impacts of the construction of the outlet that the Corps proposes to address in supplemental NEPA documents under CEQ Regulation 1508.2(b), but also the impacts of the operation of the outlet itself (DEIS pp. 5–92–94). Thus, rather than employing "tiering" as provided under the regulation, the Corps is instead using "tiering" as a ploy for segmenting the analysis of the environmental impacts of the proposed action itself, in clear violation of both CEQ Regulation 1508.2(b) and NEPA.

Until an operation plan is developed for the proposed outlet and the impacts of the operation of the outlet are described in detail, the Corps will be unable to make a decision regarding the construction of the outlet that is in compliance with NEPA. However, the Corps proposes instead to postpone the collection of data on the impacts of the operation of the outlet while it proceeds with completion of the Final EIS in 2 months and a formal decision on construction of the outlet 2 months later

with no provision for information on the impacts of the operation of the outlet being made available beforehand to the public and other agencies for review and comment in supplemental NEPA documents. Thus, any supplemental NEPA documents dealing with the most significant impacts of the outlet will not become available until after the decision has been made to build the outlet, when it is too late to avoid those impacts or select less damaging alternatives. The Corps' NEPA process for the proposed outlet, therefore, is deliberately crafted to circumvent the fundamental purpose of NEPA.

FAILURE TO CONSIDER CUMULATIVE IMPACTS

Red River Valley Water Supply Project

The Dakota Water Resources Act of 2000 authorizes a Red River Valley Water Supply Project, one alternative of which to be considered is the delivery of Missouri River water to the Sheyenne River utilizing the U.S. Bureau of Reclamation's Garrison Diversion Unit. The DEIS acknowledges that utilizing the Garrison Diversion Unit to deliver Missouri River water for a Red River Valley water supply project is a reasonably foreseeable action (DEIS p. 5–92), but, despite the fact that the projects would deliver water to the Sheyenne River from different sources, it does not discuss how operation of the proposed Devils Lake outlet might alter the operation or impacts of the Red River Valley Water Supply Project, or how operation of the Red River Valley Water Supply Project might alter the operation or impacts of the proposed outlet. With absolutely no data or analysis, the DEIS summarily dismisses discussion of the cumulative impacts of the two projects with the statement that they "do not result in any additional impacts above those described in this Draft Report/EIS" (DEIS p. 5–92).

Inlet to Deliver Missouri River Water to Devils Lake

The DEIS recognizes that:

"The purpose of an inlet from the Missouri River would be to help stabilize the lake during drier climatic conditions. Regionally, there is great interest in stabilizing the lake to try to maintain the recreational and economic value of the lake. Other States, Minnesota and Missouri, Canada, and some agencies are concerned about water quality, water quantity, and biota transfer issues associated with an inlet.

"Many believe that an outlet is the first step toward an inlet and oppose the outlet for that reason or feel that the report should include a discussion of the effects of an inlet." (DEIS p. 1–S–11)

In fact, on August 1, 1997, North Dakota Governor Edward T. Schafer and the majority leaders of the North Dakota House and Senate sent letters to U.S. Senate Majority Leader Trent Lott and U.S. House Speaker Newt Gingrich stating, in part:

"There are no immediate plans to build an inlet to bring Missouri River water into Devils Lake. The conditions do not require it. Five years ago Devils Lake was a shrinking body of water in danger of losing its multimillion dollar fishery. That situation may occur again. Stabilization of Devils Lake is essential for the long-term economic health for the region and our State.

"We ask that you consider alternative language that provides funding for an emergency outlet while not shutting the door permanently on an inlet."

On September 26, 1997, the Governor and the North Dakota Senate and House majority leaders then sent letters to the North Dakota congressional delegation stating, in part:

"A ban on the inlet is an extremely high price to pay for the outlet language. An inlet is important to ensure the long-term economic stability of the Devils Lake region, and is a significant component of the State's water-development plan. Strong support still exists for an inlet in the region.

"Everything possible must be done to keep the inlet viable in Congress as a long-term option. We ask that this letter be included as part of a legislative history that should emphasize the State's interest in revisiting an inlet when the circumstances dictate."

That same day, North Dakota Senator Byron Dorgan was quoted in The Forum (Fargo, North Dakota) as stating that he would bring back the inlet debate in future sessions of the Congress, but for now, the outlet is what is needed (Condon, 1997).

Although the construction of an inlet to deliver Missouri River water to Devils Lake could have profound consequences for the operation and impacts of the proposed outlet, particularly by escalating the risk of transfer of foreign biota to the

Hudson Bay Basin, the DEIS arbitrarily dismisses consideration of the cumulative impacts of an inlet with the statement that:

"Public Law 105–62 prohibits the Corps from using any funds to study any inlet involving the transfer of water from the Missouri Basin. Therefore, an inlet is not part of the analysis." (DEIS p. 1–S–1)

However, the Corps misinterprets the language of the 1997 Energy and Water Development Appropriations Act (Public Law 105–62). The act states:

"Provided further, That no funds made available under this Act or any other Act for any fiscal year may be used by the Secretary *to carry out the portion of the feasibility study of the Devils Lake Basin, North Dakota, authorized under the Energy and Water Development Appropriations Act of 1993 (Public Law 102–377), that addresses the needs of the area for stabilized lake levels through inlet controls* [emphasis added] or carry out any activity that would permit the transfer of water from the Missouri River Basin into Devils Lake."

Thus, Public Law 105–62 prohibits the Corps only from carrying out a feasibility study for an inlet to Devils Lake, and it does not prohibit the Corps from addressing the cumulative environmental impacts of an inlet in association with an outlet from Devils Lake that is required under NEPA.

North Dakota's 300 cfs "Temporary" Emergency Outlet

The DEIS acknowledges that a temporary outlet from Devils Lake to the Sheyenne River constructed by the State of North Dakota along Peterson Coulee is a reasonably foreseeable action (DEIS p. 5–92). However, despite the facts that (1) the North Dakota Legislative Assembly has authorized, and appropriated $15 million for, construction of the temporary outlet, (2) former State Engineer David Sprynczynatyk stated at a public meeting in Valley City, North Dakota, on August 23, 2000, that the State's 300 cfs temporary outlet will be operated indefinitely if the Corps does not build a permanent outlet, (3) the NDSWC has requested engineering design proposals and has retained the firm of Bartlett, West and Boyle to design the outlet, (4) the NDSWC's "Request for Proposal" for the temporary outlet states that the outlet could operate for 10 to 15 years if the current wet cycle continues, and (5) the Governor and the NDSWC continue to reiterate their decision to construct the outlet, the Corps declines to include the temporary outlet in the discussion or without project future conditions (DEIS p. 1–S–10) and again dismisses consideration of its cumulative effects in conjunction with the proposed Pelican Lake 300 cubic feet per second (cfs) outlet (DEIS p. 5–92).

Clearly, the construction and operation by the State of a 300 cfs West Bay outlet would have profound impacts on the justification for and feasibility of the Corps' proposed Pelican Lake 300 cfs outlet, as well as on the cumulative impacts to the Sheyenne River if the Corps's proposed outlet were to be built. However, the Corps summarily dismisses consideration of the State's proposed 300 cfs West Bay outlet with the statement that:

"The design and detailed operation plan for a temporary outlet have not been completed at this time, and there is a high probability for delays or suspension of the plan due to possible litigation and permitting issues. Therefore, the construction and operation of a temporary outlet is not considered to be a reasonably foreseeable action at this time, and the Corps is not including this outlet in the future without project conditions. If the State actually begins construction, a decision would have to be made on whether the future without project conditions should be reevaluated, which would result in the extension of the schedule to complete project design and the preparation of a revised NEPA document." (DEIS p. 1–S–10)

Of course, a detailed operation plan has not been completed for the Corps' proposed Pelican Lake 300 cfs outlet, either (DEIS p. 6–16), yet the Corps is proceeding on the premise that it is a reasonably foreseeable action subject to the requirements of NEPA. Meanwhile, the State also has indicated that it intends to build and operate its 300 cfs temporary outlet without completing a detailed operation plan (Associated Press, 2001b), but the Corps claims that exempts the State's project from consideration of cumulative impacts under NEPA.

The DEIS purports to conduct a sensitivity analysis "[t]o address the uncertainty of the implementation of a temporary outlet" (DEIS p. 1–S–10), and it states that:

"The analysis includes a discussion of the potential effect of the temporary outlet on lake levels, and how it would affect the economic feasibility of the Pelican Lake outlet alternative." (DEIS p. 1–S–10)

However, despite the facts that (1) the NDSWC's "Request for Proposal" for the temporary outlet calls for a capacity of "at least 300 cfs" and indicates that it could be operated for 10 to 15 years until the current wet cycle ends (North Dakota State Water Commission, 2001), and (2) the DEIS acknowledges that the ultimate capacity of the outlet would be "up to 300 cfs" (DEIS p. 3–25), the sensitivity analysis is based on the assumption that the temporary outlet would simply be an interim measure until a permanent outlet is operable, and it is limited to only the first 100 cfs initial phase of the State's project (DEIS p. 3–25–26). Consequently, despite acknowledging that:

"The inclusion of the State's [assumed 100 cfs] temporary outlet as part of the future without project conditions could reduce the impacts of a Pelican Lake outlet and mitigation measures." (DEIS p. 47–37)

the DEIS concludes that:

"These changes would not affect conclusions reached through the alternatives evaluation." (DEIS p. 4–36)

Clearly, compliance with NEPA requires that the Corps address the State's authorized 300 cfs West Bay outlet as a reasonably foreseeable permanent feature of the without project future conditions, and that it address substantively the cumulative impacts of (1) the authorized Red River Valley Water Supply Project delivering Missouri River water to the Sheyenne River, (2) an inlet to deliver Missouri River water to Devils Lake as part of the State's official water development plan, and (3) the State's authorized 300 cfs outlet from West Bay to the Sheyenne River.

ABSENCE OF AUTHORIZATION TO CONSTRUCT AND OPERATE AN OUTLET

The DEIS cites the 1997 Emergency Supplemental Appropriations Act as its authority to undertake preconstruction engineering and design and the associated EIS for an emergency outlet from Devils Lake to the Sheyenne River (DEIS p. 1–2), and it cites the Energy and Water Development Appropriations Acts for fiscal years 1998, 1999, 2000, and 2001 as "providing funding for the construction of an emergency outlet from Devils Lake to the Sheyenne River" (DEIS p. 1–2), but it does not cite any congressional authorization act language that specifically authorizes the construction and operation of an outlet from Devils Lake to the Sheyenne River.

The 1998 Energy and Water Development Appropriations Act cited by the DEIS states, for example, that:

"The Secretary of the Army acting through the Chief of Engineers, may use up to $5 million of the funding appropriated herein to *initiate* [emphasis added] construction of an emergency outlet from Devils Lake, North Dakota, to the Sheyenne River . . ."

subject to a determination by the Secretary of the Army that the construction:

"is technically sound, economically justified, and environmentally acceptable and in compliance with the National Environmental Policy Act of 1969."

Provided further:

"That the economic justification for the emergency outlet shall be prepared in accordance with the principles and guidelines for economic evaluation, as required by regulations and procedures of the Army Corps of Engineers for all flood control projects . . ."

and:

"That the plans for the emergency outlet shall be reviewed and, to be effective, shall contain assurances provided by the Secretary of State, after consultation with the International Joint Commission, that the project will not violate the requirements or terms of the . . . 'Boundary Waters Treaty of 1909.'"

Not only have none of these necessary conditions been met before construction may be initiated on an outlet from Devils Lake to the Sheyenne River (DEIS p. 6–28), but the Corps cites no congressional authorization to complete and operate an outlet from Devils Lake to the Sheyenne River. The language of the 1998 Energy and Water Development Appropriations Act clearly indicates that it was the intent of the Congress that the Corps, after meeting the conditions specified, was authorized only to "initiate construction of an emergency outlet" from Devils lake to the Sheyenne River. The language demonstrates that, in the event the Corps should meet the conditions specified in the act and initiate construction of an outlet, the Congress retained the authority to review the status of the "emergency" before au-

thorizing further construction and operation of the outlet and the appropriation of additional funds for its construction. That authorization would properly be in the form of a specific congressional authorization act, rather than simply through the appropriation of funds in a continued piecemeal fashion.

INADEQUATE DESCRIPTION OF ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

Not only does the DEIS fail to describe adequately the environmental impacts of the operation of the proposed Pelican Lake 300 cfs outlet, but the discussion that is provided is designed to minimize and obscure the impacts that are identified.

The downstream impacts of the operation of the proposed Pelican Lake 300 cfs outlet under a "wet future scenario" where those impacts would be most severe have not been modeled, so they have simply been interpolated from the impacts of West Bay 300 cfs and 480 cfs alternatives modeled under two "moderate" (1,450 and 1,455 feet) lake future scenarios. For example:

"Impacts to aquatic resources were evaluated for a 300 cfs constrained and a 480 cfs unconstrained outlet from West Bay . . . The effects of outlets from other locations, such as Pelican Lake, would have to be interpreted from these findings. It is *possible* [emphasis added] that a Pelican Lake outlet would approximate the water quality effects of a 300 cfs West Bay outlet and the flow effects of a 480 cfs West Bay outlet. (DEIS Appendix C, p. C–38)

"The determination of the effects of operating an outlet from Devils Lake is dependent on the conditions assumed to persist into the future and the location of the outlet. These two conditions affect the quality of the water to be discharged into the Sheyenne River and flows that are in the Sheyenne River, which in turn affects the assumptions concerning the operation of an outlet . . . Because of the uncertainty as to which outlet operation plan would be proposed for design, 300 cfs or 480 cfs—constrained or unconstrained, the analysis of natural resources effects was designed to bracket the potential effects for the *two moderate lake scenarios* [emphasis added] selected for analysis . . .

"The outlet plan preliminarily selected for design does not originate in West Bay *and falls somewhat outside the bounds for this analysis* [emphasis added]. The water quality effects on aquatic resources *would likely be* [emphasis added] very similar to those identified with the West Bay 300 cfs outlet, constrained by water quality and channel capacity. However, since a Pelican Lake outlet captures the fresh water flowing into Devils Lake, the outlet would have substantially higher flows, and the effects of increased flow on aquatic habitat in the Sheyenne River *would likely be* [emphasis added] closer to the effects identified with the West Bay 480 cfs outlet. In lieu of additional modeling, the water quality effects of the 300 cfs constrained operation and the flow effects of the 480 cfs unconstrained operation were used to evaluate the potential effects of the Pelican Lake outlet on aquatic resources." (DEIS p. 5–45)

In discussing the impacts of the operation of the proposed Pelican Lake 300 cfs outlet on the Sheyenne River under the more "moderate" 1,450 feet lake future scenario, the DEIS shows a "typical operation year" that imposes 300 cfs flows from the outlet on Sheyenne River base flows that peak at 200 cfs in July and average less than 100 cfs from May 1 through September 1, with flows from the outlet dropping to an average of perhaps 50 cfs from September 1 through November 30 (DEIS Figure 35, p. 5–50). Therefore, in a "typical operation year" under the 1,450 "moderate" scenario, it appears that the Pelican Lake 300 cfs outlet would be expected to discharge about 80,000 acre-feet of water from Devils Lake to the Sheyenne River. Under these "moderate" conditions, the DEIS states that:

"Operation of the Pelican Lake outlet would result in a substantial change in the flow regime of the Sheyenne River. Discharges of up to 300 cfs over a major portion of the summer would represent a 5- to 10-fold increase in summer/fall flows along the Sheyenne River. (DEIS p. 5–48)

". . . the outlet could result in up and down flows with sudden and extreme fluctuations in flow. These are the types of situations that made it difficult for species to adapt to habitat conditions. (DEIS p. 5–48)

"The changes in flow duration, stage and frequency could result in an increase in erosion and sedimentation on Sheyenne River. (DEIS p. 5–52)

"The changes on the Sheyenne River in water quality, hydrology, geomorphology and habitat could result in substantial changes in aquatic biota. (DEIS p. 5–53)

"Even under a constrained operation approach, the levels of many water quality constituents are increased by two to three times to concentrations just below the established water quality standards. (DEIS p. 5–53)

". . . although water quality standards on the Sheyenne River are not violated, the percent of time any particular concentration is exceeded increases dramatically. For example, sulfate exceedences go from zero to 42 percent for the 250 mg/l sulfate level. (DEIS p. 5–53)

"The loss of habitat due to increased flows, changes in channel geometry, loss of overbank cover and sedimentation, coupled with changes in water quality and algal growth, would all contribute to a substantial change in the aquatic community present in the Sheyenne River. Projected water quality changes associated with outlet operation may adversely influence fish reproduction and result in lost-year classes. The cumulative result of all these changes would be a decrease in diversity and density of aquatic species in the Sheyenne River. The threshold chloride levels of some aquatic species, such as mussels, would be approached with operation of an outlet; however, no effects are anticipated. (DEIS p. 5–53)

"Many of the effects associated with the operation of an outlet cannot readily be quantified. (DEIS p. 5–96)

"Some of the aquatic losses would not be mitigated; for example, loss of invertebrates, loss of fish year classes, loss of wetted usable area due to increased channel width, and changed channel morphology. (DEIS 5–97)

"Changes in the aquatic community would persist for many years after outlet operation ceased, especially on the Sheyenne River above Lake Ashtabula. (DEIS Appendix D, p. D–31)

". . . the 300 cfs [West Bay] constrained pumping alternative would cause much less damage than the 480 cfs [West Bay] unconstrained pumping alternative [which approximates the flow impacts of a 300 cfs Pelican Lake outlet] under either the moderate or wet climatic scenario. (DEIS Appendix A, p. A–254)

"The flow impacts due to a Pelican Lake alternative could be dramatic, particularly in the upper Sheyenne, which is essentially isolated from recolonization. Water quality changes would be devastating to uinonids. (DEIS p. 5–102)

"Substantial to significant adverse impacts on aquatic habitat availability and suitability can be expected under most if not all of the Devils Lake outlet options. The most flow sensitive habitat types, such as riffles where shallow, fast habitats predominate, would be almost entirely eliminated for a majority of the year. The largest adverse impacts on habitat would likely occur in the Sheyenne River above Lake Ashtabula, where stages are projected to increase up to 3 feet. (DEIS Appendix C, p. C–38)

"Downstream interests would bear most of the negative impacts of this [480 cfs] plan [which reflect the water quantity impacts of a Pelican Lake 300 cfs outlet]. Flooding may increase, primarily on agricultural lands along the Sheyenne River. Higher flows may exacerbate streambank erosion that may threaten farmstead structures and residences along the river. The added flow translates into stage increases, resulting in additional damage to structural property from direct flooding. Under these circumstances, flood easements would be purchased to compensate landowners for future expected losses to their properties. The potential for bearing these adverse impacts of an outlet is a source of controversy with downstream interests and has produced conflict with their upstream neighbors. (DEIS p. 4–10)

"As in the case of an overflow, farms that withdraw water from the Sheyenne River or the Red River for irrigation could suffer reduced crop yields from the lower river water quality associated with an outlet. Exacerbated flooding in the Sheyenne River could damage agricultural property, including lands, equipment, and structures. Also, higher flows in the river could affect some farms that straddle the river . . . These river crossings may be impeded or prohibited by additional river flow associated with an outlet. (DEIS p. 5–42)

"In rare instances, there could be overbank flooding due to unforecasted rainstorms and the inability to turn the outlet off in time. (DEIS p. 5–56)

"Using a ¼ mile area of influence, groundwater changes could potentially affect about 112,000 acres of riparian lands along the Sheyenne River and 76,000 acres along the Red River. (DEIS p. 5–57)

"Although the Sheyenne River channel appears currently stable, channel instability may be onset if the flows are increase[d] due to the operation of an outlet . . . The process of channel adjustment may take 50 to 100 years or more. (DEIS Appendix C, p. C–69)

"There is an increased risk of transfer of biota or the increase in the distribution of existing organisms associated with any feature that improves the connectivity between systems that have been segregated for many centuries." (DEIS 5–56)

As noted above, the DEIS shows that, in a "typical operation year" under the more "moderate" 1,450 feet future lake level scenario, the proposed Pelican Lake 300 cfs outlet would discharge approximately 80,000 acre-feet of water from Devils

Lake to the Sheyenne River, primarily from May through August. Although the DEIS does not show a "typical operation year" for the Pelican Lake 300 cfs outlet under the "wet future scenario," in order to prevent an overflow, it appears that the outlet would have to operate at its 300 cfs maximum capacity for the full 7 months from May 1 to November 30 every year. For example, with the lake reaching 1,457 feet even with the outlet in operation (DEIS p. 5–86), it would have a surface area of approximately 230,000 acres (DEIS Figure 7, p. 2–26). The average annual 21 inches of precipitation in the Devils Lake area during the 1993–1999 period on which the "wet future scenario" is based (DEIS p. 4–12) would contribute 402,500 acre-feet of precipitation directly to the surface of the lake each year. With the additional average 317,000 acre-feet of inflows during that period (DEIS p. 1–5), total annual accruals would average 719,000 acre-feet through the first 21 years of the "wet future scenario." The average annual 29 inches of evaporation through the 1993–1999 period (WEST Consultants, Inc., 2001) would be expected to remove 556,000 acre-feet per year from the lake, leaving an average annual net accrual of 162,000 acre-feet that would have to be removed by the outlet to prevent the lake from continuing to rise above 1,457 feet. A 300 cfs outlet operating at maximum capacity for 7 months would remove 126,000 acre-feet per year, so it appears that the Pelican Lake 300 cfs outlet would have to operate at maximum capacity from the 5th through the 21st year (DEIS Appendix A, p. A–110) of the a "wet future scenario" in order to prevent the lake from overflowing to the Sheyenne River and justify its construction.

Because the downstream impacts of the operation of the proposed Pelican Lake 300 cfs outlet have not been modeled, the DEIS attempts to interpret the possible impacts—examples of which are cited above—based on the water quality impacts of a 300 cfs constrained West Bay outlet and the water quantity impacts of a 480 cfs unconstrained West Bay outlet modeled under "moderate" future lake conditions of 1,450 and 1,455 feet.

However:

"A wet future in the Devils Lake basin would also probably result in a wet future in other basins." (DEIS p. 5–81)

including the Sheyenne River Basin, and the statements that:

"The primary downstream area affected would be those areas flooded when the flow on the upper and lower Sheyenne River reach 1,000 and 1,500 cfs, respectively." (DEIS Appendix C, p. C–138)

and:

"Operation of an outlet at 300 cfs would have limited effect on the extent or duration of flooded area along the upper or lower Sheyenne River with flows not exceeding 1,000 or 1,500 cfs, respectively." (DEIS Appendix C, p. C–138)

indicate that the operation of the outlet would not, in fact, be constrained to the 600 cfs capacity of the Sheyenne River channel during a "wet future scenario" as claimed (DEIS p. 3–14, 4–18), so the impacts could be expected to be substantially greater and more severe than those described under the moderate future scenarios discussed in the DEIS.

It is instructive, therefore, to consider how the DEIS describes the downstream impacts associated with the more than 50 percent increase in discharges from these "moderate" conditions (from 80,000 acre feet to 126,000 acre-feet per year) of a Pelican Lake 300 cfs outlet operating under "wet future scenario" conditions where the Sheyenne River would already be experiencing unusually high flows:

"Because the scenario is based on a wet climate, the pumping *may* [emphasis added] last longer and greater quantities *may* [emphasis added] be pumped out. Therefore, the impacts described for the stochastic analysis would last longer and the flow effects would be greater. For example, erosion would be more, aquatic effects from flow would be the same type but would be of a greater magnitude, soil salinity effects would also be of the same type but irrigators and land users would be subject to those effects for a longer period. (DEIS 5–86)

"In summary, changes in hydrology would be significant with a Pelican Lake alternative because large amounts of water could be discharged during wet periods in the Devils Lake Basin due to improved water quality. Erosion will be greater, summer nursery habitat will be less, unproductive habitat will increase in summer and fall, and change in flow magnitude between fall and winter will be greater. Therefore, aquatic communities may survive the water quality changes of the alternative, only to be affected by the change in habitat and hydrology. The changes in

the aquatic community would persist for many years after outlet operation has ceased." (DEIS p. 5–55)

That's it! These two paragraphs are the sum and substance of what the public, the Congress and other decisionmakers are told about the specific environmental impacts of the operation of the proposed Pelican Lake 300 cfs outlet in the "wet future scenario" under which outlet proponents such as the North Dakota congressional delegation, Ramsey County elected officials and Lake Emergency Management Committee representatives are advocating that the outlet be justified (Associated Press, 2002a).

Of course, the reader is told that more detailed discussion of the impacts under the scenario future is presented in the Technical Appendices (DEIS p. 5–66), but examination of Appendix C, which addresses "Environmental Resources," reveals only the same kinds of abstract and ambiguous generalizations that are used in the DEIS itself to minimize and obfuscate the downstream impacts of the operation of the proposed Pelican Lake 300 cfs outlet under the "wet future scenario" necessary to rationalize its construction.

The failure of the DEIS to provide the detailed statement of the qualitative and quantitative environmental impacts of the construction and operation of the proposed Pelican Lake 300 cfs outlet required by NEPA renders the DEIS technically inadequate and legally deficient on its face.

DEVILS LAKE OUTLETS—TECHNICALLY UNSOUND AND ECONOMICALLY UNJUSTIFIED

The DEIS concludes that the proposed Pelican Lake 300 cfs outlet only:

"Minimally reduces flood damages around the lake and moderately reduces the potential for a natural overflow event." (DEIS p. 4–38)

However:

"When balancing the project needs and objectives, including cost effectiveness, downstream water quality impacts, and other considerations, the Pelican Lake 300 cfs outlet alternative is the best overall outlet plan. Additionally, it is moderately effective in controlling future lake levels" (DEIS 1–S–7).

Under a conventional stochastic analysis, the proposed Pelican Lake 300 cfs outlet would reduce the expected lake stage from 1,450 feet without the outlet to 1,449.5 feet with the outlet—a half foot reduction (DEIS p. 1–S–4). Without the outlet, there is a 50.6 percent chance that the lake would reach or exceed 1,450 feet and a 20.8 percent chance the lake would reach or exceed 1,454 feet (DEIS p. 1–S–4–5). The outlet would reduce the chance that Devils Lake would reach elevation 1,459 feet where it would begin to overflow to the Sheyenne River from 9.4 percent to 4.1 percent (DEIS p. 5–71). "Devils Lake would have to rise to 1,460.6 before there would be a significant flow (at least 300 cfs) to the Sheyenne River" (DEIS p. 2–9), and the proposed Pelican Lake 300 cfs outlet would reduce the chance of that occurring by 2 percent, from 4 percent without the outlet to 2 percent with the outlet (DEIS Appendix B, Table II.ST–2, p. B–195). However, the 1 percent chance that Devils Lake would reach elevation 1,463 feet where the damages would be the greatest (DEIS p. 2–9, 5–71–84; Appendix C, p. C–124) still remains at 1 percent even if the Pelican Lake 300 cfs outlet is built (DEIS Appendix B, Table II.ST–2, p. B–195). Thus, the outlet would do virtually nothing to prevent the most serious damages resulting from an overflow of Devils Lake at 1,463 feet.

Under the "wet future scenario," the lake would continue to rise another 10 feet from the January 2002 elevation of 1,447.1 feet to 1,457 feet even with the outlet in operation (DEIS p. 5–89), and with any significant increase in precipitation from the 1993 to 1999 average, it also would overflow to the Sheyenne River (see The Wet Future Scenario—Fantasizing Feasibility below). Moreover, as pointed out above, during a "wet future scenario" when the Sheyenne River already has high flows, the operation of the outlet would have to be constrained below its maximum capacity, in which case it would be even less effective in preventing the lake from continuing to rise above 1,457 feet, or, if operated at maximum capacity, it would result in even more severe downstream impacts on the Sheyenne River. Consequently, the proposed Pelican Lake 300 cfs outlet is technically unsound on its face.

According to the DEIS:

"Therefore, there is about a 75 percent chance that if an outlet were built it would not be economically beneficial. (DEIS p. 1–S–5)

"The outlet plan that has been preliminarily selected for design is not economically justified using methods that would determine expected net benefits by producing probability-weighted benefits and costs. (DEIS p. 1–S–7)

"The outlet alternative under the stochastic analysis with the highest benefit-cost ratio (although it is not shown to be economically justified) is the Pelican lake 300 cfs outlet." (DEIS p. 4–3)

The benefit-cost ratio for the proposed Pelican Lake 300 cfs outlet under the stochastic analysis is 0.37 (DEIS Table 4, p. 4–2). This is even less than the 0.69 benefit-cost ratio of taking no additional action whatsoever in the Devils Lake Basin to protect the local infrastructure (DEIS p. 3–24, Table 4, p. 4–2). The benefit-cost ratios for the other outlet alternatives considered are: West Bay 300 cfs outlet = 0.28, West Bay 480 cfs outlet = 0.01, Pelican Lake 480 cfs outlet = 0.10, Pelican Lake Bypass 480 cfs-PL 2 = 0.14, Pelican Lake Bypass 480 cfs-PL3 = 0.21, and East End Outlet = 0.02 (DEIS Table 4, p. 4–2)

The Energy and Water Development Appropriations Acts for fiscal years 1998, 1999, 2000 and 2001 specify:

"That the economic justification for the emergency outlet shall be prepared in accordance with the principles and guidelines for economic evaluation as required by regulations and procedures for the Army Corps of Engineers for all flood control projects, and that the economic justification be fully described, including the analysis of the benefits and costs, in the project plan documents." (DEIS p. 1–2)

The DEIS states that:

"The Corps of Engineers traditionally recommends plans that show the greatest expected net benefits, where benefits exceed costs based on the probability of events. As a standard process under the Principles and Guidelines, this is referred to as the National Economic Development, or NED, plan. A stochastic approach was used for economic evaluation. The benefit-cost ratio of the best outlet plan incorporating probabilities of occurrence is 0.37." (DEIS Abstract)

The proposed Pelican Lake 300 cfs outlet, therefore, is without economic justification under the law, as well as under the Corps' own Principles and Guidelines. Consequently, the Corps has no alternative under the law except to recommend that the outlet not be built.

HIDDEN COSTS

The DEIS lists the Total First Cost of the proposed Pelican Lake 300 cfs outlet as $97,651,000 (DEIS Table 3, p. 3–23) and the Total Costs at $117 million (DEIS Table 4, p. 4–2) to $125 million (DEIS Table 6, p. 4–13). However, because the lake would continue to rise under the "wet future scenario" even with the outlet (DEIS p. 5–86), it still would be necessary to incur the additional costs of implementing infrastructure protection measures (DEIS p. 5–89), including raising the levees protecting the city of Devils Lake, relocating homes, building temporary levees, raising selected roads and railroads, and protecting or relocating utilities (DEIS p. 3–9).

The DEIS estimates these additional infrastructure protection costs under the "wet future scenario" without the outlet and the lake reaching 1,460.6 feet (DEIS Table B, p. 1–S–4) at $585 million (DEIS Table 6, p. 4–13). With the outlet in operation and the lake reaching 1,457 feet, (DEIS p. 5–86)—just 2 feet below overflow elevation, it might be assumed that these infrastructure protection costs still could reach $300 to $400 million. Therefore, the total cost of implementing the Pelican Lake 300 cfs outlet plus the associated infrastructure protection for a lake level of 1,457 feet required with this alternative is not the $125 million shown in the DEIS, but likely is in the range of $425 to $525 million.

THE WET FUTURE SCENARIO—FANTASIZING FEASIBILITY

In outlining the rationale for evaluating alternatives under a "wet future scenario," the DEIS explains that:

"The stochastic modeling was based on an assumption of the stationarity of the climate. Because of the uncertainty of and the differing scientific opinions regarding future climatic conditions in the Devils Lake basin, a scenario based analysis was also performed. In situations of uncertainty, the Principles and Guidelines allow for development of alternative future conditions, or scenarios. This scenario based analysis was used to specifically address potential solutions to the problems in the basin if the recent wet conditions continue. (DEIS Abstract)

"The scenarios for Devils Lake include the WET future, the moderate trace 1,445, an even more moderate trace 1,450, and a DRY future. The WET future assumes

that the years 1993 to 1999 would occur for two cycles. At this point the lake would reach the overflow elevation of 1,459 in the year 2014. The period 1993 to 1999 is repeated again to generate overflow and then the years 1980 to 1990 to finish out 50-years. The WET future was necessary to assess the impacts of a natural overflow from Stump Lake to the Sheyenne River. (DEIS Appendix A, p. A–21).

"The wet future scenario analysis evaluated one set of 50-year lake levels that is based on very recent climatic conditions for the years 1993–1999. The wet future scenario repeats the climatic and hydrologic conditions for the seven highest inflow years in recent history (1993–1999) for three cycles, causing the lake to overflow. The remaining years of the 50-year cycle were defined assuming climatic and hydrologic conditions similar to 1980 through 1999, and then 1980 through 1990, to complete the 50-trace." (DEIS p. 3–5)

The DEIS offers no evidence and makes no claim that the "wet future scenario" provides a more reliable—or even remotely more realistic—analysis of future lake conditions than the stochastic analysis. On the contrary, the DEIS points out that:

"The duration of the recent wet conditions cannot be determined definitely because of the complex interactions between global weather factors. (DEIS Appendix A, p. 1–18)

"As indicated by the regional Weather Information Center, climatic conditions during 2000–2015 are expected to be similar to conditions during 1980–1999. (DEIS Appendix A, p. 1–18)

"No one can know or predict with confidence climate 50 years into the future. The National Academy of Sciences (NAS) provided guidance for another study (citation omitted) on analysis when the future is uncertain. They warn that, *'Failure to deal explicitly with uncertainty leads the unwary to have far too much confidence in the resulting forecast and analysis, which can lead to bad public decisions* [emphasis added] . . .' (DEIS Appendix A, A–20)

"While the use of a wet future scenario may provide insight into potential benefits of the outlet alternatives, such an analysis provides little assurance as to the soundness of such an investment, since it is tied to the unlikely assumption that a particular scenario will ever occur. (DEIS p. 4–40)

"The probability of the scenario future occurring is practically zero because it is an artificial scenario. (DEIS p. 5–88)

"The alternatives were evaluated using an alternate future without conditions, which assumes a continued wet climate scenario based on the climate sequence from 1993 through 1999 repeated until a natural overflow to the Sheyenne River occurred. The probability that the lake will rise exactly in this way is zero." (DEIS p. 5–71)

Thus, the "wet future scenario" has nothing to do with reality, but is simply a set of manufactured conditions specifically created to result in just enough precipitation over a 21-year period to cause the lake to overflow without the Pelican Lake 300 cfs outlet, but not so much that the lake would still overflow even with the outlet. But, of course, "The probability that the lake will rise exactly in this way is zero" (DEIS p. 5–71). Nevertheless, proponents of the outlet cite this artificially contrived scenario as justification for building the outlet. For example:

"The key to getting a Devils Lake outlet, one official says, is to persuade the Army Corps of Engineers [to] accept a so-called 'wet-cycle scenario.'

"Ramsey County Commissioner Joe Belford said that if the Corps accepts the premise that the wet cycle of the last 8 years will continue for another 10 years or more, the project easily would meet Federal benefit-cost requirements." (Associated Press, 2002b)

Of course, the Corps cannot accept a premise that the wet cycle of the last 8 years (2001 was not a wet year in the Devils Lake Basin) will continue for another 10 years because it is without valid scientific foundation. However, rather than dealing with the matter on a rational, factual basis:

"Mike Connor, manager of the Devils Lake Basin Joint Water Board said . . . 'I think it's time for people to holler a little bit . . . Well, maybe not a little bit, maybe a whole lot.'" (Associated Press, 2002b)

Unfortunately, this has been the approach universally employed by proponents of an outlet from Devils Lake since the lake began its rapid rise in 1993. The Corps, however, is obligated to take a more responsible approach, and it is required under NEPA to recognize and respond substantively to the National Academy of Sciences' admonition that failure to deal explicitly with uncertainty leads the unwary to have far too much confidence in the resulting forecast and analysis, which can lead to

bad public decisions. The proposed outlet from Devils Lake reflects precisely such a failure to deal explicitly with uncertainty leading the North Dakota congressional delegation, the Governor, the State Water Commission and other unwary proponents of the outlet to have far too much confidence in the "wet future scenario" and, therefore, to advocate a bad public decision.

According to the DEIS:

"To better understand the sensitivity of assumptions used for future lake conditions, both with and without project, the alternatives were evaluated in comparison to other possible conditions." (DEIS p. 3–24).

Those conditions were (1) No Action Protection Strategy, (2) Moderate Future Scenarios, (3) Erosion of Natural Outlet, and (4) Proposed Temporary Outlet as Part of Future Conditions (DEIS pp. 3–24–25). However, the DEIS does not provide a sensitivity analysis of the proposed Pelican Lake 300 cfs outlet itself under a "wet future scenario." As noted above, the "wet future scenario" is a manufactured set of conditions specifically contrived to result in just enough precipitation over the next 21 years to cause the lake to overflow without the outlet, but not so much that it would still overflow even with the outlet. Therefore, it would be helpful to the public and to decisionmakers in understanding the tenuous nature and dubious relevance of the "wet future scenario" for the Corps to perform a sensitivity analysis of the outlet itself to show the effect on the efficacy and benefits of the proposed outlet of variations from the specific "wet future scenario" conditions outlined in the DEIS. For example, at elevation 1,457 feet, the "expected lake stage" with the proposed Pelican Lake 300 cfs outlet after the first 14 years of the "wet future scenario" (DEIS Table B, p. 1–S–4; Appendix A p. A–21), the lake would have a surface area of approximately 230,000 acres (interpolated from DEIS Figure 7, p. 2–6). Annual inflows to the lake from 1993 to 1999 averaged 317,000 acre-feet (DEIS p. 1–5) and precipitation, which averaged 21.0 inches from 1993 to 1999 (WEST Consultants, Inc., 2001) would contribute another 402,500 acre-feet to the 230,000 acre lake, for average total annual accruals of 719,000 acre-feet. Evaporation, which averaged 29.0 inches, or 2.42 feet, during the period (WEST Consultants, Inc, 2001), would remove 319,440 acre-feet, and the outlet, operating at maximum capacity for 7 months would remove another 126,000 acre-feet, leaving a net gain of 36,900 acre-feet per year under the "wet future scenario."

If average annual precipitation in the Devils Lake Basin under the "wet future scenario" were to increase by 1 inch (5 percent) above the 1993–1999 level, average annual inflows might be expected to increase from 317,000 acre-feet to 332,850 acre-feet and direct precipitation on the lake would increase from 402,500 acre-feet to 420,900 acre-feet, for an increase in total average annual accruals to 753,750 acre-feet. Evaporation would remove a little more than 319,440 acre-feet because the surface area of the lake would be a little larger, but the outlet still would remove only 126,000 acre-feet, leaving a net gain of about 71,000 acre-feet, or about 3.7 inches, per year, bringing the lake dangerously close to the overflow elevation of 1,459 feet by the end of the third 7 years of the "wet future scenario." An increase in average annual precipitation under the "wet future scenario" of 2 inches (10 percent) would result in an overflow to the Sheyenne River even with the proposed Pelican Lake outlet operating at full capacity, thus negating much of the assumed benefit of the outlet.

Similarly, a decease of 1 inch (5 percent) in average precipitation from the "wet future scenario" would not result in significant overflows to the Sheyenne River even without the proposed outlet, and a decrease of 2 inches (10 percent) would result in virtually no overflow, again negating much of the assumed benefit of the outlet.

Paradoxically, the DEIS cites the impossibility of predicting future lake levels with certainty as the reason for employing the "wet future scenario" (DEIS Abstract) and to justify the proposed outlet (DEIS p. 1–S–8), but it ignores the fact that realization of the anticipated benefits of the proposed outlet presumes an ability to predict future lake levels with virtual absolute certainty, because any significant deviation from the "wet future scenario" would substantially diminish or negate those benefits.

THE $125 MILLION LOTTERY TICKET

The DEIS attempts to rationalize a justification for the proposed outlet in the face of such climatic uncertainty (DEIS p. 1–S–4–10; Appendix A, p. A–9–18) and tenuous benefits (DEIS p. 5–71) by suggesting that:

"Given the uncertainty and controversy around the ability to forecast future lake stages, a decision to proceed with an outlet must consider risk aversion. Instead of

relying on the probability analysis, one could view the construction of an outlet as an insurance policy, rather than as an investment." (DEIS p. 1–S–3)

The analogy, however, is patently invalid. An insurance policy is not a guarantee that an adverse event will not occur, but rather provides compensation if the event should occur. The proposed Pelican Lake 300 cfs outlet does neither. It does not guarantee that the lake will not continue to rise—under the "wet future scenario" it would (DEIS p. 5–86)—or that it would not overflow to the Sheyenne River—it could (DEIS p. 5–89), nor does it provide any compensation if either of these occurs. Consequently, rather than viewing the proposed Pelican Lake 300 cfs outlet as an insurance policy as the DEIS suggests, it should more accurately be viewed as a $125 million (DEIS Table 6, p. 4–13) lottery ticket—with virtually no chance of winning (DEIS pp. 4–40, 5–71, 5–88).

EROSION OF THE NATURAL OUTLET—INDULGING GEOLOGIC FICTION

The DEIS states that:

"A sensitivity analysis was conducted assuming the natural outlet would erode and no actions would be taken to prevent it. The analysis is based on the materials present at the site and not on a determination if it actually eroded in the past. There is evidence and some debate if it did erode in the past or did it actually accrue sediment. Materials at about 7 feet are over 7,000 years old. Devils Lake is estimated to have spilled to the Sheyenne River within the last 1,200 years; therefore, it did not erode at that time." (DEIS p. 5–90; Appendix C, p. 129).

Nevertheless, the DEIS then goes on to describe the impacts that would occur if the natural outlet were to erode:

"It the outlet were allowed to erode, the effects would be much more significant. It is estimated that the outlet would erode down to elevation 1,450 feet with a maximum discharge of about 6,000 cfs and erosion of over 400,000 cubic yards of material . . .

"Downstream effects resulting from the erosion of the natural outlet would be significant. There would be increased sedimentation in the Sheyenne River and Lake Ashtabula. Erosion would also increase in the Sheyenne River. There would be substantial effects to the downstream aquatic resource on the Sheyenne and Red Rivers. High flows, changed water quality, sedimentation, erosion, increased groundwater levels, and overbank flooding would result in the loss of aquatic and riparian habitats. Aquatic biota and terrestrial wildlife populations in the riparian zone would be totally modified." (DEIS p. 5–90; Appendix C, p. 129)

However, in discussing erosion of the natural outlet, DEIS Appendix B states that:

"Based on the most recent surveys, overflow from Stump Lake occurs when the lake level reaches an elevation of 1,459.1 feet. This analysis indicates that the outlet control point would slowly be eroded, with the maximum potential erosion occurring down to 1,450.8.

"Under this analysis, a peak discharge of 1,440 cfs was expected to occur during year 17. (This compares to a peak discharge of only 206 cfs when no erosion of the Tolna Coulee is assumed.) . . ." (DEIS Appendix B, p. B–25)

Whether the peak discharge would be 6,000 cfs or 1,440 cfs, because the potential impacts identified with erosion of the natural outlet 9 feet (or 8 feet) from its current elevation of 1,459 feet to 1,450 feet (or 1,450.8 feet) are so dramatic, it is appropriate and instructive to consider further the likelihood of this occurring.

The DEIS states that the materials at 7 feet (elevation 1,452 feet) are over 7,000 years old and that the last overflow is estimated to have occurred within the last 1,200 years, so the outlet did not erode at that time. However, this overlooks a substantial portion of the geologic evidence regarding the absence of erosion of the natural outlet in past overflow events. For example, Murphy et al. (1997) report that:

"Sufficient sedimentological evidence exists from the Tolna Outlet to document *at least six times* [emphasis added] in the Holocene (the last 10,000 years BP [Before Present]) when water from the Devils Lake/Stump Lake system overflowed into the Sheyenne River."

and they cite evidence of five overflow events occurring between 7,500 and 9,500 years ago and four occurring between about 700 and 5,000 years ago, including one that apparently lasted for several hundred years, for a total of nine overflow events in the past 10,000 years since Devils Lake was formed by the Wisconsin Glacier (Murphy et al., 1997). In fact, the sediments in Tolna Coulee 6 feet down at ele-

vation 1,453 feet are over 5,000 years old and those 8 feet down at elevation 1,451 feet are over 7,400 years old (Murphy et al., 1997) Therefore, with materials at 1,453 feet being over 5,000 years old and those at 1,451 feet being over 7,400 years old, it is clear that the outlet did not erode to elevation 1,450 feet during any of at least four overflow events that have occurred in the last 5,000 years. In fact, with the sediments at 1,458.5 feet—a half foot below the current overflow elevation of 1,459 feet—being over 1,100 years old, it is evident that virtually no erosion of the outlet occurred during the last overflow event about 700 years ago (Murphy et al., 1997).

The geologic evidence indicates that, rather than the outlet eroding during overflow events, the trend has been exactly the opposite, with deposition of sediment during overflow events building up the outlet. As Murphy et al. (1997) point out:

"Evidence of at least seven fluvial events has been preserved in the channel fill deposits of [Tolna Coulee] trench TT1. Fluvial events are marked by layers of coarse grained sediments *presumably washed into the Coulee by water flowing from Stump Lake. These sediments were deposited at times when water levels in Devils Lake were sufficiently high to cause water to flow into the Sheyenne River through Tolna Coulee.* [emphasis added] It is likely that additional flood events occurred in this Coulee, but are not recorded in the sediments at this site. The sedimentological evidence is missing either because floods were of insufficient size and duration, or because it was removed by the scouring action of subsequent flood events."

However, Murphy et al. (1997) cite no geologic evidence, and the DEIS cites no other evidence, of sediments having been scoured from the outlet during overflow events. Therefore, if additional overflow events did occur, it is more reasonable to conclude that they were minor and did not result in either significant erosion or sedimentation of the channel. Examination of the data presented by Murphy et al. (1997) provides further support for this conclusion. For example, at a second site in the Tolna Coulee, snail and clam shell fragments were found in 3,500 to 4,500 year old sediments between elevation 1,455 and 1,456 feet (Murphy et al., 1997). Although it is possible that these could have been deposited in a former isolated wetland at the sampling site in Tolna Coulee, it is equally possible that they were incorporated in sediments deposited during an overflow event or events. The fact that snail and clam shell fragments were found at seven different strata dating from 7,000 to 8,000 years ago at the two sampling sites (Murphy et al., 1997) would suggest that their deposition was related to events occurring on a larger scale than the appearance of isolated wetlands. In any case, the presence of these shell fragments in 3,500 to 4,000 year old sediments 3 to 4 feet below the current overflow elevation of 1,459 feet provides additional evidence that significant erosion of the outlet has not occurred in any of at least three overflow events that have occurred over the last 2,500 years, and that overflows actually resulted in aggregation rather than erosion of the outlet.

A revised DEIS should expand its discussion of the probability of the natural outlet at Tolna Coulee eroding if Devils Lake should overflow by pointing out that there is no evidence in the geologic record to indicate that significant erosion of the outlet has occurred during any of at least four overflow events that have occurred in the past 5,000 years, or in any of the nine overflow events that have occurred since Devils Lake was formed 10,000 years ago. The DEIS should also point out that the evidence from the geologic record shows that, instead of resulting in erosion of the outlet, overflow events tend to deposit sediment in the outlet, causing the overflow elevation to increase. A revised DEIS should make it absolutely clear that there is no evidence in the geologic record to support speculation that an overflow would cause the outlet to erode 9 feet to elevation 1,450 and result in the discharge of up to 6,000 cfs of water to the Sheyenne River with the erosion of over 400,000 cubic yards of material.

Not only is there no evidence in the geologic record that significant erosion of the outlet would result if an overflow occurred, but the probability of an overflow occurring is, itself, very small. The probability that Devils Lake will reach elevation 1,459 feet is 9 percent and the probability that it will reach elevation 1,460 is 7 percent (DEIS Appendix B, Table II.ST–2, p. B–195).

However:

". . . Devils Lake would have to rise to 1,460.6 before there would be a significant flow (at least 300 cfs) to the Sheyenne River . . . Computer simulations of possible future lake levels assumed no erosion of the natural divide and suggest a probable maximum lake level of about 1,463, with a corresponding outflow exceeding 2,500 cfs . . ." (DEIS p. 2–9)

Elsewhere, the DEIS states that the peak discharge with no erosion of the outlet would be only 550 cfs (DEIS p. 4–34), and the Fish and Wildlife Service points out in Appendix 2 that analysis of Corps data for a 6-year flood event and a Standard Project Flood (SPF) event revealed that:

"The 6-year outflow showed that the maximum outflow out of the basin within the first 24 months was in month 18, with a maximum outflow of 80 cfs, with a 24 month average of 61 cfs. The SPF outflow showed a maximum of 1,196 cfs in month 6, with a 24 month average of 463 cfs." (DEIS Appendix 2, p. 14–6)

The probability that Devils Lake will rise to 1,463 feet is only 1 percent and the probability that it will rise to 1,460.6 is about 5 percent (DEIS Appendix B, Table II.ST–2, p. B–195). Consequently, the probability that Devils Lake will rise to a level where significant overflows would occur is extremely low, and construction of the proposed Pelican Lake 300 cfs outlet would reduce that probability by half but would not eliminate it—and it would not reduce the 1 percent chance the lake will reach 1,463 feet at all (DEIS Appendix B, Table II.ST–2, p. B–195).

As the DEIS points out:

"The probability of a natural overflow is small and therefore effects described under the scenario future without project conditions for downstream effects of a natural overflow do not have a high probability of occurring. (DEIS p. 5–88)

"Since the probability of a natural overflow to the Sheyenne River is relatively low (less than 10 percent), a natural overflow is not assumed to be part of the most likely future." (DEIS p. 4–12)

Finally, in the unlikely event that Devils Lake would rise to elevation 1,459:

". . . measures at the location of a natural overflow to minimize erosion were also considered as potential features of the most likely future without the proposed project." (DEIS p. 3–9)

and:

"One of the assumptions for the base condition upon which alternatives were compared was that measures would be taken at the location of a natural overflow to minimize erosion . . . The structure envisioned with that alternative included a 380-foot-wide concrete drop structure, with a cost for the structural portion of $1.1 million." (DEIS p. 4–33)

Thus, (1) the probability that Devils Lake will overflow is very low, (2) if Devils Lake were to approach the overflow elevation, measures would be implemented to prevent erosion of the natural outlet and (3) even if Devils Lake were to overflow and no measures were taken to protect the natural outlet, there is no evidence in the geologic record to indicate that significant erosion of the outlet would occur. Consequently, the discussion of erosion of the natural outlet in the DEIS is entirely speculative and has little relevance, and a revised DEIS should make that clear.

WETLANDS, WETLAND DRAINAGE AND WETLAND RESTORATION

A fundamental deficiency of the DEIS is its narrow focus on engineering solutions to the problems resulting from the rising level of Devils Lake, to the total exclusion of any consideration of the cause. For example, the DEIS fails to relate those problems to Devils Lake's long and consistent history of wide fluctuations in levels, ranging from completely dry at 1,394 feet to overflowing at 1,459 feet (DEIS p. 2–2). The DEIS does not address the fact that, despite widespread recognition that the lake was at its current level as recently as 1830 and was officially recorded at elevation 1,438.4 feet in 1867, development was permitted to encroach on the bed of the lake as the level continued to decline to its modern day low of 1,400 feet in 1940; development was permitted to continue on the bed of the lake as the level began to rise again after 1940; it was permitted to continue even after 1983 when the lake had reached 1,427 feet with a surface area of 54,000 acres and the State was seeking disaster assistance from the Corps for "flooding problems" around the lake; and it even has been permitted since the lake began its recent dramatic rise in 1993. The DEIS does not recognize the simple fact that the "flooding problem" at Devils Lake is the direct result of people moving onto the bed of the lake which has been higher than its current level in the past.

Although increased levels of precipitation from 1993 to 1999 (average of 21 inches per year, compared with an average of 16.5 inches per year from 1980 to 1992 [WEST Consultants, Inc., 2001]) obviously were the force driving the recent dramatic rise of the lake, the DEIS does not make any attempt to identify the contribu-

tion of other factors, such as land use changes and wetland drainage in the Devils Lake Basin, in exacerbating the rise of the lake.

Water Resource Management in the Devils Lake Basin

In his Final Biennial Report for 1911–1912, the North Dakota State Engineer reported to the Governor that:

"The water level of any lake possessing no outlet depends on the amount of evaporation, seepage, rainfall and run-off into the Lake from the drainage area tributary to it. The drainage area of Devils Lake is nearly 2,000 square miles, but the land lies so nearly level, and there are so many marshes, meadows, small ponds and lakes which arrest the flow of the water and from which it evaporates that it is not likely that the run-off from more than 700 to 800 square miles of the total area ever reaches the lake." (State Engineer, 1912)

Unfortunately, management of water resources in the Devils Lake Basin since that time has been characterized by decades of rampant and unregulated private wetland drainage and ill-considered public agricultural drainage projects (Pearson, 1985). For example, in the mid-1950s when wetland drainage began causing problems for landowners lower in the watershed, the NDSWC placed a moratorium on private drainage in the Devils Lake Basin, but the State Engineer made no attempt to enforce the moratorium and the chairman of a local water board even declared publicly that farmers would continue to drain wetlands regardless of State laws and the NDSWC's moratorium (Pearson, 1985).

With agricultural flooding problems north of Devils Lake intensified by wetland drainage in the upper basin, the U.S. Soil Conservation Service was authorized in 1967 to begin detailed planning of a 246,477-acre Starkweather Watershed Project, involving the construction of more than 60 miles of channels and the drainage of some 60,000 additional acres of prairie wetlands and lakes, with the 2,000 cfs main channel (Channel "A") discharging directly into Six-Mile Bay of Devils Lake (Pearson, 1985). However, the Soil Conservation Service abandoned the project in 1973 after environmental impact analyses mandated by NEPA disclosed the project's severe adverse impacts on wetlands and water quality in Devils Lake (Pearson, 1985).

An Associated Press story in 1975 already was reporting flooding problems at Devils Lake:

" . . . But today too much water plagues the lake and nearby residents.

"Between 1972 and 1975, the lake rose 6 feet [to 1,425 feet], becoming a threat to low-lying roads and private property along the shore.

"In the dry period, roads were built across narrow parts of the lake bed; farmers planted and harvested below the old high water mark; and the city of Devils Lake expanded into part of the old lake bed.

"Now the city is planning to build a dike between the lake and the town and the Army Corps of Engineers is working with local officials to plan for a possible flood during spring runoff.

"A heavy runoff could raise the water level 1 or 2 feet and flood businesses and private property, city and State authorities said.

"The State Highway Department says North Dakota 57, at the narrows between the main lake and East Bay, has been damaged by high water . . .

"County and township roads also have been damaged by high water . . ." (Zaleski, 1975)

With flooding problems in the watershed and around Devils Lake unresolved and the Starkweather Watershed Project stalled, the 1975 North Dakota Legislative Assembly established a Devils Lake Basin Advisory Committee, dominated by drainage interests and supported by the NDSWC, to study water management problems in the Devils Lake Basin and to recommend solutions (Pearson, 1985). However, at the same time, the Legislative Assembly appropriated $600,000 for the construction of the 2,000 cfs Channel "A" of the Starkweather Project, thereby precluding any possibility of the committee's not including this feature in its recommendations (Pearson, 1985). Although the cost participation agreement for Channel "A" between the NDSWC and the Ramsey County Water Management District explicitly stated that:

"It is the determination of the Commission that additional drainage of presently noncontributing areas will significantly contribute to increased lake levels in the Devils Lake chain, thereby increasing the flood hazard potential to the city of Devils Lake and to thousands of acres of littoral land."

and required the Ramsey County Water Management Board to enforce all applicable drainage laws, noting:

"Specifically, this includes the establishment of an effective drainage permit program to implement section 61–01–22 of the North Dakota Century Code (or any other similar statutory permit program hereafter enacted) and any supplementary regulations adopted by the Commission. Further, this includes the establishment of a procedure for closure of unauthorized drains, lateral drains, or ditches as required by section 61–16–50 (or any similar statute hereafter enacted). An effective drainage regulatory mechanism is essential to preserve the integrity of Channel 'A' and the investment of the State."

The State drainage laws required a permit for the drainage of watersheds 80 acres or larger and a permit was not to be issued unless an investigation determined that the quantity of water drained would not flood or adversely affect downstream landowners. However, county water boards typically take the position that it is not their job to be policemen and will take action on violations only if formal complaints are filed (Pearson, 1985). Consequently, both the county water boards and those who want to drain wetlands routinely ignore the permit requirement. Because landowners generally are reluctant to file complaints against neighbors (Associated Press, 1991), only the most egregious violations are reported (Pearson, 1985). When complaints are filed, they are then routinely dismissed (1) as being "clean-outs" of existing drains, a claim that is difficult to disprove after the fact, (2) as involving watersheds of less than 80 acres, either by arbitrary decision of the board or the expedient of two or more drains being used to drain the watershed, (3) by simply denying that drainage has occurred, or (4) ordering perfunctory closures while permits are issued after the fact (Pearson, 1985). If the complaint cannot be dismissed readily through these ploys, the boards frequently will repeatedly delay action until the complainant finally gives up in frustration. Consequently, little effort was made by either the Ramsey County Water Management Board or the NDSWC to enforce the agreement, and, in fact, between 1977 and 1982, the State Engineer himself approved a dozen drainage permits in the Starkweather and Edmore Watersheds, both of which drain through Channel "A" (Pearson, 1985).

Despite mounting concern over the rising levels of Devils Lake in the mid-1970s (Zaleski, 1975), the State Engineer approved a permit in 1976 for the partial drainage of Hurricane Lake, an area heavily used by migrating snow geese, adding another 7,000 acre-feet of water to Devils Lake (Pearson, 1985). Then during the spring and summer of 1979 when Devils Lake was rising from elevation 1,422 feet to 1,427 feet, 74,000 acre-feet of water were discharged into the lake from Channel "A" (U.S. Army Corps of Engineers, 1980). These flows were equal to nearly half of the 159,000 acre-feet flowing into West Bay from Mauvais Coulee (U.S. Army Corps of Engineers, 1980), which historically had been the primary route of inflows into the Devils Lake Chain (U.S. Army Corps of Engineers, 1983). In fact, on May 4, 1979, with Devils Lake at 1,424.6 feet, the 1,560 cfs discharge from Channel "A" exceeded the 1,350 cfs natural flows at Mauvais Coulee (U.S. Army Corps of Engineers, 1980).

By 1981, the rising lake was creating problems at the city of Devils Lake's new industrial park, which one city official admitted privately was in an area that "is too low to begin with" (Zaleski, 1981).

In the spring of 1982, at the same time the Ramsey County Commission was petitioning to have Devils Lake declared a disaster area because of flooding that was occurring as the lake reached a level of 1,427 feet (Associated Press, 1982), the Ramsey County Water Management Board, which operates Channel "A," had the control gates open to permit the discharge of additional water into Devils Lake (Pearson, 1983).

A year later, in the spring of 1983, while the State was seeking disaster assistance from the Corps for flooding problems around Devils Lake, the Ramsey County Water Management Board, without the required permit from the State Engineer, constructed a ditch from Lake Irvine to drain up to another 6,000 acre-feet of water into Devils Lake, and then a few months later approved a permit to drain Morrison Lake into Devils Lake (Pearson, 1985).

The attitude of drainage proponents in the face of the escalating problems created by the rising level of Devils Lake was still being expressed 2 years later in 1985 by Ramsey County Water Resource Board chairman and Devils Lake Basin Advisory Committee member Robert Garske:

"Wetland drains are a 'round robin' that profit both farmers and businessmen, Garske said. Farmers can raise wheat instead of ducks on drained wetlands, and businessmen profit from more customers drawn to the Devils Lake fishery, which runoff water supports by keeping the lake from getting too salty and killing the fishery, he said.

"'Rather than trying to hold (water) back, we need to figure out how to get more in,' Garske said." (Buttz, 1985)

That attitude has not changed. At an August 26, 2000, public meeting in Valley City, North Dakota, on the State of North Dakota's proposed "temporary" emergency outlet from Devils Lake, former North Dakota State Engineer David Sprynczynatyk stated that his office would resume issuing permits for wetland drainage in the Devils Lake Basin as soon as the outlet is built.

At a June 22, 1983, public meeting held by the Corps on water related problems in the Devils Lake Basin, the North Dakota Chapter of The Wildlife Society reviewed the history of water resource mismanagement in the Devils Lake Basin and recommended that the Corps (1) place a ban on further wetland drainage in the basin, (2) initiate a study of the impacts of current water management practices on Devils Lake, (3) conduct a comprehensive hydrologic investigation to identify the factors contributing to flooding and other water resource problems in the basin, (4) assume leadership in developing a comprehensive water resource management program for the basin, and (5) reject the alternative of an outlet to the Sheyenne River and require that water management problems be resolved within the basin (Pearson, 1983). However, nearly two decades later, the Corps still has done none of these, but instead remains focused on the construction of an outlet from Devils Lake to the Sheyenne River, while still not having done the studies necessary to determine the causes of the problem it purports to solve.

Wetlands and Wetland Drainage in the Devils Lake Basin

Although the DEIS acknowledges that wetland drainage in the Devils Lake Basin is an issue that was raised in the scoping process (DEIS Appendix C, p. C–102), it makes no attempt to address the issue. In describing the Base Conditions/Affected Environment, the only information related to wetlands provided in the DEIS is:

"Wildlife in the Devils Lake basin is closely associated with water and wetlands. Shallow water wetland habitats are clearly the most valuable habitat for waterfowl. Many wildlife and waterfowl species utilize lakes in the Devils Lake chain and surrounding habitats. Stump Lake has long been known as an excellent staging and breeding area for waterfowl and shorebirds. In 1905, President Theodore Roosevelt declared a portion of the west bay of Stump Lake as a National Reservation, making it one of the oldest refuges in the Nation." (DEIS p. 2–14)

and in Appendix C, the DEIS states, regarding Base Condition—Upper Basin, that:

"Wetland habitats of Devils Lake and its watershed can be grouped into broad categories which provide several functions and values unique to wetlands such as flood water storage, habitat for wildlife, filtering of polluted water, and groundwater recharge. Most of the wetlands in the basin can be classified as palustrine, emergent, temporarily, seasonally and semipermanent flooded wetlands. The upper basin chain of lakes can be described as lacustrine." (DEIS Appendix C, p. C–20)

There is no discussion of the numbers and acreages of the different types of wetlands originally in the Devils Lake Basin, no discussion of the numbers, acreages and types of the wetlands that have been drained and their flood water storage capacity, and no discussion of the contribution of that drainage to the rise in Devils Lake. In fact, the only substantive information on wetlands and wetland drainage is in the Fish and Wildlife Coordination Act Report, which is Appendix 2 to the DEIS. Here the reader learns that the Corps initiated an evaluation of upper basin storage in 1999 and that the evaluation was conducted by WEST Consultants, Inc., of San Diego, California (DEIS Appendix 2, p. 10–1). The reader also learns here that the study by WEST Consultants identified 200,000 acres of intact wetlands and 92,000 acres of drained wetlands, but the study covered only 68 percent of the Devils Lake Basin (DEIS Appendix 2, p. 10–2–3). In addition, the digital evaluation model used by WEST Consultants employed a 5-foot contour for 65 percent of the upper basin and a 10-foot contour for the remaining 35 percent that was studied, resulting in a failure to identify many drained wetlands (DEIS Appendix 2, p. 10–3). WEST Consultants also supplemented the digital evaluation modeling with National Wetland Inventory maps based on 1979 and 1983 photography (DEIS Appendix 2, p. 10–3), but nearly 100,000 acres of wetlands already had been drained in the Devils Lake Basin by 1975 (TPI Consultants, Inc., 1976), so many of those also would have been missed.

"As a result, it's likely that a significant number of drained depressions were never included in this study due to the limitations of the DEM data, a fact that WEST acknowledges." (DEIS Appendix 2, p. 10–3)

Because of the difficulty in accurately identifying drained wetlands, a more reliable method is to compare the acreage of remaining wetlands in the Devils Lake Basin with the original wetland acreage in the basin. Hydric soils develop under saturated or flooded conditions which support the growth of hydrophytic vegetation and, therefore, are an indictor of wetlands. Approximately 588,900 acres of hydric soils occur in the Devils Lake Basin (U.S. Fish and Wildlife Service, 1997). The Devils Lake Basin Advisory Committee, in a study authorized by the North Dakota Legislative Assembly and prepared with the assistance of the NDSWC and under the supervision of the Governor's Office, determined that 569,000 acres of wetlands originally were present in the Devils Lake Basin, and that 98,000 acres of wetlands had been drained in the basin by 1975 (TPI Consultants, Inc., 1976). Thus, it appears that from 569,000 to 589,000 acres of wetlands originally were present in the Devils Lake Basin.

Ludden et al. (1983), using photogrammatic mapping of selected areas of the basin, estimated that a total of 412,000 acres of drained and undrained wetlands were present. The Fish and Wildlife Service estimated in 1997 that there were 211,000 acres of undrained and 189,000 acres of drained wetlands in the Devils Lake Basin (U.S. Fish and Wildlife Service, 1997).

A July 14, 1998, letter from the North Dakota State Water Commission to the St. Paul District of the U.S. Army Corps of Engineers also reported that:

"Approximately 211,000 acres of wetlands exist in the Devils Lake basin including upper basin lakes, which comprise about 30,000 acres of the total."

The results of the study by WEST Consultants, Inc., are consistent with these figures. WEST Consultants identified 201,990 acres of "possibly intact" existing wetlands in the 68 percent of the Devils Lake Basin included in their study (WEST Consultants, Inc., 2001).

West Consultants also identified 92,429 acres of "possibly drained" wetlands in the 68 percent of the Devils Lake Basin included in their study (WEST Consultants, Inc., 2001). However, as noted above, the methods used in the WEST Consultants' study have been found to underestimate the acreage of drained prairie wetlands by 50 percent (DEIS Appendix 2, p. 4–2), so the 92,429 acres of drained wetlands identified in the WEST study likely reflect only half of 185,000 acres of drained wetlands in the 68 percent of the Devils Lake Basin included in their study.

Therefore, it may be concluded that a minimum of 189,000 acres to a maximum of 378,000 acres of wetlands have been drained in the Devils Lake Basin.

Contribution of Wetland Drainage to the Rise of Devils Lake

Although wetland drainage obviously is not the sole cause of the recent rise of Devils Lake, with inflows to the lake from 1993 to 1999 averaging 317,000 acre-feet (DEIS p. 1–5), the contribution of wetland drainage to those inflows clearly warrants careful evaluation.

Ludden et al. (1983) estimated the average depth of natural wetlands in the Devils Lake Basin at 7.1 inches in 2-year frequency runoffs, 11.8 inches in 10-year runoffs, 14.6 inches in 25-year runoffs, 15.7 inches in 50-year runoffs, and 18.5 inches in 100-year runoffs, with maximum average depths of 20.9 inches. The higher levels of precipitation and runoff in the Devils Lake Basin from 1993 to 1999 were preceded by 4 years of severe drought—comparable to the Dust Bowl days of the 1930s—from 1988 to 1992, so many of the wetland basins were dry and at near maximum potential storage capacity at the time the increased precipitation began in 1993. This would suggest, therefore, that as much as 328,860 acre-feet of water entered Devils Lake as a direct result of the lost storage capacity of 189,000 acres of drained wetlands in the basin. This is 2.6 times the volume that could be removed from the lake by the proposed Pelican Lake 300 cfs outlet operating at maximum capacity for 7 months from May through November. This does not include the continued annual inflow reductions that would have occurred if those wetlands had not be drained.

The U.S. Fish and Wildlife Service estimated the maximum storage capacity of the 189,000 acres of wetlands it determined had been drained in the Devils Lake Basin at 491,000 to 926,100 acre-feet (U.S. Fish and Wildlife Service, 1997). This is 3.9 to 7.4 times the volume that could be removed from the lake by the proposed 300 cfs outlet operating at maximum capacity for 7 months, and it also does not include the subsequent annual inflow reductions to the lake that would have occurred if those wetlands had not been drained.

WEST Consultants estimated the volume of the 92,429 acres of "possibly drained" wetlands they identified in the 68 percent of the Devils Lake Basin included in their study at 132,729 acre-feet (WEST Consultants, Inc., 2001). However, as noted above, the methods used by WEST to identify drained wetlands likely resulted in the ac-

tual acreage of drained wetlands being underestimated by 50 percent. Therefore, doubling the volume of the 92,429 acres of "possibly drained" wetlands identified in WEST's study results in a total of 265,458 acre-feet of lost initial storage capacity, and, consequently, added inflows to Devils Lake when the 1988–1992 drought ended in 1993, as a direct result of wetland drainage. This is 2.1 times the volume that could be removed from the lake by the proposed outlet operating at maximum capacity for 7 months, and it is over three times the volume that would be removed by the outlet in a typical year of operation. Of course, this also does not include the subsequent reductions in annual inflows that would have occurred if those wetlands had not been drained.

It is evident from these data that the drainage of 189,000 acres of wetlands in the Devils Lake Basin—the minimum estimate—resulted in 265,458 to 924,100 acre-feet of additional water initially reaching Devils Lake when the 1988–1992 drought was succeeded by unusually high levels of precipitation beginning in 1993. That is equivalent to an additional 2 to 7 feet at the January 2002 lake elevation of 1,447.1 feet and surface area of 132,000 acres, including Stump Lake (DEIS p. 2–6), and it again does not include the subsequent reduction in annual inflows that would have occurred if those wetlands had not been drained.

The average annual reduction in runoff provided by the renewable storage of existing, intact wetlands in the Devils Lake Basin includes (1) the difference between average annual precipitation (21 inches from 1993 to 1999) and evaporation (29 inches from 1993 to 1999) (WEST Consultants, Inc., 2001), which was 8 inches, (2) percolation into the soil from wetland basins, which averages 7.2 inches, and (3) evapotranspiration from areas of emergent vegetation in wetlands and vegetation at the perimeter, which averages 25.32 inches (U.S. Fish and Wildlife Service, 1997). However, because information is not available on the proportions of wetland basins that are open water and the proportions that have vegetation, and because the proportions vary with changes in water elevations, for purposes of illustration, it will be assumed that the combined evaporation and evapotranspiration from intact wetland basins average 27 inches from 1993 to 1999. Therefore, the average annual runoff reduction from existing, intact wetlands is in the range of 1.1 feet, or 1.1 acre-feet per acre.[2] This means that the 211,000 acres of existing wetlands in the Devils Lake Basin reduce annual runoff by 232,000 acre-feet during wet periods like 1993–1999. This also means that, if they were still intact, the 189,000 acres of drained wetlands in the Devils Lake Basin could reduce average annual runoff by another 207,600 acre-feet. This continuing reduction in average annual runoff if the 189,000 acres of wetlands had not been drained is equivalent to 1.6 feet at the lake's January 2002 elevation of 1,447.1 feet, or 1.65 times the volume that could be removed from the lake each year with the proposed Pelican Lake 300 cfs outlet operating at maximum capacity.

Wetland Restoration and Upper Basin Storage

If all of the precipitation occurred as snow in the winter and all of the runoff occurred as snowmelt in the spring with the ground frozen, these figures would represent the annual net renewable storage capacity and runoff reduction provided by wetlands (particularly seasonal and temporary wetlands). However, precipitation and runoff also occur at other times of the year, and non-wetland and drained wetland soils also have the capacity to store water and reduce runoff through percolation, evaporation and evapotranspiration, so these must be subtracted to arrive at the net increase in runoff reduction attributable to wetlands or to the net reduction in runoff attainable through wetland restoration.

WEST Consultants estimated the average additional annual runoff reduction that could be achieved by restoring wetlands in the Devils Lake Basin at 0.35 feet, or 4.2 inches, i.e., 0.35 acre-feet per acre of restored wetland (WEST Consultants, Inc., 2001), and explained that:

"This value primarily represents the difference between storage and evaporation in restored depressions and the percolation and evapotranspiration from the soil before restoration. It does not represent the average evaporation from a depression, which was approximately 20 or more inches per year." (WEST Consultants, Inc., 2001)

However, the WEST Consultants report points out that:

[2] Particularly in wet years, wetlands less than a foot in depth may still reduce runoff by more than their depths as water is alternately lost through evaporation and seepage and replenished by precipitation.

"The PRINET model did not include a soil moisture algorithm beneath the [restored wetland] depressions. Instead, the depressions were modeled as hard-bottom 'bowls'. Consequently, infiltration of water from a depression into the soil and evapotranspiration from the soil in the dry portion of a depression (when the depression was less than 100 percent full) were not modeled. Therefore, the model could be underpredicting the net total evaporation (free surface evaporation plus evapotranspiration from the soil) in the depressions.

"Since the net total evaporation from depressions was probably underpredicted, the annual runoff reduction with depression restoration could be underestimated." (WEST Consultants, Inc., 2001)

The omissions and underpredictions result in a substantial underestimation of runoff reduction resulting from wetland restoration. First, including percolation from drained wetland basins but excluding seepage from restored wetlands, which averages 7.2 inches annually (U.S. Fish and Wildlife Service, 1997), underestimates average net annual runoff reduction of restored wetlands by 0.6 foot. Second, including evapotranspiration from drained wetland basins but not from restored wetland, which averages 25.2 inches in prairie wetlands (U.S. Fish and Wildlife Service, 1997), further reduces average net annual runoff reduction of restored wetlands. Third, surface evaporation in the Devils Lake Basin from 1993 to 1999 averaged 29 inches (WEST Consultants, Inc., 2001), or an additional 0.75 foot more than the 20 inches attributed to restored wetlands in WEST's calculation of runoff reduction. Therefore, the 0.35 foot average annual runoff reduction for restored wetlands calculated by WEST appears to underestimate the actual runoff reduction by 0.6 foot of seepage and about 0.75 foot of combined evaporation and evapotranspiration, or by a total of about 1.35 feet. This is a 386 percent underestimation of potential runoff reduction by restored wetlands.

In evaluating the potential for upper basin storage, WEST Consultants determined that 79,762 acres, or 86 percent, of the 92,429 acres of drained wetlands they had identified in the 68 percent of the Devils Lake Basin included in their study were one-half foot or greater in depth (WEST Consultants, Inc., 2001). Using 0.35 feet as the net average annual runoff reduction from restored wetlands, WEST then calculated the average annual runoff reduction for different climate sequences with restoration of 25 percent (19,472 acres) 50 percent (39,681 acres), 75 percent (59,872 acres) and 100 percent (79,762 acres) of those drained wetlands one-half foot or greater in depth (WEST Consultants, Inc., 2001). WEST calculated the capacity of 50 percent of the 79,762 acres of drained wetlands one-half foot or greater in depth (39,681 acres) to be 63,608 acre-feet, and the average annual runoff reduction with restoration to be 12,910 acre-feet under stochastic climatic sequences and 15,642 acre-feet under the wet climate sequence (WEST Consultants, Inc., 2001). With 100 percent restoration, the 79,762 acres of drained wetlands one-half foot or greater in depth identified in the WEST study would have a capacity of 127,835 acre-feet and would result in an average annual runoff reduction of 23,841 acre feet under stochastic climate sequences, or 31,193 acre-feet under the wet climatic sequence (WEST Consultants, Inc., 2001).

The only upper basin storage alternative considered in the DEIS is restoration of 50 percent of the 79,762 acres of drained wetlands greater than one-half foot in depth identified in the WEST Consultants study:

"For this analysis to determine effects on Devils Lake stage effectiveness and cost effectiveness only 50 percent of the possibly drained depressions by volume, with depths greater than 6 inches, were used." (DEIS p. 3–19)

In discussing the impacts of this level of upper basin storage, the DEIS states:

"Restoration of 50 percent by volume of the total possibly drained depressional area greater than 6 inches in depth in the upper basin would reduce the amount of fresh water entering Devils Lake . . . Because of the small amount of annual inflow reduction, ranging from 13,000 (stochastic) to 16,000 (wet scenario) acre-feet, there would be little long-term effect on water quality and the aquatic resource in Devils Lake (based on restoration of 50 percent by volume of the total possibly drained depressions greater than 6 inches in depth)." (DEIS p. 5–32)

Consequently:

"On the basis of analyses performed to date, upper basin storage will not meet the project objectives as a stand-alone project." (DEIS p. 4–9)

However, the assertion upon which this conclusion is based, i.e., that wetland restoration would result in only "a small amount of annual inflow reduction, ranging from 13,000 (stochastic) to 16,000 (wet scenario) acre-feet," seriously underesti-

mates, misrepresents and minimizes the potential for wetland restoration in the upper basin to reduce flooding problems at Devils Lake.

First, the 12,000 to 16,000 acre-feet annual inflow reduction cited in the DEIS fails to consider the initial 63,608 acre-feet of storage created by the restoration of 39,681 acres of drained wetlands in the upper basin (WEST Consultants Inc., 2001). Second, the 12,000 to 16,000 acre-feet annual runoff reduction figures are based on the 0.35 foot figure from the WEST Consultants report which, as discussed above, underestimates seepage from restored wetlands by 0.6 feet and underestimates evaporation from restored wetlands by 0.75 feet, for a total underestimation of the annual runoff reduction from restored wetlands of 1.35 feet. Therefore, the inflow reduction resulting from the restoration of 39,681 acres of drained wetlands would be 63,608 acre feet initially, and then an average of 46,000 acre-feet under stochastic climate conditions to 62,000 acre-feet under the "wet future scenario" annually thereafter.

However, because the WEST Consultants' study also underestimates the acreage of drained wetlands in the Devils Lake Basin by 50 percent, the potential inflow reduction with restoration of one-half of the 159,524 acres of drained wetlands over one-half foot in depth that likely are present in the basin actually would be 92,000 acre feet (stochastic) to 112,000 acre-feet (wet future) annually. This is 115 percent of the volume that would be removed by the proposed Pelican Lake 300 cfs outlet in a typical operation year and 89 percent of the volume that could be removed with the outlet operating at maximum capacity under the "wet future scenario," respectively.

It should also be noted that van der Kamp et al., (1999) report that:

"The long-term water level data presented in this paper show conclusively that when the catchments of small prairie wetlands are converted from cultivated land to undisturbed brome grass the wetlands dried out and remained dry, even in years of heavy precipitation."

Therefore, inflows to Devils Lake could be reduced even further by planting the catchments of both existing and restored wetlands to permanent grasses, rather than cultivating to the margins of the wetlands.

The DEIS attempts further to diminish the feasibility of alternatives involving wetland restoration in the upper Devils Lake Basin by stating that:

"About 75 percent of the land use (about 30,000 acres) in the depressions is classified as cropland or grassland. (DEIS p. 5–32)

"Landowners in the upper basin . . . feel that drainage is necessary in order to productively farm their land. They feel that additional inflows from their drainage practices have had little impact on increasing the lake level. (DEIS P. 4–9)

"On the basis of previous attempts to voluntarily acquire runoff storage areas in the upper basin, this plan will be difficult and costly to implement. The value of payments to acquire easements for storage areas, which are based on lost productivity of the land, are likely to be contested by landowners. This increases the administrative costs of implementing this plan significantly. (DEIS p. 4–9)

"Program administration and negotiations, included to acquire land through condemnation (Minimum of $4,800 per tract). (DEIS Appendix B, p. B–29)

"Converting 30,000 to 40,000 acres of farmland to runoff storage areas reduces the economic base of the local economy that is already highly dependent on the agricultural sector. The storage areas could be farmed in dry years. But, in those years when they could not be farmed, the impact would be felt throughout the local economy. (DEIS p. 4–9)

"Annual costs for previous upper basin storage programs ranged from $40 to $90 per acre per year. (DEIS Appendix B, p. B–29)

"This analysis assumes that the storage is in place when the lake is above elevation 1,440. Previous programs have varied from an annual program to one with a 10-year contract. Therefore, it is assumed that an expanded program could involve contract lengths of any duration up to 10 years. Implementation of an upper basin storage program would involve construction of outlet structures, acquisition or leasing of land and development of an operating plan for outlet structures when the lake recedes. On the basis of these items, it was assumed that the implementation of the storage would cost $1,000 per acre. Therefore, the total project costs are $39,681,000." (DEIS p. 3–20).

Consequently:

"On the basis of the stochastic analysis, upper basin storage is not cost effective. Net benefits result under the wet future scenario." (DEIS p. 6–30)

Elsewhere, however, we find that:

"In 1996, agriculture accounted for 48 percent of the area's economy, followed by Federal Government outlays (38 percent), tourism (10 percent) and manufacturing (3 percent). Tourism has been the fastest growing component of the area's economic base, increasing from 3 percent in 1980 to 10 percent in 1996. Tourism is particularly important in Ramsey County, having reached nearly two-thirds the importance of agriculture in 1996. The tourism figures are understated because they account only for the expenditures of travelers from out of State. (DEIS p. 2–16)

"The per-acre market value of land and buildings is also similar: Ramsey $391, Benson $320, Nelson $476." (DEIS p. 5–19)

and:

". . . many candidate wetlands in the High and Severe [salinization] hazard classes may be good candidates for restoration because they may no longer represent productive cropland. Many such wetlands are now unsuited or marginal for agriculture due to drainage-related salinity problems. Placing restored saline wetlands and their surrounding buffer zones into a conservation reserve program may be an attractive option to farmers whose land is not producing efficiently because of existing, drainage-related salinity problems (DEIS Appendix C, p. C–113)

"Costs for these outlet structures . . . could vary from $0 up to $100,000 per site. (DEIS Appendix B, p. B–29)

"Costs for easements or leases could vary widely since some lands may be more valuable agricultural areas than others may (ranging from 10 to 70 percent of fee title). (DEIS Appendix B, p. B–29)

"Approximately 200,000 acres of land is currently under the CRP program in the basin." (DEIS Appendix C, p. C–17)

The Corps' failure to consider wetland restoration objectively and forthrightly in discussing the upper basin storage alternative is reflected in the statement that:

"Upper basin storage consists of storing water in depressions in the upper basin. This alternative would result in the conversion of agricultural lands to intermittent or permanent wetland storage areas." (DEIS p. 6–30)

Clearly, the Corps does not understand, or does not want to recognize, that wetland restoration involves converting wetlands that have been drained for agricultural production back to wetlands, rather than converting what were originally agricultural lands to wetlands.

It is apparent that restoring 40,000 to 80,000 acres of farmed wetlands—equivalent to 20 to 40 percent of the CRP acreage or 2.6 to 5.2 percent of the 1,562,000 acres of cropland in the basin—would not have a negative impact and could actually have a positive impact on the local economy and could be an attractive alternative for many landowners with marginally productive drained wetlands or drained wetlands that still cannot be farmed in wet years. It also is evident that the $1,000 per acre figure "assumed" in the DEIS for wetland restoration represents a significantly inflated estimate—perhaps by two to five times—of the actual costs of a properly managed wetland restoration program. Consequently, by minimizing the benefits of wetland restoration by several fold while exaggerating the costs by several fold, the DEIS seriously underestimates, and thereby dismisses, the feasibility of the upper basin storage alternative.

The failure of the DEIS to provide an accurate, objective and realistic analysis of upper basin storage involving wetland restoration and other land use practices to reduce inflows to the lake renders the discussion of alternatives to the proposed action, and therefore the DEIS itself, inadequate on their face.

Continuing Wetland Drainage in the Devils Lake Basin

Because continued drainage of the remaining 211,000 acres of wetlands in the Devils Lake Basin would eliminate the water storage and runoff reduction capacity of those wetlands and exacerbate the problems caused by the high water at Devils Lake, the U.S. Fish and Wildlife Service points out:

"*Accelerated Wetland Drainage in the Upper Basin as a Result of the Outlet.*—The Service is concerned about the accelerated loss of wetland habitat in the upper basin as a result of this project. A private drainage survey conducted from 1965 to 1980 documented a 2.5 percent drainage rate of wetlands per year in the Devils Lake basin. The Service believes that the pressure to drain remaining unprotected wetlands for agricultural and other purposes has not diminished over time. Within the basin, there is continuing legal action by lower basin landowners who claim that they have been adversely affected by the rise of Devils Lake, due in part to decades o[f] wetland drainage by upper basin landowners. In the recent wet cycle, the practice of wetland drainage, including pumping, has shown itself to be a contributing

factor in the rise of the lake. The Service is concerned that the construction of an outlet, without control on additional inflow to the lake from drainage, will provide the supporters of wetland drainage a way to export water out of the basin." (DEIS Appendix 2, p. 11–20)

Therefore, the Service recommended:

"*Moratorium on New Wetland Drainage and Pumping Within the Basin for the Life of the Project.*—The Service recommends that the Corps coordinate with the State to insure that any plans to remove water from the landscape and place it into the lake through wetland drainage be postponed during the life of the project to avoid the need to move additional water downstream. Taking precautions to prevent further aggravating factors, such as wetland drainage and pumping from increasing lake levels is consistent with the goal of the outlet to reduce lake levels and prevent a natural overflow of Devils Lake to the Sheyenne River." (DEIS Appendix 2, p. 14–2)

As noted above, at a meeting in Valley City, North Dakota, on August 26, 2000, former North Dakota State Engineer David Sprynczynatyk stated that his office would resume authorizing wetland drainage in the Devils Lake Basin as soon as an outlet to the Sheyenne River is built. However, the Corps summarily dismisses the Fish and Wildlife Service's recommendation with the perfunctory statement that:

"The Corps concurs that controls on future wetland drainage in the upper basin would improve the effectiveness of other features. *The decision to place a moratorium on future drainage is under the control of the State.*" [emphasis added]

Thus, the Corps agrees that future wetland drainage in the Devils Lake Basin would reduce the effectiveness of its proposed $125 million Pelican Lake 300 cfs outlet, but it leaves control of future wetland drainage to the very agency which already had announced publicly 2 years ago that it will resume authorizing wetland drainage as soon as the outlet is built!

WEST Consultants estimated that the 201,990 acres of remaining wetlands identified in their study have a capacity of 481,604 acre-feet (WEST Consultants, Inc., 2001), and draining those wetlands could contribute up to 481,000 acre feet of water to Devils Lake.[3] This is equivalent to 3.6 feet at the lake's January 2002 elevation of 1,447.1 feet, and it is 3.8 times as much water as the proposed Pelican Lake 300 cfs outlet could remove operating at maximum capacity from May through November. Drainage of the 201,990 acres of remaining wetlands would also result in an additional 272,000 acre-feet of inflows to Devils Lake annually, which is more than two times the volume that could be removed by the proposed Pelican Lake 300 cfs outlet operating at maximum capacity.

It is clear, therefore, that before expending any further public revenues on the proposed $125 million Pelican Lake 300 cfs outlet or other structural measures to deal with problems caused by the high water levels at Devils Lake, the Corps has a fiduciary duty to implement and enforce an effective program to prevent further wetland drainage in the Devils Lake Basin in order to protect the Federal Government's investment in those measures. That drainage prevention program and its enforcement provisions should be discussed in detail in a revised DEIS.

Indeed, Congress requires that this be part of any Corps of Engineers flood damage reduction project. Section 402(c) of the Water Resources Development Act of 1986 as amended requires, as a basic condition of Federal participation in any flood control project, the development and completion of a floodplain management plan by non-Federal interests that will preserve and enhance natural floodplain values and address those measures to be taken by non-Federal interests to preserve the level of flood protection that is provided by the project and upon which it is justified. The plan is intended to be developed as part of and concurrent with the project feasibility study. In this case it appears, to the contrary, that the Corps is not involved in working with the State of North Dakota and local agencies in developing the required plans and non-Federal activities that would be necessary to preserve the level of flood protection that is intended to be accomplished by the proposed Pelican Lake 300 cfs outlet.

INFLATED VALUES AND EXAGGERATED BENEFITS

The DEIS states that:

[3] The fact that wetlands may be protected by easement does not assure that they will not be drained (Grosz, 2001).

"Rising lake levels have severely affected the rural economy around Devils Lake. Many of the farms and ranches bordering the lake have been forced to abandon operations because of the loss of pasture and croplands. At its January 2001 stage of 1,447.1, the lake covered 137,000 acres (DEIS p. 2–6 puts the figure at 132,000 acres), an increase of about 93,000 acres (approximately 145 square miles) since 1993. At an average land value of $600 per acre for non-urban land, this represents a loss of over $55 million." (DEIS p. 2–38)

However:

"Agricultural land that would be inundated by further rise of Devils Lake lies primarily in Ramsey County, with a relatively small area in Benson County and an even smaller area in Nelson County . . .

Agriculture in Ramsey, Benson, and Nelson Counties is profiled on the basis of information contained in the 1997 Census of Agriculture. The three counties have a similar agricultural profile. The farm sizes (in acres) of the three counties are similar: Ramsey 1,254; Benson 1,255; Nelson 1,136. The per-acre market value of land and buildings also is similar: Ramsey $391, Benson $320, Nelson $476." (DEIS p. 5–19)

Thus, by calculating the loss of flooded non-urban land at an inflated value of $600 per acre instead of market value, the DEIS overestimates the damages by more than $19 million or by 53 percent. (In fact, as shown in the following paragraph, the average value of these non-urban lands is less than $265 per acre, so the claim that the flooding of 93,000 acres of non-urban lands since 1993 represents a loss of over $55 million actually overestimates the loss by $30 million or 120 percent.) And, of course, inflating the damages from flooding exaggerates the benefits of preventing those damages.

It also is necessary to recognize that less than one-half (91,323 acres) of the 184,182 acres of non-urban land around Devils Lake between elevations 1,447 feet and 1,463 feet is classified as cropland (DEIS Appendix C, Table C–5, p. C–16). Another 38,198 acres are grassland (DEIS Appendix C, Table C–5, p. C–16), which had an average value of $165 per acre in North Dakota in 2001 (Associated Press, 2001c). The remaining 54,661 acres are classified as woodland (9,622 acres), grass-shrub (95 acres) and wetland (44,944 acres) (DEIS Appendix C, Table C–5, p. C–16) which might be expected to have values of $100–$125 per acre. Thus, the non-urban lands that would be flooded in the unlikely event that Devils Lake would rise to 1,463 feet have a value of about $49 million, or an average of less than $265 per acre.

Even if the proposed $125 million Pelican Lake 300 cfs outlet were built, the lake still would continue to rise to elevation 1,457 under the "wet future scenario" (DEIS p. 5–89). As noted above in the discussion of Hidden Costs this means that some $300–$400 million still would have to be expended on infrastructure protection, including raising the dike to protect urban areas at the city of Devils Lake. And, if the lake should rise to elevation 1,457 feet, approximately 64,000 additional acres of non-urban land, with an average value of $265 per acre, would be flooded. This means that, even with the outlet, under the "wet future scenario" necessary to justify it, an additional $17 million in losses would occur to non-urban land. This also means that the Corps is proposing to spend $125 million to build an outlet to reduce the chance of flooding of the remaining 62,000 acres of non-urban land between elevations 1,457 and 1,463 feet, which are worth approximately $17 million, from about 2 percent to 1 percent (DEIS Appendix B, Table II.ST–2, p. B–195).

Unfortunately however, even this may be overly optimistic because the soils of the bed of Devils Lake below elevation 1,461 generally are not of the same quality as the upland soils upon which average land values in the area are predominantly based, so even the $17 million in losses to non-urban lands that might be prevented by the outlet likely are exaggerated.

FLOODING AT DEVILS LAKE—HARDSHIPS, HANDOUTS AND FALSE HOPES

According to the DEIS:

"At its January 2001 stage of 1,447.1 feet, the lake covered 137,000 acres, an increase of about 93,000 acres (approximately 145 square miles). At an average value of $600 per acre for non-urban lands, this represents a loss of over $55 million. (DEIS p. 2–38)

"Since 1993, there have been 11 Presidential disaster declarations for the Devils Lake region. These declarations were made for regions within North Dakota that extended well beyond the Devils Lake area to address the effects of the climatic wet cycle, including flooding of agricultural impacts. Under emergency authorities, Fed-

eral agencies have moved or bought out and abandoned homes that were flooded by the rising lake. Approximately 400 homes around Devils Lake have been moved or abandoned in response to the rising lake waters. While some homes have been abandoned, most homes have been relocated. Some of the houses were second homes, but most were primary domiciles." (DEIS p. 5–7)

and:

"It is likely that the physical conditions on the lake under the with- and without-project conditions would require additional relocations of homes and commercial structures with consequent social and local economic disruption." (DEIS p. 5–8)

Proponents of an outlet frequently cite the "loss" of 400 homes and the flooding of 93,000 acres of "agricultural" land around Devils Lake as demonstrating the need to "do something" and, therefore, as justification for constructing an outlet from Devils Lake to the Sheyenne River. The DEIS states that:

"The perceived risk may be more damaging to community vitality than the actual risk. Although it is unlikely that the city of Devils Lake would be inundated, there is *a perception propagated by media coverage of the rising lake* [emphasis added] that the city proper is at risk. According to economic development officials, multiple enterprises have postponed or deferred decisions on new investment in the city. This stigma reduces the vitality of the community and its ability to reverse the trend of population loss, through perceived economic stagnation in addition to problems associated with the lake." (DEIS p. 5–14)

Instead of addressing these misperceptions, however, the Corps proposes to build a $125 million outlet to the Sheyenne River:

"An intangible benefit of the outlet would be the initial psychological boost to the local economy that the solution to the problem is at hand and that the Devils Lake community will prosper in the future as a result. (DEIS p. 4–9)

"An outlet from Devils Lake would promote economic development in the city of Devils Lake and stimulate business activity by reducing uncertainty and risks to commercial enterprises associated with rising lake levels. An outlet would also help restore regional shopping patterns that allowed the city to serve as the retail center for areas south of the lake. The construction of an outlet would temporarily stimulate business activity in the lake area and in the city of Devils Lake as the economic hub of the area." (DEIS p. 5–42–42)

Unfortunately, even if the proposed Pelican Lake 300 cfs outlet were to be built, the lake would still continue to rise another 10 feet to 1,457 feet under the "wet future scenario," and it would still have a 4 percent chance of reaching elevation 1,459 feet, a 2 percent chance of reaching 1,461 feet and a 1 percent chance of reaching 1,463 feet (DEIS Appendix B, Table II.ST–2, p. B–195). Consequently:

". . . although a 300 cfs outlet would reduce peak levels under most climatic conditions, it would not prevent the lake from rising altogether if it is already on an upward trend and most of the costs and damages occurring under the without project condition would be incurred with this plan in place as well. A 300 cfs outlet may generate controversy among the local community, as the elation initially produced by the outlet is followed by the disappointment of unmet expectations regarding the outlet's effectiveness in lowering lake levels. (DEIS p. 4–9–10)

"It is supposed that a constrained or unconstrained outlet could also have negative impacts on lakeside communities if the lake keeps rising despite the outlet. *The dashed expectations could be more detrimental to community vitality than if they had never had an outlet.*" [emphasis added] (DEIS p. 5–41)

And, as the U.S. Fish and Wildlife Service points out:

"The Service is concerned that the public's expectation that an outlet will solve their flood problems is not met with the current alternatives. An outlet that fails to perform to the public expectation may create future pressure to operate the outlet in a way inconsistent with its original intent by increasing its pumping duration and capacity. Increasing the pumping duration or capacity will likely create additional downstream water quantity degradation, erosion and sedimentation on the Sheyenne and Red rivers, as well as other environmental problems." (DEIS Appendix 2, p. 15–2)

As we have already seen above in the discussion of Exaggerated Benefits, the value of the 93,000 acres the non-urban lands within the bed of Devils Lake that have been "flooded" since 1993 is not $600 per acre, but less than $265 per acre,

so the damages are not the $55 million claimed in the DEIS (p. 2–38), but actually less than $25 million.

The DEIS explains that:

"The Federal Emergency Management Agency (FEMA) has led this effort [to relocate houses] around most of the lake, but the Department of Housing and Urban Development (HUD) has taken responsibility for relocating many structures on the Fort Totten Indian Reservation. FEMA administers the National Flood Insurance Program (NFIP) through which the Federal Government provides flood insurance for those communities that adopt floodplain management ordinances. (DEIS p. 5–7)

"Regarding FEMA's impacts on land use around the lake, the agency urged Ramsey and Benson counties and the city of Devils Lake to adopt permanent land use ordinances establishing conservation easements that prohibit new construction below 1,460 feet msl in exchange for the NFIP waiver allowing structures to be moved before inundation. After much deliberation, Ramsey County decided not to adopt the ordinance, but Benson County and the city of Devils Lake decided to implement the ordinance with minor adjustments. There are an estimated 45 people in Benson county who qualify for the flood insurance endorsement and waiver." (DEIS p. 5–15)

It is important to recognize that the rise of Devils Lake has not been the economic disaster that proponents of the outlet frequently portray. For example:

"The rising lake has adversely affected many residents around the lake. However, even under the adversity produced by the rising of Devils Lake, some parties have benefited. For example, the influx of Federal emergency funds to relocate threatened homes, provide crisis counseling, and maintain local infrastructure has brought over $350 million in Federal funds into the Devils Lake region. This has provided a significant boost to some elements of the local economy, such as those individuals and enterprises involved in road construction or house moving, or those individuals or enterprises that support these activities (e.g., lodging, restaurants, etc.) In addition, the improvement in the Devils Lake fishery associated with lake level rises has benefited the local recreation related industry." (DEIS p. 5–17–18)

The population of the Devils Lake Basin in 1975 was 38,473, with 12,913 living in Ramsey County (including the city of Devils Lake), 5,776 living in Nelson County and 5,957 living in Cavalier County (TPI Consultants, Inc., 1976). The population of the basin decreased 16.5 percent from 1980 to 1996 (DEIS p. 2–15), so the current population of the basin is less than 32,000. The city of Devils Lake, which had a population of 7,742 in 1980 (U.S. Army Corps of Engineers 1992), had a population of 7,672 in 1996 (DEIS p. 2–16.). Consequently, the influx of $350 million in Federal funds into the Devils Lake region is equivalent to $11,000 per person living in the Devils Lake Basin.

In fact:

"In 1996, agriculture accounted for 48 percent of the area's economy, followed by *Federal Government outlays (38 percent)* [emphasis added], tourism (10 percent) and manufacturing (3 percent). Tourism has been the fastest growing component of the area's economic base, increasing from 3 percent in 1980 to 10 percent in 1996. Tourism is particularly important in Ramsey County, having reached nearly two-thirds the importance of agriculture in 1996. The tourism figures are understated because they account only for the expenditures of travelers from out of State." (DEIS p. 2–16)

Consequently, in 2000 when local officials were seeking $70,000 in Community Development Block Grants and economic development funds, they had difficulty showing that the rise of the lake had adversely impacted the area. As Devils Lake Economic Director Jim Dahlen explained:

"The challenge we have is statistically the (flooding) impact doesn't show up real well in areas of taxable sales and services. Our unemployment rate is very low, well below the national average. And the average wage continues to rise. It's a hard thing to show what impact the flooding's had." (Anonymous, 2000)

The Devils Lake Journal went on to report:

"The report could also help create an argument the cost/benefit ratio being used against building an outlet—which according to Congressman Packard is only 10 cents benefit for every dollar spen[t]—is out of line. According to Dahlen the cost/benefit ratio is based only [on] lost revenue and it is not taking into consideration lost land or collateral.

"'We hope this report will put some teeth in the cost/benefit ratio,' Dahlen says. 'But we don't have the expertise to do it ourselves.'

"'From what I've heard from out congressional delegation we'll be dead in the water if we don't come up with this kind of report,' Commissioner Dick Johnson admitted." (Anonymous, 2000)

By the fall of 1997, the National Flood Insurance Program had paid over $14 million in claims on some 300 houses around Devils Lake that had been relocated—and on which the owners had paid insurance premiums totaling only $900,000. Owners were able to repurchase their homes from FEMA by matching the highest bid, which frequently was below market value, and then move them to another location. The cost of moving a house is approximately 70 percent of market value, plus the cost of a new lot (DEIS p. 5–8).

Some home owners filed claims and received payments for moving their houses twice because they did not move them far enough from the lake the first time. In fact, the owner of a restaurant located near the lake who was interviewed buy a local television station boasted that he had been able to make major improvements in the restaurant when it was moved the first time, and that he was expecting to make additional improvements when it was moved the second time.

In the spring of 2000, FEMA spent $2.2 million and was seeking another $1.3 million to buy out the town of Chuchs Ferry, a small town of 113 people and 43 homes at the northwest side of Devils Lake—equivalent to $31,000 per person (Gilmour, 2000). FEMA reportedly paid "about $45,000 apiece for three 20-year-old mobile homes," plus relocation incentives up to $22,500 and averaging $14,466 (Gilmour, 2000). In another case, the owners sold their 14 x 70 mobile home at Churchs Ferry to the Government and bought a 28 x 70 double-wide and located it at another small town 13 miles away (Gilmour, 2000). In fact, one Churchs Ferry resident reportedly exulted:

"I'm getting into a gorgeous house . . . a step up. There's lots of excitement . . . I've always dreamed of having a house like this. The (buyout) price we got for our house was great . . . wonderful and that's all I can say about that. But we wouldn't have been able to do this without the buyouts." (Gilmour, 2000)

It is not surprising, therefore, that local officials are more concerned about the lake going down than they are about it continuing to go up:

"The hard numbers have been skewed by the nearly $300 million spen[t] by the Government in protecting the area through infrastructure improvements, says Dahlen. 'What happens when the construction ends?'" (Anonymous, 2000)

Of course, constructing the proposed Pelican Lake 300 cfs outlet would bring another $125 million into the Devils Lake area even if the lake continues to go down.

BIOTA TRANSFER—CONFUSING ABSENCE OF PROOF WITH PROOF OF ABSENCE

The DEIS states that:

"All of the biota in the Devils Lake basin are either known or considered likely to be present in the Red River basin. One possible exception is the striped bass, which has not been recorded in Devils Lake in many years. Many species have not been reported in the Red River basin, but were found to have sufficient means of overland or airborne dispersal that they could invade the Red River basin in the future. Other species were confirmed as being in the Red River basin on the basis of published scientific literature or from unpublished information provided by experts.

"The biota of the Devils Lake basin and the Red River basin are similar, and Devils Lake does not harbor any species that are not already present in the Red River basin. Additionally, there is risk of biota transfer from natural causes and recreational users."(DEIS p. 5–27–28)

Proponents of an outlet frequently cite such statements as proof of the absence of any risk of transfer of foreign biota to the Hudson Bay basin as a result of operation of an outlet from Devils Lake to the Sheyenne River.

However:

"The potential for an outlet to transfer biota from Devils Lake to the Red River basin was evaluated. This assessment was based primarily on existing information.

"The conclusions of the study were that: (1) on the basis of all available information, it appears highly unlikely that downstream habitats would suffer substantially as a result of biota transfer caused by the Devils Lake outlet project, and (2) *avail-*

able information is inadequate to allow conclusive statements to be made regarding all species of biota transfer." [emphasis added]

However, three concerns were worth noting.

—"Though unlikely to occur, transfer of significant concentrations of toxic algae could cause substantial problems downstream.
—"Salinity and nutrient changes to the Sheyenne River and Lake Ashtabula could cause community composition changes in these waters.
—"*It is not certain whether any known exotic, invasive species are now present in Devils Lake*." [emphasis added] (DEIS p. 5–61)

"Although fish and algae communities have been fairly well documented, data sources on other biota were relatively few and incomplete. Regional experts had little knowledge of Devils Lake biota, and most agreed that the biota of the Devils Lake and Red River basins had not been particularly well studied. (DEIS Appendix C, p. C–73)

"There are substantial data gaps in a number of taxonomic groups. Because of these gaps, it is impossible to state definitively that all species currently in Devils Lake have been accounted for. To the contrary, it is likely that Devils Lake does harbor species that have not been analyzed. Accordingly, there may be additional species that are currently unknown at this time. It is more likely, however, that many species not documented in either the Devils Lake or Red River basin actually present in both.

". . . The recent water level rise has created much new favorable habitat in Devils Lake for many species and has attracted increasing numbers of fishermen and recreational boaters. These anthropogenic factors are among the most important vectors of several harmful species in areas that they have invaded (e.g., Eurasian watermilfoil and zebra mussels). Any of these species could possibly find very favorable habitat in Devils Lake. The zebra mussel, in particular, could exploit the newly freshened habitats that have traditionally been too saline for mussels." (DEIS p. 5–28)

In fact:

"Out-of-State boaters from zebra mussel areas used Devils Lake almost exclusively during 1999. Devils Lake also served as a major source of movements, i.e., a potential 'transportation hub,' for boats going on to other parts of North Dakota and other States not currently infested with zebra mussels and other ANS [aquatic nuisance species]." (Grier and Sell, 1999)

Thus, even if Devils Lake does not currently harbor species foreign to the Hudson Bay Basin, it has the potential to be a major point of introduction and source of dissemination of such species in the future.

As the DEIS points out:

"There is increased risk of the transfer of biota or the increase in the distribution of existing organisms associated with any feature that improves the connectivity between systems that have been segregated for many centuries. The operation of the outlet would be considered such a feature. Based on available information, there do not appear to be any organisms in Devils Lake that are not already present in the Red River or the North basin. However, it cannot be said with certainty that some may not be identified or introduced in the future. In addition, the operation of an outlet or a natural overflow may improve the conditions necessary for the dispersal of organisms currently found in the Sheyenne or Red River. No mitigation feature can be said to be 100 percent effective in eliminating the risk of biota transfer. The actual effects are unknown and cannot be predicted at this time." (DEIS Appendix C, p. C–66)

Despite the paucity of information on the biota of Devils Lake and the potentially catastrophic impacts that could result to the Hudson Bay ecosystem from the introduction of damaging foreign species, the DEIS concludes that:

"All of the biota in the Devils Lake basin are either known or considered likely to be present in the Red River basin." (DEIS p. 5–27)

Well, maybe not quite "all" species:

"The one possible exception is the striped bass, which has not been recorded in the lake in many years . . . However, experts have indicated that the one possible exception, striped bass, has not become established as a *reproducing* [emphasis added] population in Devils Lake and no further stocking is planned. If any of the originally stocked individuals remain in the lake, they would now be large and

would easily be excluded from outlet pipelines and machinery by fish screens already planned to cover the intake openings." (DEIS p. 5–62)

When 13,000 "advanced" fry striped bass arrived in North Dakota in 1977, they were found to be in such poor condition that, instead of being taken to hatchery rearing ponds, they were released directly into Devils Lake. At least three have been caught since then, one by the North Dakota Game and Fish Department in netting operations and two by anglers, and all three were large fish in the 15 to 20 pound range. In fact, the North Dakota State record striped bass was a 20.75 pound fish caught at Devils Lake in 1993—just 9 years ago and 16 years after striped bass were first stocked in the lake. Therefore, even if striped bass had not become established as a reproducing population in Devils Lake, it is clear that they became established as a surviving population.

Since 1993, ecological conditions in Devils Lake have changed dramatically, with rapidly improving water quality in the lake and high volumes and long durations of inflows from tributaries such as Mauvais Coulee. The DEIS does not consider the possibility that conditions may now have developed that are suitable for reproduction of striped bass, and if they have, what the likelihood is that they would have been detected. It is instructive to consider examples from another lake in the area where exotic fish were stocked during that same time period.

Sprirtwood Lake is an approximately 600-acre lake in a "closed" basin about 60 miles south of Devils Lake. In 1971, the North Dakota Game and Fish Department stocked 4,000 white amur, or grass carp, in the lake. Although no formal monitoring has been conducted, a few grass carp were periodically reported from 1975 to 1977, and grass carp are still being reported in Spiritwood Lake two decades after they were stocked.

In the summer of 1989, the North Dakota Game and Fish Department stocked 20,000 European zanders in Spritwood Lake (Kraus, 1989a), and another 185,000 in the adjacent East Spiritwood Lake, which now is connected with Spiritwood Lake. However, when North Dakota Game and Fish Department traps in the lake failed to capture any zander, they were thought not to have survived . Then in 1989, a fisherman caught an 8.5 inch zander in the lake (Lohman, 1990), but intensive netting by the North Dakota Game and Fish Department from 1990 through 1993 failed to turn up any more zander.

"'We never caught even one,' [North Dakota Game and Fish Department Chief of Fisheries Terry Steinwand] said. 'After that third year, we thought that there weren't any zander left in the lake. But I gave the disclaimer that we weren't 100 percent sure, based on our netting techniques.'" (Wilson, 2001)

In August 1999, a fisherman caught and photographed a fish from the lake that appeared to be a zander, but extensive netting operations by the Game and Fish Department again failed to produce any more zander (Wilson, 2001). A fisherman caught and photographed another zander in 2000, and in June of 2000, the Department's netting operations finally captured a 2-year-old, 3 pound, 18.5 inch zander in Spiritwood Lake.

"The DNA-tested zander taken from Spiritwood lake is a 2-year-old fish and, scientists are 'fairly confident', is a product of natural reproduction. Meaning: There is a chance more zander remain in the lake, or at least did a few years back.

"'For natural reproduction to occur, we know that there were at least two in Spiritwood at one time,' Steinwand said. 'And logic would tell you that there were more than that. But based on our inability to catch them with nets, and no reports coming in from anglers, the population is very low.'

"When the zander were stocked, Steinwand said Spiritwood was a closed basin lake.

"'The only possible escape for these fish was by anglers,' he said. 'But things changed in 1997 when we started to see some overflow out of Spiritwood Lake'" [to the James River]. (Wilson, 2001)

If reproducing zander escaped detection in the 600-acre Spiritwood Lake for 8 years despite intensive sampling efforts, and if white amur have survived in the lake in low numbers for two decades, what would be the likelihood of detecting low numbers of reproducing striped bass in the 132,000-acre Devils Lake?

The DEIS dismisses the possibility of striped bass escaping through the proposed outlet by assuming that "any of the originally stocked fish" would be excluded by fish screen already planned to cover the intake openings. Of course, the DEIS ignores the possibility that conditions in the lake might be or might become suitable for reproduction of striped bass, and it does not consider the possibility of damage to or other failure of the screens. Because the Energy and Water Development Ap-

propriations Acts for fiscal years 1998 through 2001 require consultation with the International Joint Commission before construction begins on an outlet, it is instructive to consider what the International Joint Commission had to say about relying on engineering features to prevent biota transfer under the Garrison Diversion project:

"In fact, overriding everything else, as it turns out, has been the necessity that such introduction be prevented at all costs . . .

"Unlike some other adverse consequences that can be minimized by additional mitigating measures or by cessation of operation of the Project, remedial measures to control unwanted exotics are oftentimes futile and, what makes it even more difficult, is that it may be some years before the full adverse impact is apparent.

"The Board's conclusion was that the implementation of their proposals would virtually eliminate any direct transfer by GDU of fish, fish eggs, fish larvae and fish parasites and would reduce the risk of transfer of fish diseases to the Hudson Bay Drainage Basin. The Board rated the [double 40 mesh phosphor bronze] fish screen and the closed system together, as described in the Board's report, as a means which would be effective and feasible in meeting the objective assigned to it.

"There is no question in the Commission's mind that the Board's recommendations greatly reduce the risk of an unintentional transfer. There would be two lines of defense, either one of which by itself might accomplish the desired result . . . The Commission gives great weight to the Board's opinion that these two lines of defense will work. At the same time, the Commission must weigh the consequences to Canada if the Board is wrong. Were the potential biological consequences to the Hudson Bay ecosystem predictable in manner and extent, the Commission might accept the Board's approach. The Board has reduced the risk of a biological 'time bomb' but not eliminated it. The Commission is concerned that even with the best engineering talent available and with the best operating practices possible, the very complexity of the scheme, the immensity of the physical features, the large number of human beings involved in carrying out the responsibility, and the possible mechanical failure, what cannot happen, will happen . . ." (International Joint Commission, 1977)

In the case of the Pelican Lake 300 cfs outlet, the Corps proposes to rely on a single line of defense against biota transfer—a fish screen, which if it doesn't fail over the 50-year life of the project, would exclude 15 to 20 pound adult striped bass.

Meanwhile, the Corps cites a Biota Transfer Risk Analysis which recommended that:

". . . surveys for the following invasive species (at a minimum) be carried out in Devils Lake before the outlet begins operation: rusty crayfish, spiny water flea, zebra mussel, and Chinese mystery snail and relatives." (DEIS Appendix C, p. C–77)

but no information is provided about whether the surveys will actually be conducted, what their sampling designs will be, who will pay for them, who will conduct them, and when they might be completed. Instead, the Corps proposes to proceed with the construction of a $125 million Pelican Lake 300 cfs outlet to the Sheyenne River before knowing whether the risk of biota transfer may prevent it from ever being used.

MYTHICAL MITIGATION

According to the DEIS:

"The outlet itself would consist primarily of a buried pipeline with open channel features restricted to areas along Highway 281 north of Minnewaukan and would not require mitigation." (DEIS Appendix C, pp. C–138–139)

However:

"Construction and operation of an outlet from Devils Lake would require the development and implementation of a mitigation plan to compensate for unavoidable adverse effects. General geographic areas of potential impact would be Devils Lake, the outlet route, the Sheyenne River, Lake Ashtabula, and the Red River. Investigations to date indicate the greatest potential for significant adverse impacts to natural resources, cultural resources, and downstream water users is associated with increased flows and water quality changes in the Sheyenne River." (DEIS p. 5–92–93)

but:

"Many of the effects associated with operation of an outlet cannot be readily quantified." (DEIS p. 5–96)

and:

"Because of the inability to accurately predict project impacts associated with operation, an extensive resource monitoring program will be required. The monitoring will be necessary to quantify specific impacts and identify acceptable mitigation measures." (DEIS p. 5–93; Appendix C, p. C–139)

In view of the fact that:

"Many of the potential effects involve long-term changes to existing ecosystems that may not be readily noticeable or quantified without extensive monitoring programs." (DEIS p. 5–96)

how does the DEIS propose that mitigation might be accomplished for the potentially severe and long-lasting impacts of operation of the proposed Pelican Lake 300 cfs outlet?

These include:

—Substantial changes in the flow of the Sheyenne River resulting in up and down flows with sudden and extreme fluctuations in flow that will make it difficult for species to adapt to habitat conditions (DEIS p. 5–48),

—Increased erosion and sedimentation (DEIS p. 5–52) and changes in water quality, hydrology, geomorphology and habitat that could result in substantial changes in aquatic biota in the Sheyenne River (DEIS p. 5–53),

—Adverse influence on fish reproduction and lost-year classes of fish and decreased diversity and density of aquatic species in the Sheyenne River (DEIS p. 5–53)

—Water quality changes that would be devastating to unionids in the upper Sheyenne River (DEIS p. 5–102),

—The elimination of flow sensitive habitats, such as riffles where shallow, fast habitats predominate, in the upper Sheyenne River where stages are projected to increase up to 3 feet (DEIS Appendix C, p. C–38),

—Changes in the aquatic community in the Sheyenne River above Lake Ashtabula that would persist for many years after outlet operation ceases (DEIS Appendix C, p. D–31)

—Higher flows that may exacerbate streambank erosion and threaten farmstead structures and residences along the river (DEIS p. 4–10),

—Exacerbated flooding in the Sheyenne River that could damage agricultural property, including lands, equipment and structures (DEIS p. 5–12), and

—The increased risk of biota transfer (DEIS p. 5–56).

According to the DEIS:

"Potential mitigation features *could* [emphasis added] include acquisition of key riparian blocks of lands, plantings, erosion control, fish structures, fish stocking, and vegetation management." (DEIS Appendix C–141)

Therefore:

"A possible mitigation plan *could* [emphasis added] include purchase and management of strategic blocks of riparian lands along the upper and lower Sheyenne River. (DEIS p. 5–97)

"Management measures *could* [emphasis added] include plantings, erosion control structures, fish structures, and vegetation management." (DEIS p. 5–97)

except:

"This would be implemented *after operation has ceased* [emphasis added] in order to allow the terrestrial and aquatic ecosystems to recover." (DEIS p. 5–97)

and:

"For most pumping alternatives, pumping begins May 1, 2005 and occurs throughout the 50-years. For other Pelican Lake alternatives, pumping begins May 1, 2006." (DEIS Appendix A, p. A–40)

and:

"Changes in the aquatic community would persist for many years after outlet operation ceased, especially on the Sheyenne River above Lake Ashtabula. (DEIS Appendix D, p. D–31)

"The flow impacts due to a Pelican Lake alternative could be dramatic, particularly in the upper Sheyenne River, which is essentially isolated from recolonization sources. (DEIS p. 5–102)

"Some of the aquatic losses would not be mitigated; for example, loss of invertebrates, loss of fish year classes, loss of wetted usable area due to increased channel width, and changed channel morphology." (DEIS p. 5–97)

Therefore, this approach would delay mitigation of the impacts of the operation of the outlet for 50 years and would result in many significant impacts to the aquatic ecosystem of the Sheyenne River not being mitigated.

Consequently, the DEIS suggests that:

"Mitigation could also be implemented in other basins, which are also tributaries to the Red River. This would eliminate the problems associated with the continued operation of the outlet but would shift the burden of mitigation onto others not otherwise impacted by the project." (DEIS p. 5–97)

The DEIS neglects to mention that none of the other tributaries to the Red River are remotely similar hydrologically, morphologically and ecologically to the 460 miles of the Sheyenne River below the proposed Pelican Lake outlet, so the impacts to the Sheyenne River cannot be mitigated in other basins.

The cost estimates for these mitigation "alternatives" are based primarily on mitigation of terrestrial impacts (DEIS p. 5–97), but:

"A similar approach for estimating mitigation costs for losses to aquatic habitat is not appropriate. Two approaches would be possible for cost estimating. Some of the aquatic losses would not be mitigated; for example, loss of invertebrates, loss of fish year classes, losses of wetted usable area due to increased channel width, and changed channel morphology.

"In the absence of similar guidelines for estimating aquatic mitigation costs, one approach is to assume 5 percent of the total project cost is set aside for aquatic mitigation features . . . Aquatic mitigation features include streambank stabilization, in-stream structures, and fish stocking. As described above some impacts would not be mitigated.

"Another approach, which was used for the analysis in this report, is to assume that some aquatic mitigation could be accomplished through the management of riparian lands. Controlling erosion and providing a stable and vegetated streambank *could* [emphasis added] mitigate *some* [emphasis added] aquatic impacts. By maintaining a healthy riparian zone, aquatic resources impacts *could* [emphasis added] be minimized or populations could reestablish themselves *after the outlet has ceased operation* [emphasis added]. The acquisition of key riparian areas *could* [emphasis added] provide both terrestrial and aquatic benefits . . ." (DEIS p. 5–98)

It is evident, therefore, that the Corps (1) does not know what the impacts of operation of the proposed Pelican Lake 300 cfs outlet will be, (2) it has no plan for mitigating those impacts, (3) it does not know if the impacts can be mitigated, and (4) it already has written off the mitigation of impacts to aquatic resources. Faced with the daunting task of developing an effective plan to mitigate the impacts of the project, the DEIS finally dismisses the matter with the cursory statement that:

"Monitoring to determine the actual magnitude of effect is perhaps the best mitigation. Further mitigation can then be designed to address actual impacts." (DEIS p. 5–102)

According to the DEIS:

"Areas that would require monitoring include, but may not be limited to, groundwater, erosion, sedimentation, aquatic habitat, biota transfer, water quality, riparian vegetation, cultural resources, soil salinity, surface water users, and endangered species. *Monitoring is a major component of the proposed mitigation package* [emphasis added]. (DEIS p. 5–94)

"Extensive monitoring programs for Devils Lake and along the Sheyenne and Red Rivers are being designed and *will be proposed* [emphasis added] for implementation prior to operation of the outlet. *Potential* [emphasis added] monitoring programs include groundwater monitoring, water quality monitoring, soil salinity monitoring, establishment of long-term survey stations to assess aquatic ecosystem changes, including channel morphology, fish surveys, benthic/nektonic surveys and mussel surveys, and the establishment of vegetation survey transects along the Sheyenne River riparian corridor to monitor vegetation changes, monitoring downstream water users to determine changes in treatment procedures and costs." (DEIS p. 5–96)

Of course:

"Monitoring would require a long-term commitment of time and funds. It is assumed that monitoring would be required for the life of the project or until agency coordination determines it is no longer necessary." (DEIS p. 5.94)

The DEIS states that:

"Monitoring costs should be considered as part of the mitigation cost of the project." (DEIS p. 5–96)

but it does not suggest any mechanism for assuring that funds will continue to be appropriated to cover the costs of monitoring environmental impacts over the 50-year life of the project, or to cover the costs of mitigating the impacts that are identified. Once the outlet is built and operating in 2005, the North Dakota congressional delegation certainly will have little incentive to seek appropriations to identify and mitigate adverse impacts of the project.

So, who will conduct the monitoring and implement the mitigation plan for the proposed outlet from Devils Lake?

"Coordination with Federal, State, and local agencies and interest groups will be required to implement the monitoring and mitigation program." (DEIS p. 5–93)

What local agencies and interest groups? Certainly not the Devils Lake Joint Water Resource Board or the Devils Lake Emergency Management Committee, both of whom deny that any significant adverse downstream impacts would occur from operation of the outlet and lack the technical expertise to identify them when the do. State agencies? Certainly not the North Dakota State Water Commission which, under a directive of the Governor, is proposing to build a 300 cfs West Bay outlet and operate it with only the most perfunctory monitoring of impacts. What Federal agencies? The U.S. Fish and Wildlife Service? It is not the Service's responsibility to monitor and mitigate the environmental impacts of other Federal agencies' projects.

Responsibility for monitoring and mitigation of the environmental impacts of the Corps' proposed Pelican Lake 300 cfs outlet rests squarely the Corps, and a revised DEIS should recognize that and deal with that responsibility in a substantive and straightforward manner.

But, what about mitigating the impacts of biota transfer?

"No mitigation feature can be said to be 100 percent effective in eliminating the risk of biota transfer." (DEIS p. 5–56)

So, what does the DEIS propose?

"To minimize the risks of transfer of undesirable biota into waters downstream from the outlet, monitoring and outreach programs *could* [emphasis added] be implemented. These could include monitoring water chemistry at the outlet, at Lake Ashtabula, and at the Sheyenne River's mouth at a minimum." (DEIS p. 5–100)

But, of course, monitoring water chemistry will do nothing to detect undesirable biota or mitigate the impacts of their introduction to the Hudson Bay Basin. Anything else?

"Biotic monitoring programs *could* [emphasis added] also be enacted to create an alert system that would be triggered if exotic species are found in Devils Lake or in the Sheyenne River. These programs *could* [emphasis added] include public education regarding boat and trailer cleaning and identification of exotic fish species (e.g., zander, grass carp), and surveillance of boats and trailers by Government officials at public launch sites." (DEIS p. 5–100)

Of course, the absurdity of suggesting that a monitoring program would be effective in detecting even large exotic species such as zander and grass carp in the 132,000-acre Devils Lake in time to prevent their being transferred by the outlet to the Hudson Bay Basin is demonstrated by the fact, pointed out above, that zander were undetected in the 600-acre Spiritwood Lake for 8 years despite intensive sampling by the North Dakota Game and Fish Department, and grass carp have survived in the lake in very low numbers for two decades.

Furthermore, monitoring simply may detect the presence of undesirable biota, but it does nothing to prevent their transfer—particularly if they already have reached the Sheyenne River—or to mitigate the impacts of such a transfer. As the International Joint Commission pointed out:

". . . remedial measures to control unwanted exotics are oftentimes futile and, what makes it even more difficult, is that it may be some years before the full adverse impact is apparent." (International Joint Commission, 1977)

It is abundantly clear from the DEIS that the Corps not only does not have a mitigation plan for the proposed Pelican Lake 300 cfs outlet, but it then claims that monitoring is a major component of the project's mitigation "package" when it does not have a monitoring program, either, or know how it would be funded or who would conduct it—or even if it would be effective in identifying impacts.

There could not be a more clear or blatant violation of the mandate of the National Environmental Policy Act for Federal agencies to known the impacts of their actions before taking them.

U.S. ARMY CORPS OF ENGINEERS ENVIRONMENTAL OPERATING PRINCIPLES

On March 26, 2002, Chief of Engineers Lt. General Robert Flowers announced new Corps of Engineers Environmental Operating Principles to guide the Corps in all of its works:

"The Principles:

"Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.

"Recognize the interdependence of life and the physical environment.

"Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.

"Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.

"Continue to accept corporate responsibility under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems [emphasis added].

"Seek ways and means to assess and mitigate cumulative impacts to the environment; bring systems approaches to the full cycle of our processes and work.

"Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environmental impacts of our work.

"Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the Nation's problems that also protect and enhance the environment."

As the preceding comments document, the DEIS repeatedly violates every one of these principles. Therefore, a revised DEIS should discuss, substantively and specifically, how it has been modified to comply with these principles in each of the areas outlined in these comments.

CONCLUSIONS

—The DEIS is based on a flawed scoping process that discouraged and frustrated public participation.

—The DEIS inappropriately employs tiering of the analysis of the environmental impacts of the proposed Pelican Lake 300 cfs outlet in order to segment the analysis of those impacts and avoid their disclosure until after the decision has been made as whether to build the project.

—The DEIS fails to consider the cumulative impacts of other related and reasonably foreseeable projects, including the Red River Valley Water Supply Project, an inlet to deliver Missouri River water to Devils Lake, and the State of North Dakota's "temporary" emergency outlet from Devils Lake to the Sheyenne River.

—The Corps lacks congressional authorization to complete and operate an outlet from Devils Lake to the Sheyenne River.

—The proposed Pelican Lake 300 cfs outlet would have severe and long-lasting adverse impacts on the Sheyenne River under moderate future conditions. Although, the DEIS does not describe the environmental impacts of the proposed Pelican Lake 300 cfs outlet under the "wet future scenario," they would be substantially more severe.

—All Devils Lake outlet alternatives discussed in the DEIS would either be ineffective in preventing the continued rise of the lake or they would cause unacceptable downstream impacts, and none of the outlet alternatives have positive benefit/cost ratios under standard economic analyses. Therefore, the outlet alternatives are neither technically sound nor economically justified.

—The proposed Pelican Lake 300 cfs outlet is estimated to cost $125 million, but because the lake would continue to rise another 10 feet under the "wet future scenario" even with the outlet, an additional $300–$400 million would still have to be invested in infrastructure protection measures, bringing the total cost of this alternative to $425–$525 million.

—The "wet future scenario" upon which the proposed Pelican Lake 300 cfs outlet is justified is a manufactured set of conditions created to result in just enough precipitation to cause Devils Lake to overflow without the outlet, but not overflow with the outlet. This artificial scenario has no basis in reality and has a zero probability of occurring.

—The DEIS suggests that because of the low probability that the conditions will occur that are necessary to justify the proposed Pelican Lake 300 cfs outlet, the outlet should be viewed as an insurance policy rather than as an investment. However, the outlet neither guarantees that the lake will not continue to rise and overflow nor provides compensation if it does. Therefore, it should be more accurately viewed as a $125 million lottery ticket with virtually no chance of winning.

—There is no evidence in the geologic record to support speculation that an overflow of Devils Lake would result in the natural outlet eroding down 9 feet and releasing 6,000 cfs of water and 400,000 cubic yards of sediment into the Sheyenne River. Moreover, if the level of Devils Lake were to approach the overflow elevation, measures would be implemented to prevent erosion of the outlet.

—The DEIS fails to address wetland drainage in the Devils Lake Basin and its contribution to the rise of the lake, it significantly underestimates the potential for wetland restoration in the upper Devils Lake Basin to reduce flooding problems at the lake, and it disregards the effects of continuing wetland drainage in reducing the efficacy of the proposed Pelican Lake 300 cfs outlet and other publicly funded measures to deal with flooding problems at Devils Lake.

—The DEIS significantly inflates the value of non-urban lands around Devils Lake that already have been flooded and, by implication, those that would be flooded if the lake continues to rise with or without the outlet. The result is exaggeration of the benefits of preventing those losses.

—Although flooding at Devils Lake has resulted in personal hardships for those residents living adjacent to the lake, the influx of some $350 million in Federal funds and the thriving tourist industry based on the outstanding sport fishery that has developed at Devils Lake, combined with generous compensation of affected homeowners by Federal agencies, have substantially blunted the economic impacts of the rise of the lake.

—The potential for transfer of foreign biota from Devils Lake to the Hudson Bay Basin by an outlet from Devils Lake is a major issue, and its resolution is complicated by the paucity of information on the biota of Devils Lake, the potential for introduction of new damaging species into Devils Lake, and the absence of effective measures to mitigate the impacts of biota transfer if it should occur.

—The DEIS fails to provide a detailed discussion of the environmental impacts of the operation of the proposed Pelican Lake 300 cfs outlet, it acknowledges that it may not be possible to mitigate some impacts to aquatic resources, it does not include a plan to mitigate impacts that already have been identified, and it does not include a plan to monitor the impacts of the project and implement mitigation measures for those that are identified in the future.

—The DEIS violates each of the Corps of Engineers' recently released "Environmental Operating Principles."

—The DEIS is procedurally faulty, conceptually flawed, technically deficient and legally defective. The inadequacies are so fundamental and the deficiencies are so pervasive that the Corps has no recourse under the law except to withdraw the DEIS and begin the NEPA process anew to produce an environmental impact statement that complies with both the letter and the spirit of the National Environmental Policy Act.

—Despite its profound shortcomings, the DEIS is forced to acknowledge the inescapable conclusions that:

"The outlet plan that has been preliminarily selected for design is not economically justified using methods that would determine the expected benefits by producing probability-weighted benefits and costs. (DEIS p. 1–S–7)

". . . implementation of the Continued Infrastructure Protection within the basin is economically justified, and may in fact represent the most economically defensible approach to flood damage management at the lake." (DEIS p. 4–14)

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LETTER FROM CHARON K. JOHNSON

FEBRUARY 17, 2009.

The Honorable BYRON L. DORGAN,
United States Senate,
Washington, DC 20510.

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE: My name is Charon Johnson. My wife and I own land in sections 30, 31, and 32, in DeGroat Township, and section 36 in Chain Lake Township, all in Ramsey County, North Dakota, upstream of Devils Lake.

There appears to be the lack of a known strategy to deal with downstream and upstream events that will occur if Devils Lake continues to rise. It seems short sighted, with all of the studies that have been done over the years, there is no established public plan that spells out what procedures would be carried out to deal with continued rising of Devils Lake. As things stand now, to the best of my knowledge, the only plan being discussed, and currently on paper, is the protection of the city of Devils Lake by raising and extending levees. Concern has been voiced about Spirit Lake Nation Tribal lands, impacts on Camp Grafton Military base, and the city of Minnewaukan. These are all important issues.

My concern, and certainly the concern of many others who derive their livelihood from the approximately 50,000 acres of vulnerable agricultural land that lies upstream of the Lake, is what can be done to lessen the negative impact of a prolonged flood in that area.

It seems apparent there is not an outlet that is acceptable in solving the flooding problem of the area. Not withstanding the obstacles, it is simply "too little, too late".

Since Stump Lake has now equalized with Devils Lake, the level will continue to rise if the current climatic conditions continue. In all probability, the pressure from the tremendous head of water from the lakes will cause seepage and washing away of the silt buildup in the Tolna Coulee outlet to the Sheyenne River, well before the lake elevation reaches the assumed discharge level of 1,459 feet. If nature were allowed to take it's course, eventually the silt would no doubt wash away enough that the lakes would recede to the point there would no longer be a flooding problem in the Devils Lake basin. Undoubtedly before this would occur, someone, probably the Corps of Engineers, would react quickly to prevent serious consequences downstream from the volume of water that would naturally flow out of the lake. It has been suggested that a barrier or armor would be constructed to control the flow, and prevent this from happening.

Unless constructed at a lower level, such a structure would transfer the devastation from downstream to upstream and the approximately 50,000 acres of agricultural land. Also affected, would be highways, railroads, game refuges, wildlife habitat, etc. At that point, it could become a legal problem.

North Dakota Century Code.—Title 61, chapter 01, section 07, reads: Obstruction of watercourses—Penalty. "If any person illegally obstructs any ditch, drain, or watercourse, or diverts the water therein from its natural or artificial course, the person is liable to the party suffering injury from the obstruction or diversion for the full amount of the damage done, and in addition, is guilty of a class B misdemeanor".

Therefore, I suggest that it would be prudent to start a process to put in place a plan that could be implemented before such an event, and be prepared to act rather that react. There may be interests that would participate in a joint venture that could provide benefits to the area instead of distress.

Topographical maps will confirm the approximately 50,000 acres of agricultural land that is in jeopardy. From personal experience, I can attest that land values have already been negatively affected in the area.

My interest in this matter stems from my history in the area. Our land located in DeGroat Township, was homesteaded in 1883 by my great grandfather. While farming this land, I became actively involved in water issues in the Devils Lake Basin while serving on the Ramsey County Water Management Board. I was elected the first chairman of the Devils Lake Basin Joint Water Management Board, and assisted in bringing in additional counties to help make it basin wide. I know the area very well, and would welcome the opportunity to visit on these issues at any time.

Respectfully,

CHARON K. JOHNSON.

LETTER FROM CITY OF WAHPETON, PUBLIC WORKS

FEBRUARY 10, 2009.

Senator BYRON L. DORGAN,
United States Senate,
Washington, DC 20510

DEAR SENATOR DORGAN: Thank you for the opportunity to provide input regarding the city's concerns with potential spring flooding on the Red River this year.

Although significant progress has been made in the city's flood protection system since 1997 when the river crested at 19.4 ft, the city has only 65 percent of its permanent levee system in place and is dependant on temporary levees for the remaining third. Based on the current forecast the city will likely need to take advance measures to improve existing temporary levees and construct additional temporary levees.

In 2004 the city completed construction of its interior flood protection system which greatly improves it ability to prevent interior flooding such as occurred in 1997. The interior flood protection system includes emergency generators and large portable pumps for back-up and increased capacity at several pump stations. Based on the current river forecast for Wahpeton, the city will need to make preparations for additional backup pumps and alternative power for its pump stations.

If river levels reach the higher levels in the current river forecast or if precipitation patterns and events are more extreme than normal. the city may need to request the assistance of State and Federal agencies with advanced measures and flood fighting activities.

If you have questions or would like additional information, feel free to contact me by phone at 642–6565 or by e-mail at randyn@wahpeton.com.

Sincerely,

RANDALL NELSON, P.E.,
City of Wahpeton, Public Works Director.

PREPARED STATEMENT OF MYRA PEARSON, TRIBAL CHAIRPERSON, SPIRIT LAKE TRIBE

Chairman Dorgan and subcommittee members, I am Myra Pearson, Chairperson for the Spirit Lake Tribe. I would like to thank the subcommittee for inviting me here to testify on this extremely important issue for our tribe.

As you know, our area was declared a Federal Disaster Area for 12 years because of flooding. As a result of this flooding, our tribe has lost over 8,465 acres of land at an estimated value of over $2,962,750. The current prediction is that the water level will rise another 3 feet by June 2009. This will result in an additional loss of over 859 acres of trust land.

The weather services and other science related organization are predicting additional flooding, and our tribal elders are making similar predictions. Elders age 75 and older have told us that water is standing in places they have never seen it in their life time. One elder said "a long wet season, over 10 inches of rain in 2 days this fall, a quick and deep ground freeze early, all low areas filled with water, snow amounts not seen for many years and if we have a rainy spring season there is no place for the water to go."

Our tribal programs used their annual service budgets to respond to the flooding and we are now facing millions of dollars in lack of ability to provide needed services due to prioritizing disaster response. At your request the tribe has previously submitted a record of our financial losses with no resolve. Disaster recovery funding for Spirit Lake has been minimal and our recovery efforts are ongoing. The tribe currently has no resources to respond to new disaster mitigation needs, because of our lack of a tax base and because our casino is not as profitable as many other tribal casinos. Once again I bring to you a brief highlighted summary of the ongoing impacts of the severe flooding and the impacts that will be caused by additional flooding, and at financial estimates for mitigation/recovery in the short term.

Tribal Land Base Lost to Flooding.—In the treaty between the Spirit Lake Tribe and the United States Government there was an allocation of land made to individual tribal members and for the tribe's designated reservation lands. This land base has since dwindled and diminished in usable acreage due to the flooding, which has detrimentally affected our tribal economic well being. We have lost many acres used for agricultural leasing income, which now must be used for home site relocation from flooded areas. We now have little to no available land for home sites areas except for the farmland or income generating acreage. With the current projections the tribe will continue to lose its land base.

The loss of land base is straining our Housing Authority, which is incurring excessive home relocation costs, paying for repairs to homes damaged by ground water levels. This creates a lack of funding for other services. The population of our reservation is 6,500 enrolled members, and our housing waiting list has over 450 families waiting for housing availability.

The tribe requests congressional participation for a meeting with the tribe and the BIA to discuss the historical land base of the reservation and our current status of lost usable acreage and its affect to our economy as a tribe and government.

Funding Needed to Relocate Lagoon Areas.—In the St. Michael lagoon area on the reservation there are 90 homes currently threatened by the rising water levels. The lagoon must be moved to higher ground. The St. Michael lagoon area is surrounded by three roads that act as dams. See comments on RAADS project in section 5 below. There are homes with private septic systems and many of those systems are beginning to fail. In addition, there is no space available in the current lagoon for additional homes to be put in this area. The St. Michael lagoon has been damaged by excess pumping, but it is not feasible to repair the lagoon, when what is needed is relocation. The tribe will need $2.6 million to relocate and build a new lagoon for the St. Michael district. If the IHS sanitation facilities priority list was fully funded, then the tribe's needs would be included.

In addition, there are two other lagoons that the tribe must prepare for excess water use: (1) The Fort Totten Lagoon requires $135,000 in funding; and (2) the Tokio Lagoon requires $1.8 million in funding to prepare for flooding.

Funding Needed to Replace Sewer Systems.—The flooding is also causing older sewer systems to backup into the basement of homes. The majority of homes with this problem are occupied by tribal elders. The age of the sewer systems make them more vulnerable to failure from the ground water flooding. Therefore, the tribe requires $400,000 to replace these old sewer systems in 50 homes. IHS views this sewer replacement project as preventative and therefore will not use current funding to assist the tribe. The tribe sees the replacement project as preventing a imminent disaster. If the tribe waits for the disaster to occur it will cost much more in damage to the homes, lodging cost, cost of health care for the elders, and continuous pumping of the systems. The tribe requests funding to begin this replacement project immediately.

Funding Needed to Assess the Cost of Upgrading the Sewer Lift-Stations.—The sewer lift-stations on the reservation have not been upgraded since the early 1990s, and the flooding is causing excess usage of these lift-stations. When the lift-stantions were last upgraded the amount of water from the flooding was not affecting the tribe and there the lift-stations were not built to sustain the amount of extra workload caused by the flooding. The tribe estimates the cost of upgrading these lift-stations would be $145,000.

Funding Needed for the RAADS Project.—Lack of financial resources to complete within technical specifications roads under the Roads-Acting-As-Dams Project will compromise our current transportation infrastructure. The current roadways which are acting as dams are not built to withstand the pressure of the water at these levels. The RAADS project could protect at least 745 acres from being lost to flooding, but we understand that shortfalls in funding are prohibiting this project from achieving its full potential. The tribe requests that Congress appropriate the $125 million needed to raise the roads to a safe level that could prevent millions of dollars in damages, lost lives, and lost land base. We also understand that amend-

ments to section 1937 of the Safe Accountable Flexible Efficient Transportation Equity Act—A Legacy for Users, is needed to address the perceived limitation on the amount of funding that can be expended on the RAADS project in a single fiscal year. The tribe requests that Congress review those provisions and make the necessary amendments.

Funding Needed to Address the Health Related Impacts of the Flooding.—The mental and physical health of our people has been greatly impacted. Our historical poverty conditions, unemployment, and now a lack of money for assistance programs. During the mid-1990s, a suicide crisis on our reservation was attributed to the excessive stress that parents and care providers were in, due to the economic conditions caused by the effects of the flooding. From 2006–2008 there were over 4,600 visits to our health care facility for depressive disorders. There has also been an increase in the diagnosis of cancer, for which our tribe asks for the CDC to assist. Our people are also concerned that the water quality might be a contributing factor to the rise in cancer rates. We request that additional health funding be set aside for the tribe to asses the health impacts of flooding on our reservation and how to best meet the needs of our people suffering from cancer and stress related disorders. The tribe also requests funding for an emergency shelter facility for our youth and funding to increase the number of mental health providers on the reservation for our youth.

Devil's Lake Dike Funding.—Finally, we understand that Congress is considering appropriating an additional $80 million in funding to build up the Devil's Lake dike. While the tribe understands the need to protect the Devil's Lake community, the tribe also believes that building up the Devil's Lake dike will flood more of our lands, and cause more of the problems discussed here. We respectfully ask that when Congress is considering appropriating funds for these dike projects that it consider the additional costs and funds needed to protect our tribal lands. Those funds need to be included in any appropriations package for dike funding.

It will continue to take all of our heart and spirit to work together to assure that we do not treat these continuing threats to our livelihood as a tribal nation and local community with desensitized moral, due to the expansive time we have lived with these conditions and challenges. I thank you for this opportunity to share with you the concerns and issues of the Spirit Lake Tribe. I will be happy to answer any questions you have.

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