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95-65 FLOODING PROBLEMS, RED RIVER OF THE NORTH

GOVERNMENT

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JOINT HEARING  
BEFORE THE  
SUBCOMMITTEE ON  
INVESTIGATIONS AND REVIEW  
AND THE  
SUBCOMMITTEE ON WATER RESOURCES  
OF THE  
COMMITTEE ON  
PUBLIC WORKS AND TRANSPORTATION  
HOUSE OF REPRESENTATIVES  
NINETY-FIFTH CONGRESS  
SECOND SESSION

SEPTEMBER 30, 1978, AT EAST GRAND FORKS, MINN.

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and Transportation



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## FLOODING PROBLEMS, RED RIVER OF THE NORTH

SATURDAY, SEPTEMBER 30, 1978

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON INVESTIGATIONS AND REVIEW,  
AND SUBCOMMITTEE ON WATER RESOURCES,  
OF THE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,  
*East Grand Forks, Minn.*

The subcommittee met, pursuant to notice, at 9:35 a.m. in the hearing room of the American Inn, Highway No. 2, East Grand Forks, Minn., Hon. Arlan Stangeland presiding.

Present: Representatives Stangeland and Hagedorn.

Staff present: Paul R. S. Yates and Charles A. Krouse.

Mr. STANGELAND. I will call the meeting to order this morning.

This is a meeting of the Subcommittees on Investigation and Review and Water Resources of Public Works.

I would like to welcome all of the witnesses who are here, as well as the others who are here, to listen and learn, and hopefully we can learn together.

The flooding problems of the Red River of the North are of great concern to us all. Of equal concern to all of us is an early but long-lasting resolution of these problems. We must realize that no one State, no one agency, no one person can accomplish what has to be done. It will take the combined efforts of all of us working together, with each one willing to sacrifice a little to gain a lot.

I have with me today Congressman Tom Hagedorn of the Second District of Minnesota. Tom is a member of the Subcommittee on Water Resources—the subcommittee which handles the authorizations for water resource and flood control projects. I serve on the Subcommittee on Investigations and Review which is charged with the oversight responsibility for such matters. Repeated requests from people such as yourselves have brought us here to build a record for Congress concerning the problems you have, the corrective measures under consideration, and whatever proposals may emerge.

The solution to the Red River flooding problems will not be totally Federal, but the Federal Government unquestionably has a role to play. The Corps of Engineers and the U.S. Fish and Wildlife Service may offer some suggestions here today. We will also hear from the States, the watershed districts, the cities, and the farmers. As a minimum, I expect this meeting to clarify some issues that are in dispute by bringing together all divergent groups to lay their cards on the table.

I especially hope the watershed districts can pull together as a coordinated group and perhaps lead the way toward a long-range solution. I have asked Bob Herbst, Assistant Secretary of the Interior for Fish and Wildlife, to consider the feasibility of temporary water

storage on Fish and Wildlife lands to aid in lowering flood crests. The watershed districts may wish to look into this approach, among others.

Most important, we must all involve ourselves in resolving this problem and in so doing keep in mind that each of us is contributing to the final solution. Tom Hagedorn and I are here today both to demonstrate our willingness to help at the congressional level and to emphasize that some local and regional agreements must be reached.

For the convenience of those present and any who could not appear today, we will hold the official record open for 2 weeks for the submission of written material.

I have here a letter I would like to read, from Congressman Mark Andrews.

DEAR ARLAN: Thank you for inviting me to participate in hearings at East Grand Forks, Minn., conducted by your Investigations and Review Subcommittee, Public Works and Transportation, on the Red River flooding problems. I deeply regret that I am unable to attend due to a longstanding commitment on September 30. However, I have asked my field representative, Earnie Schmit, to represent me.

I am also aware that Mrs. Monica Larivee from Congressman Andrews' Grand Forks office is with us as well.

As you know, these recurrent floods which grow more severe each year are a major problem for North Dakota and Minnesota farmers in the Red River Valley. Some of the most productive land in our State is being damaged, and the ability to plant crops is in jeopardy because of the rampaging Red River. It is imperative that an early, workable solution be found to this problem.

It is my hope that the Corps of Engineers' studies which could provide a basis for solving the problems can be further expedited. The last 2 years, my colleagues on the Appropriations Committee have supported us by increasing the budget for Red River of the North studies to full capability funding. I will continue to do all I can to expedite the study efforts.

Studies, of course, by themselves solve nothing. However, this study can provide alternatives and options needed by our local and State governments to formulate a workable plan of action.

In the interim, I hope the North Dakota State Water Commission and the Minnesota Department of Natural Resources will work with local water districts and county commissioners to formulate plans and to take actions which will be fair to farmers on both sides of the river and which will protect both agricultural land and urban interests.

I am sure that this hearing will provide valuable answers to this problem and I look forward to working with you towards solving it.

Warm regards.

Sincerely,

Mark Andrews.

Mr. Hagedorn, do you have any statement you would like to make?

MR. HAGEDORN. Thank you, Mr. Chairman.

It is a pleasure to be here in East Grand Forks to learn firsthand about your problems concerning the Red River of the North and the diking problems that you have had and been involved with. I recognize that any solution is going to require much local and regional cooperation between communities in the State of Minnesota and North Dakota. I think there is a limited role which the Federal Government will be able to play. But as a member of the Water Resources Committee I want to stress that I am willing to help resolve this issue.

So, I think, Mr. Chairman, we should move forward with the testimony and listen to the individuals who have come to testify today.

Thank you.

Mr. STANGELAND. I would just like to recognize for the record Senator Marvin Hanson, Minnesota State Senate, here in attendance.

We will begin the hearings this morning and we have set up a series of people to testify who are in some manner connected with the local governmental unit.

I would like to call first off Mr. Duane R. Ekman, who is chairman, and Ray Huuton, vice chairman, of the Minn-Dak Farmers Food Control Association.

I would say before we begin for those of you who are interested in testifying after we get through with our formal witnesses, we would like to have you condense your testimony as much as possible.

I have to apologize that we are a half hour late in starting this meeting from what it was advertised, but we had a little bit of a mix up as to where our airplane was going to land. Consequently we were a little late.

But we will be wanting to hear from as many as care to testify and I would advise those of you who are thinking of testifying to have your thoughts collected and try not to be repetitive, but maybe when you hear someone say something alike, you can just refer to that and attach yourself to his remarks.

Mr. Ekman, do you care to proceed?

**TESTIMONY OF DUANE R. EKMAN, CHAIRMAN, AND RAY HUTTON,  
VICE CHAIRMAN, MINN-DAK FARMERS FLOOD CONTROL ASSO-  
CIATION**

Mr. EKMAN. Thank you.

Mr. Stangeland, Mr. Hagedorn, and the staff members:

On behalf of the Minn-Dak Farmers Flood Control Association, I thank you for inviting us here to express our concerns, as farmers, about the recurrent flood problems on the Red River of the North.

In reference to condensing our statement, I believe, Mr. Chairman, that I would like to read a paper that we have presented and we feel this is a condensed form already.

Mr. STANGELAND. Fine.

Mr. EKMAN. As a background, Minn-Dak is an association of seven farmer groups centered around Manvel, N.Dak. and Oslo, Minn. These seven farmer groups organized into the Minn-Dak Farmers Flood Control Association in 1975; mainly as an emergency attempt to protect thousands of acres of crops from the disastrous 1975 summer flood by constructing a system of dikes along the Red River. Minn-Dak realizes that diking alone is not the answer to the Red River Valley's flooding problems. We realize that water retention in the tributaries to the Red River is essential. Minn-Dak's main goal is a comprehensive water management and flood control program for the entire Red River Valley.

I would like to quote a statement from the Souris-Red-Rainy River Basin Commission's comprehensive study which is especially relevant to past studies of the problems in the Red River Basin.

The citizens role in making plans designed to solve his problems is little more than reviewing and commenting on decisions already made by the professional planners. What is needed is a way for the committed citizen to enter the process at the outset and remain as a continuous participant. He must be encouraged to

seek a broader role in challenging the professionals to consider the validity of customary approaches to planning and management.<sup>1</sup>

Local, State, and Federal Government has our commitment to participate in the design and implementation of an overall plan for flood prevention for the Red River Basin.

We have participated in many public meetings and several public hearings so that much of what we have to present here today is already a matter of public record. This paper has been prepared after consultation with our membership and with the help of the Middle River-Snake River Watershed District staff.

With your approval, Mr. Chairman, I would like to restate portions of our position today. After this presentation, I will gladly answer any questions the committee may have. However, I would like to retain the right to redirect certain questions to persons more familiar with the material than myself.

There are three main topics we would like to comment on. First, the severity of the flooding on the main stem of the Red River. Secondly, the agricultural dikes and the proposed diking criteria. Third, the role of government to control flooding. Finally, we would like to present some recommendations for your consideration.

#### SEVERITY OF FLOODS ON THE MAIN STEM HISTORY

The Red River is formed by the confluence of the Otter Tail and Bois de Sioux Rivers at Wahpeton, N. Dak. and Breckenridge, Minn. From this point the Red River flows northward to form the Minnesota-North Dakota State boundary and continues into Canada. At this point the river drains 40,070 square miles or 25 million acres. Eighteen major tributaries flow into the Red River from North Dakota and Minnesota. The slope of the main stem averages approximately one-half foot per mile while the slopes on tributary streams range up to 20 times this. According to the corps reports the Red River Valley regional 100 year floodplain includes six cities larger than 2,500 population, eight smaller communities and a vast rural area, totaling 606,500 acres. About 67 percent of this area, or 406,000 acres, is located between Grand Forks and the international boundary.<sup>2</sup>

The agricultural importance of the Red River Valley has national significance. Eighty percent of the total area is used for crop production. Red River Valley cropland is recognized as some of the richest soil in the world, producing wheat, barley, beans, potatoes, sugar beets, and sunflowers as major crops. Production capabilities from these soils under normal conditions have averaged yields from 1½ to 2 times the national average for some crops.

Increasing flooding has had serious effects on crop production in this area. Red River main stem flooding differs from most areas in

<sup>1</sup> Souris-Red-Rainy River Basins Commission, "Comprehensive Study," vol. 7 (Washington, D.C.: U.S. Government Printing Office, 1972), p. 261.

<sup>2</sup> Souris-Red-Rainy River Basins Commission, "Comprehensive Study," vol. 1 (Washington, D.C.: U.S. Government Printing Office, 1972), pp. 129-30.

that water covers the land from 3 to 4 weeks on the average. We have also experienced floods that last from 6 to 7 weeks. This causes planting delays extended as late as mid-June and in some years has totally prevented planting. In July of 1975 we experienced a summer flood that destroyed growing crops, after already having suffered a spring flood.

Many studies have been made which describe the flood problems in the Red River Basin, however, damages to property along the main stem have never been properly recognized.

State and Federal policymakers have told us that we live in a flood plain and we must accept periodic flooding of our property. Up to a point they are correct, but in recent years the damages we have sustained have increased so rapidly in magnitude and frequency that the future of our farms now rests on our ability to protect them from nearly annual flooding.

We have severe flooding around Oslo, Minn., whenever the stage at Grand Forks reaches  $37\frac{1}{2}$  feet or more. This stage corresponds roughly to what the corps presently defines as a 5-year flood.<sup>1</sup> In the last 14 years we have experienced nine 5-year floods in our area. We believe that the magnitude and frequency of flood events has increased dramatically.

It has been argued that we are merely going through another wet cycle and that floods were recorded in 1882, 1893, and 1897, which equaled or greatly exceeded any of these which have occurred since. We do not believe this is true. In the vicinity of Oslo, Minn. there are many building sites that were homesteaded prior to 1897, where the descendants of the original settlers still live. According to testimony presented at a hearing on April 26, 1978, in Grand Forks, the stage of the 1897 flood was exceeded in 1950, 1965, 1966, 1969, 1975, and 1978.<sup>2</sup> Considering this, we feel it is unlikely the the 1897 flood was as large as the current publications indicate.

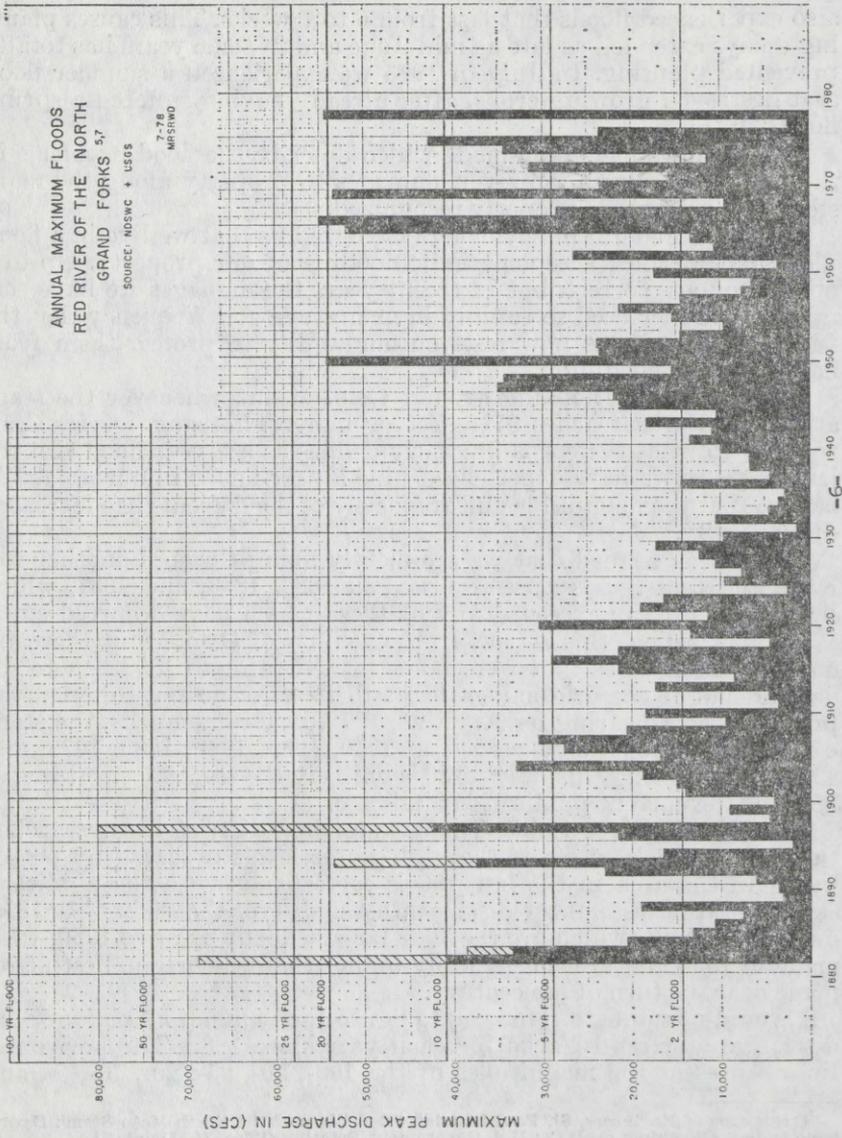
The Middle River-Snake River watershed district has researched the early records to see if the high water levels observed by people living in the area in the late 1800's corresponds with the published stages. It appears that the discharge estimates for the 1882, 1883, 1893, and 1897, floods, which are the four largest floods prior to 1950, were made in 1953 and are considerably higher than the original estimates made near the turn of the century.

I would now like to refer you to figure 1, on annual maximum peak discharge at Grand Forks for each year since 1882. The horizontal lines represent the magnitudes of the 100-, 50-, 25-, 20-, 10-, 5-, and

<sup>1</sup> U.S. Corps of Engineers, St. Paul District, "Red River of the North Main Stem: Hydrologic Data." (Washington, D.C.: U.S. Government Printing Office, 1977), pl. 21.

<sup>2</sup> Minnesota State Office of Hearing Examiners, transcript of hearings held on Apr. 25, 1978, at Moorhead, Minn. and on Apr. 26, 1978, at Grand Forks, N. Dak., pertaining to the first amendment to the joint and cooperative agreement for the establishment of criteria for authorizing dikes and other flood control structures and measures of the Red River of the North and the Bois De Sioux River."

Figure I



2-year floods.<sup>1, 2</sup> The cross-hatched portions of the columns for 1882, 1883, 1893, and 1897, represent the adjustments made to these values in 1953.

It is interesting to note that in publications prior to 1950,<sup>3,4,5,6,7</sup> the shaded value for these years is reported as the peak discharge. In our opinion, the 1953 adjustments were not justified and certainly cannot represent the flood situation as we know it existed in 1897. We contend that the magnitude and frequency of flooding on the Red River of the North has definitely increased, and that close examination of all the evidence will support this contention.

I would also like to interject here that there may be some questions and further explanation of this graph required and I would like to suggest that Mr. Ron Adrian, engineer for the watershed district, will make himself available for the explanation, if so desired, Mr. Chairman.

#### LEGAL RESPONSIBILITIES OF THE GOVERNMENT TO CONTROL FLOODING

We believe it is the responsibility of the State to control flooding problems. This has been recognized in the Federal courts in *Cubbins v. Mississippi River Commission*, (1913); BC 204 Fed. 299.

In addressing the role of the State government the court said:

The right of the States \* \* \* to construct and maintain levees along the banks of said river has been exercised from time immemorial, and until the filing of the bill has never been questioned in the Courts \* \* \*. When we consider the vast territory \* \* \* the great value of the property affected by these periodical overflows, a Government which would fail to take some steps to prevent the loss of life and destruction of property likely to occur by reason of the inundations which occur annually, and in some years two and three times, would be derelict in its duty to its people.

#### THE STATE'S ROLE IN CONTROLLING FLOODING

Laws of North Dakota and Minnesota clearly mandate certain State responsibilities for water management and flood control, and both States have the authority necessary to implement flood control projects. Yet, in our opinion, neither State has acted to even begin to alleviate flooding along the Red River main stem.

The North Dakota Century Code, section 61-01-22 requires anyone proposing to drain a body of water or wetland with a drainage area of over 80 acres to obtain a permit from the State water conservation commission. Before such a permit may be granted, the proposal must be investigated to determine whether the water being drained will

<sup>1</sup> U.S. Corps of Engineers, St. Paul district, "Red River of the North Main Stem: Hydrologic Data." (Washington, D.C.: U.S. Government Printing Office, 1977).

<sup>2</sup> U.S. Geological Survey, "Compilation of Records of Surface Waters of the United States through September 1950: Part 5. Hudson Bay and Upper Mississippi River Basins" Geological Survey Water-Supply Paper 1308 (Washington, D.C.: U.S. Printing Office, 1959), and all subsequent publications.

<sup>3</sup> George A. Ralph, "Report of the Water Resources Investigation of Minnesota: 1911-12 by the State Drainage Commission in Cooperation with the United States Geological Survey." (n.p., 1913), pp. 370-80.

<sup>4</sup> Robert Follansbee, "Water Resources of Minnesota: Results of Surface Water Investigations by the United States Geological Survey in Cooperation with the State Drainage Commission." (n.p., 1912).

<sup>5</sup> North Dakota State Water Conservation Commission, "Water Resources of North Dakota Supplement "B" of the Fourth Biennial Report of the State Water Conservation Commission and the Twenty-First Biennial Report of the State Engineer of North Dakota." (n.p., 1945), pp. 120-35.

<sup>6</sup> U.S. Congress, House, Committee on Public Works, "Red River of North Drainage Basin, Minnesota, South Dakota, and North Dakota: Letter from the Secretary of the Army." 81st Cong., 1st sess., 1949, House Doc. No. 185, p. 36.

<sup>7</sup> U.S. Department of Agriculture, "Report on Drainage and Prevention of Overflow in the Red River of the North." Department of Agriculture Bulletin No. 1017, by P. T. Simons and Forest V. King (Washington, D.C.: 1922), p. 23 and p. 51.

flood lower landowners. The water management district may not issue a permit for a proposal which will cause flooding unless flowage easements are obtained from the burdened landowners. Further, anyone who performed such work without a permit is liable for all damages sustained by the lower landowners. This law could have been used to control upper watershed drainage and slow the increase of severe flooding along the Red. Instead, North Dakota has largely ignored its responsibility to properly enforce it. The necessity for controlling the additional runoff waters caused by increased tributary drainage was long ago recognized by Herbert Hard, former chief engineer for North Dakota State Water Commission, in his second biennial report to the Governor for the years 1919-20. In reference to the disastrous floods of 1915-17, he said that "These floods are not only likely to recur again, but, owing to the constant increase in the number of large ditches and canals in the valley, are likely to become more destructive in the future."<sup>1</sup>

In view of this finding by the chief engineer for the State of North Dakota and the North Dakota statute it is difficult to see how any new drainage could have been allowed in the North Dakota portion of the Red River basin.

The North Dakota Century Code, section 61-02-01, declares in part:

That the general welfare and the protection of and \* \* \* property the rights of all the people \* \* \* require that the \* \* \* control of waters \* \* \* and the control of floods \* \* \* necessitate the exercise of the sovereign powers of the state and \* \* \* concern a public purpose.

Clearly, the State has the responsibility to be actively involved in flood control for the general welfare of all its citizens. However, North Dakota has not actively sought a solution to the flooding problems along the Red River.

The North Dakota Century Code, section 61-02-14, gives the State water conservation commission the:

Full and complete power, authority and general jurisdiction \* \* \* to control and regulate flood flow in the streams of the State to minimize the damages of such flood waters

and to

stabilize the waters of the state for \* \* \* flood control.

The same statute gives the commission the authority to:

Cooperate with the United States \* \* \* in the \* \* \* establishment \* \* \* of dams \* \* \* (and) reservoirs \* \* \* for \* \* \* flood control.

The North Dakota Century Code, section 61-02-22, gives the commission condemnation power to install waterworks.

Minnesota's responsibilities are also outlined in State law.

Minnesota statute, section 105.39, directed the commissioner of the DNR to develop a water resources conservation program for Minnesota "for the best interest of the people". It further mandated that the commissioner "shall be guided by such program in issuing permits for waterworks." Minnesota statutes, section 105.403, directed that a State water plan be prepared and that it include provisions for the "control or alleviation of damages by flood waters" and "regulation of

<sup>1</sup> Herbert A. Hard, "2nd Biennial Report to the Governor of North Dakota on Flood Control" (Grand Forks: Normanden Publishing Co., n.d.), p. 10.

the flow of streams and conservation of the waters thereof." Despite these legislative directives, the State of Minnesota has no comprehensive water conservation program or flood control plan. The Commissioner is thus in the position of having to determine the feasibility and the practicality of flood control proposals without the guidance of any statewide program or plan defining what Minnesota's water objectives are.

Minnesota statute, section 105.48, grants the commissioner of the DNR the power to construct and maintain dikes and dams.

Minnesota statutes 105.39, subdivision 4, grants the commissioner condemnation power for water projects.

Minnesota statutes, section 105.49, gives the commissioner the power to enter into agreements with Federal, State, and county government for water projects.

Despite the authorities granted to both States and their responsibilities to control flooding problems, virtually nothing has been accomplished at the State level to reduce flood damages along the main stem of the Red River.

#### THE FEDERAL ROLE IN CONTROLLING FLOODWATERS OF THE MAIN STEM OF THE RED RIVER

Another factor contributing to the flood problems on the Red River main stem has been the manner in which Federal involvement in flood control works has been carried out. The time span for Federal works involving flood control has become so lengthy as to almost preclude any major works being constructed during an individual's active career, and the works that have been done were constructed with little regard to their effects on the flooding of the Red River main stem.

It has long been recognized that a comprehensive plan for flood control is needed, yet the projects that have been constructed have been very localized in nature. Back in 1920, Herbert Hard, North Dakota's chief engineer reported that:

Not even the worst injured districts should be detached from the Valley problem for separate and immediate attention. All basins are interdependent, and if one is treated separately and put under control, its removal from the project will remove its impetus toward the solution of those less immediate problems, and less capable of independent action.<sup>1</sup>

In constructing works of flood control there are essentially three measures available to control floodwaters. These are: The construction of levee's, the increase of channel capacity—channelization and drainage—and the construction of flood detention reservoirs. It appears that in the vast majority of the projects to date the methodology used has been the construction or improvement of channels in rural areas and the construction of dikes in urban areas.

As an example of this, the last comprehensive plan which we are aware of for flood control in the Red River basin is outlined in House Document No. 185, dated 1949:

The projects (proposed) include a total of approximately 276 miles of channel improvements and cutoffs which would shorten channel distances a total of about 68 miles. In addition the projects include a total of 4.5 miles of levee's and flood

<sup>1</sup> Ibid., p. 76.

walls through urban areas on the main stem and a multiple purpose reservoir on the Otter Tail River.<sup>1</sup>

The problem of increased flood flows from these projects are addressed as follows:

It is believed that increase in flood flow at other points on the main stem as a result of construction of other tributary channel and major drainage works would be relatively small and would tend to be offset by operation of existing and proposed reservoirs in the basin.<sup>2</sup>

The construction of flood detention reservoirs as a viable alternative for flood control in the Red River basin appears to be limited by the apparent inability of the Corps of Engineers to consider secondary benefits<sup>3</sup> and the environmental damages caused by flooding of downstream areas in their determination of benefit-cost ratios.

#### DIKING

The inaction or inability of the States, combined with statements from representatives of the corps stating that it was not feasible to provide protection to agricultural lands, left us with only one alternative to control flooding, namely the construction of dikes.

The idea of continuous agricultural dikes along the Red River was listed as an alternative for flood protection by the Souris-Red-Rainy comprehensive study in 1972.<sup>1, 2</sup> This plan was generally dismissed as too costly for further consideration until we were faced with an emergency situation in 1975. At that time heavy rains fell in the southern and eastern portions of the valley prompting official flood forecasts for downstream areas. Farmers in the Oslo area had 1 week to prepare, and they did so by constructing 10 miles of dike, which proved successful in saving an estimated \$4 million of crops. Naturally, others, who had lost their entire crop were impressed by the diking effort so they organized to continue the concept. Organizational meetings were attended by representatives from township, village, and county government, SCS, watershed districts, the State legislature, and farmer leaders.

The levee system consists of approximately 38 miles of continuous levee in Minnesota and approximately 10 miles of continuous levee in North Dakota in the vicinity of Oslo. The levee in Minnesota was generally constructed to an elevation corresponding to 3 feet above the level of the July 1975 flood and the elevation in North Dakota was generally constructed to an elevation of 2 feet above the July 1975 flood.

I should note here that an agreement was made to limit that dike to 3 feet above the 1975 level.

Alignment and location were determined by the landowner. Coordination was provided by Minn-Dak. However, the levee system in North Dakota was not completed because of opposition from the State

<sup>1</sup> U.S. Congress, House, Committee on Public Works, "Red River of the North Drainage Basin, Minnesota, South Dakota, and North Dakota: Letter from the Secretary of the Army," 81st Cong., 1st sess., 1949, House Doc. No. 185, p. 46.

<sup>2</sup> *Ibid.*, p. 54.

<sup>3</sup> Letter dated Aug. 23, 1977, from J. R. Calton, Chief of the Planning Branch of St. Paul District Corps of Engineers, to Mrs. Elsie Miller of the East Grand Forks Chamber of Commerce concerning evaluation of secondary benefits.

<sup>4</sup> Letter dated Feb. 9, 1978, from James E. Braatz, Chief of Public Affairs Office, St. Paul District Corps of Engineers, to John Roleczynski of Minot, N. Dak. concerning agricultural diking.

<sup>5</sup> Souris-Red-Rainy River Basins Commission, "Comprehensive Study," vol. 3, Washington, D.C.: U.S. Government Printing Office, 1972, p. 134.

Water Commission to the construction and inaction by the State Water Commission on a petition to form a diking district.

The dikes were constructed between June 1975 and December 1975 in full view of and acknowledged by representatives of North Dakota, Minnesota, and the Federal Government.<sup>1, 2</sup> It was not until construction was complete that the States acted by drafting a joint agreement to formulate criteria for the control of diking along the Red River.

In September 1976 we were informed of the intent of the States to adopt a joint agreement to regulate diking. The agreement was to be among three parties: The States of North Dakota, Minnesota, and the area residents.<sup>3</sup> The criteria was to be developed after consultation with the parties involved.

On December 30, 1976, we were informed at a meeting held in Grand Forks, N. Dak., that a joint and cooperative agreement had been adopted by the States of North Dakota and Minnesota and that the criteria which would become a part of this agreement would be developed at a later date.

Perhaps more important than the adoption of the agreement at this point in time were the attitudes of the persons representing the States. We were impressed most by the fact that the representatives and the agencies involved appeared to view this as an adversary relationship. I would like to quote from the statements made by some of the participants.

A statement presented for Mr. Robert Herbst, then the Minnesota Commissioner of Natural Resources said in part:

After consultation with North Dakota officials, I feel confident that our two States will shortly thereafter mutually agree on criteria for approval of dike construction along these boundary waters. Once this has been accomplished, I intend to determine as soon as possible what portions of the existing agricultural dikes fail to meet the adopted criteria and by a commissioner's order will require their complete removal by November 15, 1977.<sup>1</sup>

Vern Fahy presented a letter that had been forwarded to certain landowners in North Dakota who owned lands upon which dikes had been constructed. This letter said, in part, that records developed from field investigations indicated that they had constructed or authorized the construction of dikes on their properties without securing proper authorization first. The letter also stated that to receive proper authorization for their dikes, permits would be required; and that if these dikes do not meet the criteria which the two States adopt, the dikes will have to be removed.<sup>2</sup>

A statement presented for Col. Forrest T. Gay III, U.S. Army Corps of Engineers stated in part that:

The District Engineer has the authority to order the removal of unauthorized structures placed upon the right-of-way or site of a Federal flood control project.

<sup>1</sup> "Effects of Diking on Red River Uncertain." Grand Forks Herald, Oct. 15, 1975.

<sup>2</sup> Letter dated Sept. 11, 1975, from Max W. Noah, St. Paul District Corps of Engineers, to James M. Wright, flood plain management unit, Minnesota Department of Natural Resources concerning Red River agricultural dikes.

<sup>3</sup> Statement by Vern Fahy, State engineer, North Dakota State Water Commission, at the Red River farm diking hydrologic analysis meeting on Sept. 14, 1976, at the American Legion post in Oslo, Minn. Meeting minutes available through the Upper Mississippi River Basin Commission regional office, at Fargo, N. Dak.

<sup>1</sup> Statement by Robert L. Herbst, commissioner, Minnesota Department of Natural Resources, at the meeting of the Upper Mississippi River Basin Commission on Dec. 30, 1976, at Grand Forks, N. Dak.

<sup>2</sup> Letter dated Dec. 9, 1976, from Vern Fahy, State engineer, North Dakota State Water Commission, to certain North Dakota landowners, informing them of proposed action by North Dakota concerning Red River agricultural dikes.

In this regard a letter was sent to Mayor Peter Gerszewski of Oslo, Minn. on November 7, 1975, directing the city to remove the local dikes from impingement upon the permanent Federal levees and from permanent project right-of-way.<sup>1</sup>

The statement goes on to state that:

\* \* \* The Corps is deeply concerned about the long-term consequences if such a levee construction program is permitted to continue unabated or uncontrolled. Moreover, it is the corps recommendation that dike building along the banks of the Red River cease and the present dikes be removed and not be rebuilt until detailed studies determine the appropriate location for a system of agricultural levees.<sup>1</sup>

Up to this point in time the closest any of the agencies involved had come to recognizing the factors contributing to the flooding of the Red River main stem is revealed in section VI of the joint and cooperative agreement which states:

Parties to this agreement hereby agree that they shall initiate discussions concerning joint management/regulation of drainage into the boundary rivers and their tributaries.<sup>1</sup>

In 1976 and 1977 we participated in several meetings with the States in an effort to develop criteria for dike construction. These meetings resulted in the States drafting the first amendment to the joint and cooperative agreement,<sup>2</sup> which is the diking criteria.

In April 1978 we participated in a public hearing on the proposed "first amendment." The hearing was conducted by the Minnesota Office of Hearing Examiners for the State of Minnesota and the State Water Commission for North Dakota. On July 26, 1978, the hearing examiner issued his recommendations and findings and we are presently awaiting the decision of the States on whether or not to adopt the criteria as proposed or to modify them.

In essence, the hearing examiner has accepted the criteria as proposed with the exception that an 18-month waiting period was recommended for the States to deal with the existing dikes.<sup>3</sup>

#### SUMMARY OF THE PROPOSED CRITERIA

In essence, the criteria, as proposed, seek to regulate all agricultural levees within what is termed the regional flood plain of the Red River of the North and the Bois de Sioux River. These criteria seek to establish a permit system that would limit the construction of agricultural levees to a height 1 foot above the elevation of the 10-year frequency flood. They would also not permit any levee system which would raise the stage of the 10-year frequency flood 1 foot or more. In addition, minimum standards are set for interior drainage, levee construction and crossings of minor tributaries. Also, levees are not to be permitted to cross any of the larger tributaries.<sup>1</sup>

Our objections to the criteria have been well documented. They were presented, in part, at the dike hearings held April 25 and 26, 1978, and

<sup>1</sup> Statement by Col. Forrest T. Gay, St. Paul District Corps of Engineers, at the meeting of the Upper Mississippi River Basin Commission on Dec. 30, 1976, at Grand Forks, N. Dak.

<sup>2</sup> "Joint and Cooperative Agreement for the Establishment of Criteria for Authorizing Dikes and other Flood Control Structures and Measures on the Red River of the North and the Bois de Sioux River," made between Minnesota and North Dakota and effective on Nov. 15, 1976.

<sup>3</sup> *Ibid.*, first amendment.

<sup>4</sup> Report of hearing examiner, Allan W. Klein, Minnesota State Office of Hearing Examiners, dated July 26, 1978, "In the Matter of Proposed Rules for Regulating Agricultural Dike Construction Along the Red River of the North and Bois de Sioux River."

<sup>5</sup> *Ibid.*, first amendment.

they are a part of the official proceedings, so I will not repeat them here. However, to give you some perspective, I will briefly summarize our objections.

If approved, the proposed criteria will have the effect of retroactively establishing a flood plain zoning ordinance that would be applicable only to agricultural lands. Flood plain zoning is not an appropriate method of reducing losses to agricultural lands. It has been stated by representatives of both States that the criteria as proposed would provide protection 9 out of 10 years. This is extremely hard to believe. Levees meeting the proposed criteria would have failed three times in the last 4 years and six times in the most recent 14-year record, or an average of four times in 10 years. We have every reason to believe that the 1-foot limitation in stage increase has already been exceeded by increased drainage on the tributaries and, unless we are allowed to continue to protect ourselves, we expect this will destroy our livelihood.

It is ironic that the corps has completed one study and the States have conducted hearings in regards to these criteria, yet neither the corps nor the States has publicly stated what portions of the existing levee system would meet the criteria and to what extent they would have to be modified. Under these circumstances we will work to retain the only flood protection we have.

We briefly listed some recommendations that probably need a lot of expanding on, but this paper was getting quite long so I will just read them in their condensed form.

A comprehensive plan for control of flooding in the Red River Basin must be developed and implemented. Minn-Dak believes changes are necessary in the following areas:

1. Both large and small water retention structures on the tributaries are needed.
2. Diking should be recognized as a necessary part of obtaining flood protection for agricultural lands and farmsteads.
3. Greater recognition of local input is needed.
4. Drainage flows must be controlled to prevent tributary peak flows from reaching the Red River main stem simultaneously.
5. Red River bridges and channel flow capacities must be evaluated in a systematic manner.
6. Downstream channel handling capacities must be considered by all drainage authorities before authorizing drainage projects.
7. Federal Government must stop expending public funds for drainage projects. Some of these projects are presently done under the guise of flood control.
8. Environmental damages caused by floods must be recognized and evaluated.
9. Offsetting environmental benefits must be considered when impact statements are drafted for proposed impoundment sites.
10. Canadian-American dialog should be improved as a necessary part of developing the Red River Basin plan.
11. Cost-benefit ratio determination for flood projects should include drainage benefits realized by upstream areas.
12. Compensation to farmers and other property owners displaced by acquisition of land for impoundment sites must be greater than market value.

13. Capital gains income tax laws also need changing to allow longer time for reacquisition of farmland.

14. Feasibility for electric power generation should be considered in development of impoundment projects.

15. Federal disaster aids after floods are vastly inadequate to cover actual damages. We believe taxpayer money would be better spent on flood damage reduction projects.

We believe this position paper has outlined the responsibility of Government to provide better management of water resources. Minn-Dak believes that this can be realized in a realistic timeframe if the Federal Government properly recognizes priority needs and provides adequate funding for implementation of water management projects. In view of the Corps of Engineers' record, past record, we feel that this could be best accomplished by channeling funds through the States involved, with Federal involvement limited to a coordinative role.

Thank you for the chance to present this, and we will try to answer any questions or respond to any portions of this, Mr. Chairman.

Mr. STANGELAND. Thank you, Duane, for a very excellent statement. I gather from your statement when you go back to comparing the floods, the last severe one of 1897 and then the recent flooding, your contention is that increased drainage throughout the whole basin is the cause of the increased flooding?

Mr. EKMAN. Yes. That is correct.

But we also bring this up, Mr. Chairman, for another reason. We cannot understand why one or all of the participants, the corps or the two States, have chosen to put so much emphasis on the fact that they believe we are just going through another wet cycle and that the floods have not increased in frequency and magnitude. This is why we chose to address this problem in this position paper here today. And that is why I believe it is an important part.

But I still cannot fully understand the reason why such efforts were made in presenting these at the hearings in Grand Forks.

Mr. STANGELAND. I apologize.

Mr. Hutton, did you have anything you wanted to add to Mr. Ekman's statement?

Mr. HUTTON. No; not really. I was a part of helping to draw it up.

Mr. STANGELAND. I see.

Is there any, to your knowledge, coordination between the drainage and the compounding of the problem between North Dakota and Minnesota?

In other words, if one restricted drainage, say, is there any coordination so that the other would restrict as well, so that one State did not compound the problem while the other State was trying to resolve it?

Mr. EKMAN. As far as I know, there has been no such mechanism to date.

Mr. STANGELAND. Would the agreement entered into by the two States dealing with the dike in that construction and the criteria, would that be a vehicle for the two States to work, in your opinion?

Mr. EKMAN. I think it certainly could have been. The way it is presently written I believe it was intended more for getting at the control of dikes. We, too, wish it could have been expanded to include some more positive steps for reduction.

Mr. STANGELAND. A good deal of this problem, of course, is here with us from past action, but it is for the future that we have to take a look and see what kind of coordination we can get.

You spoke on page 12 of the need for detention of reservoir, and you speak of the need for paying more than, let's say, fair market value for lands taken.

Do you foresee as a partial solution to the problem a large water retention, large water impoundment areas?

Mr. EKMAN. I think some of each project is necessary.

May I use as an example the Red Lake River or the Sheyenne River in North Dakota. Certainly small impoundment sites will be helpful, but, as you know, there was a proposal to construct a Hewitt Dam on the Red Lake River and this did not come about. Alternative recommendations included a few smaller dams.

But we believe one of the reasons why that program didn't go forth in a timely manner was because of local objection. This local objection is the reason why we listed the recommendations to change the manner in which settlements are made to landowners where they are forced off their land.

This traditionally has been assessed market value or determination of market value. Farmers organized to oppose projects when this matter of settlement was made because they cannot do like the businessman does; go down the street and open up a new shop. They are put out of business and there is not necessarily a chance to buy replacement farms. If they don't buy a replacement farm within a certain timely manner they are hit for capital gains tax. They realize all these things and there is just no way they can come out on it. Their livelihood has been destroyed.

Mr. STANGELAND. How far away from the Red River here? How large is the drainage basin in miles east and west? Do you know?

Mr. EKMAN. Not offhand.

Mr. STANGELAND. We can find that out. I was just asking.

Has your organization, Minn-Dak, done any communicating with the farmers farther away from the river in the upper reaches, as far as the problem that is down here? Have you made any attempt to do some communicating with these people?

Mr. EKMAN. Yes. We certainly have to the extent of the southern portion of the valley. We tried to tell our story and to be helpful, so that people realize that we all have a common problem and need to work at solutions together.

We feel that it has been too localized in the past. Fargo's problem, Grand Forks' problem, and the farmers' problem should be all the same.

Mr. STANGELAND. What kind of reception do you get when you go away from the river when you talk about the problem of flooding here?

Do you know what the attitudes are or do you have any feeling of the attitudes?

Mr. EKMAN. Yes.

I think traditionally it has been one of little concern. Too many people have felt that it is a God-given right that the water that falls on their land can be drained in any manner that they see possible with no regard to paying for that right at all or to help the downstream people that they might be harming.

Mr. STANGELAND. Do you have some questions?

Mr. HAGEDORN. Yes. I have a few questions here, Mr. Chairman.

No. 1: How many farmers belong to Minn-Dak? How many members?

Mr. EKMAN. About 250 members.

Mr. HAGEDORN. What is the breakdown between Minnesota and North Dakota?

Mr. EKMAN. It is a few more members in Minnesota than in North Dakota.

When I say "members", we are talking members that have paid on an assessment basis to the group, not including the number in their family.

Mr. HAGEDORN. Are all these members strictly because of their agricultural interests or are there other business interests other than agriculture that you know of?

Mr. EKMAN. There can be some. Most of them are landowners and some of those are not necessarily farming their land themselves.

Mr. HAGEDORN. What was the cost of constructing the dikes?

Mr. EKMAN. Approximately \$1 million.

All funds came from private sources.

Mr. HAGEDORN. For the whole 48 miles?

Mr. EKMAN. For the whole system that has been constructed to date.

Mr. HAGEDORN. I see.

Do you have any reason to believe that the dike building activities of Minn-Dak have contributed to increased flood problems downstream?

Mr. EKMAN. No, not downstream. I don't believe this to be true.

Mr. HAGEDORN. Upstream?

Mr. EKMAN. No.

Mr. HAGEDORN. OK.

Mr. STANGELAND. Mr. Hagedorn is from the southern part of the State. He is not used to a river running north.

Mr. HAGEDORN. Is Minn-Dak either the plaintiff or the defendant in any lawsuits currently that have grown out of the dike building?

Mr. EKMAN. Not at the present time that we are aware of.

Mr. HAGEDORN. I see.

Just one last comment about the capital gains tax. Although I think that there will be some substantial reductions, the current legislation that is being considered in Congress will not deal directly with the points you make. I think that when land is acquired for public purpose then there ought to be some exceptions made in the area of taxation. This is not understood at the current time. I for one would be in support of it and I think a significant number of Members of Congress would as well.

I think your point is a very excellent one.

I have no further questions.

Mr. STANGELAND. Just one or two more, Mr. Ekman.

What was the reason when the dikes were constructed that they were constructed 3 feet above the 1975 flood on the Minnesota side and 2 feet on the North Dakota side? Was there any reason?

Mr. EKMAN. I made one comment about that that was not printed.

Organizational efforts were made to coordinate the dike building process. At that time it was agreed on between the farmers of both States that the maximum elevation dikes would be allowed would be

3 feet above the 1975 level. The 1975 level was there. It was easily identified because we just experienced the flood. And for that reason Minnesota did build theirs 3 feet above. North Dakota's is listed as 2 feet primarily because their efforts were stopped and their engineering program wasn't fully developed to see that it was finished in a professional manner.

I would just like to say that I feel that I am answering all the questions as chairman of Minn-Dak, but we also have Mr. Hutton here and Mr. Coran and Mr. Adrian. With your permission, if some of the questions could be expanded upon, I would like to have them do so.

Mr. STANGELAND. If you have something that you would like to have Mr. Adrian get into the record bring him up here and we would be happy to hear from him. I don't have any particular questions, I don't believe, Mr. Ekman, this morning. But if there is something that you would like to bring out by questioning him yourself, it will be fine to do that.

Mr. EKMAN. Mr. Chairman, maybe I was assuming that some questions would come other than from the Congressmen from the committee and maybe this will happen at a later time.

Mr. STANGELAND. It could be as testimony evolves there will be. I have some questions here, but they are going to come out when we have other witnesses and maybe then you can respond or will be able to respond to those questions at that time. But I do not want to ask them now because we have some other witnesses that are going to address themselves in those areas.

Mr. EKMAN. It is not our wish to delay the proceedings either.

Mr. STANGELAND. We are here to get all the information that we can. It may well be that we will have some questions for him, Mr. Ekman, after we have heard from the watershed districts and some of the other witnesses.

Mr. EKMAN. We feel we have raised a number of issues, and it certainly would be a big surprise if there was no concern.

Mr. HAGEDORN. I have one more question.

When you constructed these dikes, did you check with the State authority to see if there were permit requirements that we needed, or did you just go ahead and construct your dikes?

Mr. EKMAN. There I think we need a two-part answer. I will first attempt to answer for the Minnesota side, and I would like to ask Ray to answer for the North Dakota side.

In October of 1975, we received word that there was Government concern over the construction of levees.

Mr. HAGEDORN. Just a second. This is after construction?

Mr. EKMAN. It was during construction.

Mr. HAGEDORN. During construction. You did not check first to see if there were permit requirements?

Mr. EKMAN. Yes. I checked with our county attorneys, and our local attorney did a lot of research for us. It was our local attorney's opinion that in the absence of any specific regulation, we had the right to protect our property from the devastating floods that were occurring.

After this, I checked with our State legislator, our State senator, who in turn asked—I do not know if this is the proper name—the

Senate Research Council to dig into the matter and get back. And we never did receive a clear-cut answer. It seemed that their answer was that the statutes were ambiguous as far as exactly how they would pertain to the dike building issue.

So, at this point in time, Mr. Peter Gerszewski, the mayor of Oslo, and at that time vice chairman of our group, our legal counsel, and myself went down to St. Paul and met with Commissioner Herbst and Mr. Jim Wright, of the flood-plain management. This was upon our request. We talked about the situation. It was still unclear, as I interpreted it, just what the permit issue would involve, but at the same time they did remind us that a permit would be necessary; they also said it would never be granted.

Mr. HAGEDORN. What do you expect to do if the State or the Army Corps issues an order to remove the dikes? Do you plan to go into court? What is your plan of action?

Mr. EKMAN. Mr. Hagedorn, we did have the letter directing removal of the agriculture dikes where they meet the Olso Federal levee. This order was not obeyed, and it was not pursued by the corps.

Colonel GAY. Maybe I could clarify that. The order was issued, and then about 2 weeks later it was put into suspension until the States could work out the criteria for dike construction. It has never been rescinded.

Mr. STANGELAND. For the record, that is Col. Forest Gay III, of the U.S. Army Corps of Engineers.

Mr. HAGEDORN. Assuming that order is issued again, what would your organization do?

Mr. EKMAN. I think our organization would probably remove the dikes at the requested locations and possibly just build around the Oslo levee.

I am not sure. It would be very simple to just go around.

Mr. KROUSE. Mr. Ekman, I understand the dikes on the North Dakota side failed in the flooding earlier this year. They were topped and backhauled and so forth.

What is the Minn-Dak position, replacement or repair of those dikes?

Mr. EKMAN. I would like Mr. Hutton to answer that question.

Mr. HUTTON. I did not hear the question.

Mr. KROUSE. What is the Minn-Dak position on the dikes that have failed on the North Dakota side?

Mr. HUTTON. We have several tributaries in Grand Forks County that we were told we couldn't cross and, as you know, if there is a hole in the dike, it is of no value at all.

We also have a dam across Walsh County, Sioux Line Railroad, Sioux Line Bridge, which is quite a restriction. It backed the water out west and come in from the west, and flooded many of the Walsh County farmers.

The dikes on the Red River were above water except for about three small areas. But if there was water in behind it, there was not much use in trying to save those areas either.

Mr. KROUSE. So, you really have an unsuccessful dike system today. If there is additional flooding, it will not work the way it is now constituted.

Mr. HUTTON. Not unless we can get the tributaries controlled.

Mr. HAGEDORN. But that is only on the North Dakota side?

Mr. HUTTON. Yes. Well, there are some in Minnesota, too.

Mr. EKMAN. Same problem.

Mr. HUTTON. There is the same problem there.

Some of them are—I do not know what you call them. We call them the Ray Rivers. The river comes out of the Red River and right back into it. It is not a tributary coming from the west. It is a spillway, you might say. We have two right in our local area.

Mr. STANGELAND. If there are no further questions, we thank you gentlemen very much. And there may well be questions as we go along through the hearings, that we would like to have you respond to.

Mr. EKMAN. I can probably elaborate a little bit on the legality problem that Mr. Hagedorn brought up between the State laws and our diking permit request.

At that time, it should be pointed out, there was a concern about the legality of the dikes, and one of the questions that was asked was whether the area of the dikes was in a flood-plain zoning area as designated by the county. Our county had not developed a flood-plain zoning ordinance. So, therefore, they indicated that the dikes were not illegal.

Mr. HAGEDORN. I see. One other question for counsel.

Is there a map available that we might have?

I guess it is right up there. OK. Thank you.

Mr. EKMAN. Thank you very much.

Mr. STANGELAND. Our next witness will be Vernon Fahy, State Engineer of the North Dakota State Water Commission, accompanied by Dave Sprynczynatyk, Engineering Director.

**TESTIMONY OF VERNON FAHY, STATE ENGINEER, NORTH DAKOTA  
STATE WATER COMMISSION, ACCOMPANIED BY DAVID SPRYN-  
CZYNATYK, ENGINEERING DIRECTOR**

Mr. FAHY. Mr. Stangeland, Mr. Hagedorn, in pronunciation of Dave's name, you need not feel like you are the only one that has had difficulty with that. We frequently refer to him as Dave Spry. Most people who call for his services call up and call him Dave Spry.

Mr. STANGELAND. He will be known as Dave Spry for the rest of the day.

Mr. SPRYNCZYNATYK. Incidentally, the spelling on this card is not correct. Evidently they dropped three letters so it would fit on the card.

Mr. FAHY. It really does not make that much difference.

Gentlemen, Duane has done a reasonably good job of laying the background for the problem that exists and some of the efforts that have been made to arrive at some sort of an approach to a solution that would be satisfactory to all parties concerned.

My testimony today is largely in the nature of introduction of Dave Sprynczynatyk, who is our general engineering director, and who will present a formal statement.

I would like to say at this time the statement is a reduction of a longer statement. But from the standpoint of time we would like to reduce it to address the criteria generally speaking.

I do not think that anything that has been said here today or that will be said will be new. All of it has been on the record before. There have been numerous public hearings, numerous attempts made at communication, and I think you will find that very little will be said that is not already a matter of record at some public hearing or at some group.

I think you both have noticed the maps that are on the wall. One shows the general layout, the red lines indicating the diking on either side of the river. The green line that is barely discernible shows where the dikes should be in order to allow for the passage of water in a 10-percent chance flood without raising the elevations more than 1 foot.

The missing element on the map is that which would show the flooded area in a flood and, of course, you would have to have a wider photo in order to accomplish that because the flood plain itself covers a considerably wider area.

Mr. Ekman went into quite a lot of detail about North Dakota's position in the management of water or lack of management and it is true that over the years there has been a good deal of drainage in both States. But I submit to you that the statement made by Mr. Ekman is a gross oversimplification of what caused the flooding. I think we need to look much beyond tributary drainage or drainage into tributaries and I think we will as we go along in this study. But I think you must recognize there have been many changes in the period of time that has elapsed since the early floods—the development of the four-wheel-drive tractor, the 12- and 14-bottom plows, the fact that you now prepare land from the center out to the roads everywhere, and that there are no longer natural storage capacities. The runoff is far greater per acre now than it was back in those days in many instances. However, you cannot discount the drainage that has been done. There is no question that there are some contributing factors there.

On the North Dakota side—I know nothing about the Minnesota side, so I will not attempt to speak to that. On the North Dakota side there have been in excess of 50 flood structures built to control the runoff into the Red River Valley.

Now, keep in mind as a background to this entire discussion the Red River Valley has been completely drained, ditches, everything. The Red River Valley is completely drained. The people down here have made and are making maximum use of their land.

So, the drainage has been done in the Red River Valley. We need to keep that as a background through all of our discussion. This is a well-drained area that we are discussing.

But in North Dakota there are and have been numerous flood control structures built. We are making a study now just to identify, in terms of total acre-feet, the storage of waters that are behind flood control structures, and inventory those sites where, in the future, if society permits, additional flood impoundments could be built.

So, there has not been a total lack of attention to retention of water on the land.

One other thing that must be remembered when comparing the Red River Valley today with the Red River Valley of yesterday is the numerous roadways that have been built crossing this valley in every direction, and the number of culverts that have been installed in roads.

Construction of the transportation system has built some detention structures and also has built some problems in the flooding area.

But there are a good many things that are involved in flooding of lands besides the ones mentioned in prior testimony, and I wanted to bring that out.

There has not been, at least I have never felt that there has been, an adversary position established between the State of Minnesota and the landowners. Naturally in the event of the building of the dikes, if you take a 6- or 8- or 10-mile spread of water and condense that, you are going to have an elevation rise. It is going to do something.

We are concerned and we want to work with these people and I think the record will show we have had a number of meetings with them.

The criteria, I think, reflect the attempts to recognize and handle all interests. You have the concern of raising a flood stage if you permit continuation of the construction of this chute. But in addition you have increased velocity that must dump out somewhere wherever the end of that chute comes.

Canada is extremely concerned and stays quite conversant with the progress of this whole problem.

So, our whole effort here is to try to arrive at something we can all live with and it is not an easy matter. The criteria are an approach and we have been working on that and the testimony that we present now by Dave Sprynczynatyk will deal with the development of those criteria.

Mr. SPRYNCZYNYATYK. I have given the counsel a copy of the testimony that was presented at the April 25 and 26 hearings. That is quite lengthy, but I feel that it goes into detail and explains the history of flooding in the Red River Valley, the background of the diking situation, and also the justification that the two States or the two State agencies developed or used in developing the criteria.

In the interest of saving time, I would like to just summarize that portion of that earlier testimony which deals with the criteria.

I have also given to counsel a copy of the criteria. If you have any questions, I will try to answer those also.

But the North Dakota State Water Commission and the Minnesota Department of Natural Resources have spent the past 21 months developing the proposed criteria which apply directly to agricultural dike construction. There have been public meetings and public hearings at which the proposed criteria were presented and comments and suggestions were solicited. The Corps of Engineers has also helped to develop background material for these criteria and have provided the States with valuable technical assistance.

The criteria were developed for the orderly and consistent review of permit applications to construct, relocate, rebuild or alter agricultural dikes along the Red River of the North and the Bois de Sioux Rivers in order to assure that the granting of such permits would be in the best interest of the people of Minnesota and North Dakota. These criteria are mutually applicable in both States. The authority to establish these criteria is granted to the commissioner of natural resources by Minnesota Statutes and to the North Dakota Water Commission by sections of the North Dakota Century Code.

The two States recognize that establishment of these criteria governing the issuance, review, and denial of permits for the agricultural

dikes is but the first step in the exercise of joint control over those activities which could contribute to an increased flood potential of these rivers.

The two States further recognize the need to exercise this joint control in that water management decisions which may appear logical in a local or statewide context may have a negative interstate and international impact.

These criteria govern the review, issuance and denial of permits for the agricultural dikes and pertain to all such dikes located within the flood plains of the Red River of the North and the Bois de Sioux Rivers.

Criteria also apply to dikes constructed on tributaries within the flood plains of these boundary rivers.

Criteria for agricultural diking setbacks and maximum elevations as presently proposed are based on the 10-year frequency flood. One reason this degree of protection was chosen was that it would provide relief from flooding 9 out of every 10 years on a long-term average and would provide for increased economic stability within the farming community.

The 10-year frequency flood is a statistical approach to determining what magnitude of flood you can expect in any one given year and also at looking back at a flood and determining how it relates to other floods.

Since 1873—we have 105 years of record—during that period there have been 10 floods which have equaled or exceeded the calculated 10-year flood at Grand Forks. This works out to a flood of that magnitude approximately once in 10 years. And the diking criteria as presently written would have provided protection on an average of 9 out of every 10 years or 95 out of 105 years.

It must be remembered that a 10-year frequency flood designation does not mean that a 10-year flood will occur in 1 year and not again for another 10 years. It is entirely possible to have two 10-year floods in any one given year or to have a 10-year flood 1 year and another 10-year flood in the next year. It is also possible to go for 10 years or even 20 years without exceeding the 10-year-flood.

During that 105-year period there was a 19-year period where no flooding occurred and also a 25-year-period where no flooding occurred.

Another reason for utilizing the 10-year flood criteria is that that data is readily available and is acceptable to the U.S. Corps of Engineers as well as the U.S. Geological Survey.

If a higher degree of protection were selected, for example the 25-year-frequency flood, the amount of dike setback would have to be increased and would result in less land being protected during more frequent floods. This is based on the section of criteria that states that the dikes be constructed a sufficient distance from the river so as not to cause an increase in elevation of more than 1 foot along the river.

The criteria specifies that no more than a 1-foot increase in the 10-year frequency flood shall be allowed at any point along the river. One reason for the selection of the 1-foot maximum increase is that the Federal Insurance Administration permits only a 1-foot increase in flood stage in their flood plain management criteria. By constructing the dikes to this criteria and permitting only a 1-foot rise, the effects of the dikes on the less frequent events would be greatly reduced. The reason

for this is, as the dikes are overtopped, the natural valley storage is regained and the effect of the dikes on the flood stage is minimal.

Dikes constructed to the proposed diking criteria would have little effect on the stage of the 100-year-flood event. In terms of acres flooded, if the dikes are raised a significant number of additional acres are flooded both upstream and downstream of the diked area. Additional upstream areas are flooded because of backup water due to a constricted flow section. Additional downstream flooding results from increased velocities and increased discharges, which in turn results in increased stages. Also associated with increased velocities downstream is increased erosion.

The criteria states that the allowable rise for a 10-year-flood protection in your urban areas is limited to  $\frac{1}{2}$ -foot. The  $\frac{1}{2}$ -foot rise is used because of the higher risk of property damage and to insure the safety of the inhabitants of urban areas which are not protected by dikes. The existing dikes around urban areas cannot be extended above their present levels without decreasing the structural stability of the dikes.

In determining the effects of proposed dikes as to the 1-foot allowable increase, calculations would be based on the dikes being located on both sides of the boundary water, an equal distance from the center of the channel. This concept is known as "equal encroachment."

The purpose of equal encroachment is so that if an individual on one side of the river decides to construct a dike, he must place it the same distance from the channel as his neighbor across the river if he were to build one also. This would result in equal benefits to both people if dikes are eventually constructed on both sides. If mutual agreement has been reached between applicants on both sides of the river the diking criteria allows that equal encroachment requirements may be waived.

It is specified in the criteria that no freeboard or additional dike above the allowable 1-foot increase over the elevation of the 10-year-flood will be allowed. This means that any discharge greater than the 10-year frequency flood will immediately overtop the dikes. If freeboard is allowed the degree of protection would be above the 10-year frequency flood and the resulting increase in river stage on undiked areas would be greater than 1 foot.

For example, if 1 foot of additional dike is allowed and dikes are built only on one side of the river, there would be an additional 62,000 acres of flooded area over natural conditions on the undiked side of the river. If no additional dike is allowed and the dike on the one side of the river were built to provide for only 1 foot of increase, the result would only be an additional 23,000 acres flooding on that opposite side.

These figures are based on a 40-mile reach of the river immediately downstream from Grand Forks. These additional areas which are flooded are areas that may have under natural conditions been flooded only once in 100 years and would now be flooded on a 10- to 20-year frequency.

Finally I would like to make a brief comparison of the area flooded by the 1978 spring flood and the 1969 spring flood. These two floods were comparable in magnitude as shown by measurements taken by the U.S. Geological Survey from Grand Forks to the Canadian border. The Corps of Engineers did compare aerial photos of both floods, and determined that the 1978 flood covered an additional 22,300 acres more

than the 1969 flood. They further determined that on the North Dakota side of the border there was an additional 26,400 acres flooded in 1978 compared to 1969. And on the Minnesota side of the border there were 4,100 fewer acres flooded in 1978 compared to 1969. Although the blame cannot be completely put on the farmer constructed dikes, I do believe that the dikes were one major reason for the additional areas flooded.

I feel that it is absolutely necessary that the Corps of Engineers do a detailed analysis to determine exactly what did cause the difference in areas flooded by the two floods. This would answer many questions regarding the hydraulic effects of the farmer dikes.

If you have any questions, I would be glad to answer them.

Mr. STANGELAND. Thank you, Mr. Fahy and Mr. Spry.

First of all the North Dakota testimony presented in the April 25 and 26 hearings will be retained in the committee files. I guess I would like to have you comment on some ideas or some things that the States might do to prevent floods.

I did not intend here to reopen a dike hearing that has taken place on criteria. But some of the information you have given is very informative.

As we look at the valley, what happens with the value of land as we leave the Red River and go east and go west?

Mr. FAHY. I would suspect without knowing that your valley land probably has a higher market value.

Mr. STANGELAND. Higher market and probably higher productive.

Mr. FAHY. Yes.

Mr. STANGELAND. I am thinking that we ought to be looking and I am wondering what vehicles North Dakota has looking to provide protection beyond dikes.

I think everyone in this room perhaps recognizes that we cannot throw up a dike high enough to contain that river and shove it into Canada. That is just not going to happen. We are going to really have some problems then.

So, we have to look for ways to reduce the incidence of floods in this part of the Red River Valley, in the richest and most fertile part of the valley.

In North Dakota, do you have the mechanism to put in or construct water retention systems, and do you have the areas—I am thinking perhaps of fish and wildlife lands—do you have any plans or any overall water plans that might help reduce the incidence?

You know, you speak that it is not only drainage, but farmers are working all their land from the center out and getting it out into the ditch. That is a form of drainage. There is no ditch there, but that is still a way of draining that land. And there really is not much land left to be drained in this fertile, high-priced, valuable land area.

I am just wondering if North Dakota has any programs, like watershed districts or this type of a program, that the local people can take a look at the problems and try to resolve them.

Mr. FAHY. Yes. We have our attorney, Mr. Dwyer, and I think I would like to have him address the kind of coordination we are looking for.

But I think before I go to that, I would hope when we look at solutions, that we are considering investments and the impact of invest-

ments on landowners, as well as the value of land. Because I am sure that, although the value of land in the Red River Valley is extremely high and its productivity is extremely high, the people who live in the escarpments have investments which represent a higher percentage of their income than in the valley.

So, I would hope that we do not attempt to put a solution on a land evaluation basis or lead in that direction. I think we need an overall coordinated approach.

Mr. STANGELAND. My intent was not that we have to harm someone else to protect this high-value land. That was not the gist or the thrust of what I was saying. But rather we have to be concerned, and I think everyone has to share in the responsibility and make the effort to try to prevent the damage here when you do not have the damage in the upper regions. But really, we are all contributing to this water problem right down here in the heart of the valley.

Mr. FAHY. It should also be remembered, if you are looking at impoundments for the control of floods, that your opportunities for impoundments are limited. You can't build them in the valley because there are no impoundment areas, which means then that someone in the upper reaches has to have a permanent flood on his land in order to protect the valley.

So, when we look at impoundments, we are looking at a very difficult, but I think a very necessary, engineering solution for some of these problems.

Mr. STANGELAND. I am wondering. When we talk of impoundments, I was in a watershed district, and because we started talking about a large impoundment, we were forestalled from creating that district for about 15 years, I would suspect, because the people in the upper regions did not want to lose that land, and I guess I have to sympathize with them.

But I am wondering if we ever catalog or set up criteria or areas where we could look to low impoundments that would not have to take that land totally out of production, but just slow that flow of water down until the crest has hit here and then release it. There are Fish and Wildlife lands which would not be damaged by some additional water retention in the spring of the year when there is not that much wildlife in there and that water could then be released substantially at less cost.

I am wondering if the States have any inventory of the amount of land and the amount of water-holding capacity that would have without doing damage to that land or the adjoining farmland.

Mr. FAHY. I think that is one of the thrusts to look at, or one that we are looking at and have utilized in North Dakota, as I mentioned to you. We have numerous small structures in North Dakota on our side of the river to help this very thing, and I think there are opportunities for others.

Not always though will the Fish and Wildlife Services agree that additional water means improvement in the water manageability. Time and again they will tell you about the advantages of dry marshes and that sort of thing.

So, yes; I think the opportunities are there. I think they are somewhat limited, at least in North Dakota. But the opportunities are there.

Mr. STANGELAND. Well, I am thinking, you know, that if we look at the land that is in public trust, and those people entrusted to look after that land are willing to assist in any solution to the problem by retaining, perhaps we might convince some of the farmers to retain some for some period of time.

You know, it means probably in some of these areas a matter of holding water 3 days, 4 days, a week.

Do you have a vehicle where the two States can work together to control drainage and try to hold back some of the heavy flows of water?

Mr. FAHY. That is the next item we would like to address, that coordination, and I would like to have Mike Dwyer, our staff attorney, address it.

Mr. STANGELAND. OK. Mr. Dwyer.

Mr. DWYER. Congressman Stangeland, you asked that question of the State engineer, Vern Fahy, and you also asked that question of Mr. Ekman. I would like to elaborate on that specific point.

Vigorous attempts are being made on the North Dakota side of the river to create a cooperative joint water management district throughout the whole Red River Valley watershed, which would have the capacity to cooperate and coordinate with the Minnesota side and perhaps come up with some resolutions that you suggest.

What I would like to do is give you a background on this so you have a clear understanding of the setup.

In North Dakota, we have water management districts. Water management districts are created by the North Dakota Legislative Assembly. In other words, they are a political subdivision. But their jurisdictions are generally based on county boundaries. The water management district of Cass County, N. Dak., has the jurisdiction to address water management problems within the boundaries of those county lines.

I guess probably the way to summarize the water management district's authority is to say that the legislature recognized that it was best to have extensive authority for dealing with water management problems at the local level, so they granted them very extensive authority to create impoundments, to drain, to build flood control structures. The water management district authority is a means more extensive than the State itself.

So, the organization does have a great deal of things that they can do.

Now, in 1975—I guess I should back up a minute. As I stated, the water management districts are set up on county boundary lines and, of course, as you recognize, the water management problems tend to ignore artificial boundaries. If you have a river that flows through two counties, the water management problem is not going to end at the county line.

So, recognizing this, the North Dakota Legislature in 1975 enacted a statute which would allow water management districts to cooperate and to exercise their power jointly.

After the floods this spring, Governor Link invited all the water management districts in North Dakota to come together with the hope that they would be able to utilize that statute that authorized them to cooperate and to exercise their powers. He invited them to come together and meet with the State Water Commission in hopes that perhaps a joint board could be formed that would be able to adopt a

program, a comprehensive approach for the North Dakota side, and to coordinate with the Minnesota side in adopting that approach so that, as you suggested before, one side is not draining and the other side is not retaining their waters. Just so there is a uniform and consistent approach.

That meeting was held about the middle of this summer, and we had very good representation from all the water management districts.

I should say that there are 15 water management districts in the Red River Valley watershed on the North Dakota side. When I say "watershed," I mean those waters eventually end up in the Red River.

We have pursued that. We have had other meetings. We have discussed the types of things that would be included in a joint powers agreement. And finally we have come to the point where all the water management districts have agreed that a joint powers agreement is in their best interest. So a final draft of that agreement has been proposed to them, and they are in the process of considering it with their individual boards and voting or deciding to get into the joint powers agreement.

I have brought along a copy of the final draft of that Joint Powers Agreement. I will give it to the reporter as part of the transcript, so that you will have an idea of what type of an organization will be established on the North Dakota side of the river.

Now, probably the most important thing to keep in mind here is the purpose of establishing this joint board. One of the primary purposes is to allow the entire area in North Dakota that is in the Red River Valley watershed to coordinate with the entire area on the Minnesota side so that a comprehensive and a consistent and uniform approach can be arrived at. It would be senseless for one side of the river to adopt an approach that would not be adopted or would not be followed on the other side of the river.

Another very important aspect of it would be to allow through coordination the adoption of a comprehensive approach. Perhaps there are numerous legal drains on both sides of the river. In Minnesota I believe they call them judicial drains. In North Dakota we call them legal drains. Perhaps some action could be taken that would put temporary trap gates at the outlet of those legal drains that would hold the water back, say, for 7 days. That is just an example. Those types of things can be discussed when this joint board is formed so that it would apply to the whole valley, including North Dakota and Minnesota.

Another purpose of establishing the local organization that could take the leadership in resolving water management problems of the valley is to allow them to have adequate and effective representation with the State governments and the Federal Government.

Mr. Ekman spelled out what he thought should be the Federal Government's and the State government's authority and responsibility with respect to these problems, but I am sure he would not deny that the local government entities and people have a tremendous responsibility also. By the formation of some type of a joint effort on both sides of the river, perhaps the local leadership could provide some very effective resolution to some of these problems.

Mr. STANGELAND. Very well. The Joint Powers Agreement you referred to earlier will appear at this point in the record.

[The material referred to follows:]

AGREEMENT—JOINT EXERCISE OF POWERS AGREEMENT FOR WATER MANAGEMENT DISTRICTS LOCATED WITHIN THE RED RIVER VALLEY

I. PARTIES

This Agreement, pursuant to Section 61-16-11.1 of the North Dakota Century Code, is between the boards of commissioners of the following water management districts:

- a. Richland County Water Management District, acting through its chairman, Aaron Heglie.
- b. Grand Forks County Water Management District, acting through its chairman, Tom Ronan.
- c. Maple River Water Management District, acting through its chairman, Harry Warner.
- d. North Cass County Water Management District, acting through its chairman, Morris Melander.
- e. Pembina County Water Management District, acting through its chairman, George H. Brown.
- f. Rush River Water Management District, acting through its chairman, Ken McIntyre.
- g. Southeast Cass County Water Management District, acting through its chairman, Howard Emerson.
- h. Trail County Water Management District, acting through its chairman, Gilman Wastvedt.
- i. Steele County Water Management District, acting through its chairman, Bennett Rindy.
- j. Walsh County Water Management District, acting through its chairman, Charles Zahradka.
- k. Barnes County Water Management District, acting through its chairman, Howard McMillan;
- l. Cavalier County Water Management District, acting through its chairman, R. H. Schroeder;
- m. Nelson County Water Management District, acting through its chairman, Ben Varnson;
- n. Ransom County Water Management District, acting through its chairman, Norman Cross;
- o. Sargeant County Water Management District, acting through its chairman, Maynard Lien.

II. INTENT OF AGREEMENT

The water management districts which are parties to this agreement have extensive jurisdiction over the management of the water resources within their respective boundaries pursuant to Section 61-16-11 of the North Dakota Century Code. This includes the power to construct works and projects as well as the authority to adopt rules and regulations governing water management. In addition, water management districts which are parties to this agreement have jurisdiction to regulate, within their boundaries, the construction of dikes and dams pursuant to Section 61-16-15 of the North Dakota Century Code, and the construction of drainage ditches pursuant to Section 61-01-22 of the North Dakota Century Code.

However, it is recognized by the parties to this agreement that actions of an individual board (construction of works or regulatory actions) which may provide local benefits could have adverse consequences at other locations within the Red River Valley. Further, it is recognized that one entity representing the Red River Valley would better represent the area concerning planning and implementation of a complete water management plan for the Valley. Therefore, the parties agree that a Joint Water Management Board having the powers delegated herein must be established.

III. PURPOSE

The Red River Valley Joint Water Management Board is hereby established to carry out the intent of this agreement.

IV. POWERS OF THE JOINT BOARD

The Red River Valley Joint Water Management Board shall have the power:

1. To accept funds and property or other assistance, financial or otherwise, from federal, state, and other public or private sources for the purposes of aiding

the construction or maintenance of water conservation and flood control projects ; and co-operate and contract with the state or federal government, or any department or agency thereof, in furnishing assurances and meeting local co-operation requirements of any project involving control, conservation and use of water ;

2. To procure the services of engineers and other technical experts, and employ an attorney or attorneys to assist, advise, and act for it in its proceedings ;

3. To plan, locate, construct, reconstruct, modify, maintain, and repair dams and water conservation devices of every nature and water channels ; to regulate and control flood waters for the prevention of floods, by deepening, widening, straightening, or dyking the channels of any stream or watercourse within the joint district, and construct reservoirs or other means to hold and control such waters ;

4. To make rules and regulations concerning the management of water resources in the Red River Valley watershed ; such rules, however, shall be limited to implementing the powers enumerated herein ; any rules and regulations adopted by the joint board shall be binding upon all the parties to this agreement ;

5. To exercise the power to eminent domain in the manner provided by title 32, Judicial Remedies for the purpose of acquiring and securing any rights, titles, interests, estates, or easements necessary or proper to carry out the duties imposed by chapter 61-16, and particularly to acquire the necessary rights in land for the construction of dams and other water conservation works of any nature and to flood lands, and to secure the right of access to such dams and other devices and the right of the public access to the waters impounded thereby ;

6. To acquire by lease, purchase, gift, condemnation or other lawful means for use and control as provided by law both real and personal property and easements and rights of way within or without the limits of the joint district for all purposes authorized by law or necessary to the exercise of any power ; to convey, sell, dispose of, or lease personal and real property of the joint district as provided by chapter 61-16 of the North Dakota Century Code ;

7. To authorize and issue warrants to finance construction of water conservation and flood control projects, to assess benefitted property for part or all of the cost of such projects, and to require appropriations and tax levied to maintain sinking funds for construction warrants on a cash basis at all times ;

8. To borrow money within the limitations imposed by chapter 61-16 of the North Dakota Century Code for projects herein authorized and to pledge security for the repayment of such money ;

9. The joint board shall also have the right, power and authority to enter into contracts or other arrangements of water conservation or flood control works with the United States government or any department thereof, with the Canadian government or any department thereof or any of its provinces or municipalities, with persons, railroads or other corporations, with public corporations, and state governments of this or other states, with drainage, water management, conservation, conservancy, or improvement districts, in this or other states, for cooperation or assistance in planning, constructing, maintaining, and operating such works and in making investigations and reports thereon ; and may purchase, lease or acquire land or other property in adjoining states or provinces in order to secure outlets to construct and maintain dikes or dams, or for other purposes authorized by this chapter and may let contracts or spend money for securing such outlets or works in adjoining states or provinces. Provided, that this joint board shall not have the right, power or authority to connect by artificial means boundary waters having different natural outlets so that the waters of one may be discharged into the other.

The above agreed upon powers to be exercised by the joint board are found in Sections 61-16-11 and 61-16-19 of the North Dakota Century Code.

This agreement shall in no way limit or restrict the powers and duties of each water management district which is a party to this agreement pursuant to Section 61-16-11 of the North Dakota Century Code. Nor shall this agreement limit or restrict in any way the regulatory authority and responsibility of each water management district which is a party to this agreement pursuant to Sections 61-16-15 and 61-01-22 of the North Dakota Century Code for applications which are not of inter-district significance, as determined by the State Engineer.

If any individual water management district proposes to construct any water management project or works which is of inter-district significance, as determined by the State Engineer, or if any application pursuant to Section 61-16-15 or 61-01-22 of the North Dakota Century Code which is determined by the State Engineer to be of inter-district significance, in accordance with applicable regulations, such matter shall be referred to the Red River Valley Joint Water Management Board for determination thereon.

## V. JOINT BOARD OF DIRECTORS

The Red River Valley Joint Water Management Board shall be governed by a joint board of directors. The joint board of directors shall consist of one representative from each water management district board of commissioners which is a party to this agreement. The joint board representative shall be a member of a water management district board of commissioners and shall be chosen by a majority of the water management district board of commissioners. Each water management district shall also choose an alternate who shall exercise the authority of the joint board representative in the event of his absence. In order to be more thoroughly informed and more effectively represent their respective boards, alternate members shall be encouraged to attend all joint board meetings, including those when the primary member is present.

Each representative serving on the Red River Valley Joint Water Management Board shall represent one vote. However, there shall be a maximum of one vote from each county. Therefore, Southeast Cass, Rush River, Maple River, and North Cass Water Management Districts shall determine among themselves and shall submit to the secretary of the joint board the method by which they shall apportion and cast the vote representing Cass County.

The Board of Directors of the Joint Board shall adopt such rules and regulations and bylaws for the conduct of the business affairs of the Joint Board as they may deem necessary, including the time and place of regular meetings of the Joint Board. They shall elect from their number a chairman and vice-chairman. They shall also elect a secretary and a treasurer, which officers may be held by the same person, and either or both offices may be held by someone not a member of the board. Special meetings may be called by the secretary on order of the chairman of the Joint Board or upon the written request of the majority of the qualified members of the board. Notice of a special meeting shall be mailed to each member of the Joint Board at least six days before such meeting, provided, that a special meeting may be held at any time when all members of the board are present or consent thereto in writing. Three-fourths of the members of the joint board of directors shall constitute a quorum for the transaction of business, but any number may adjourn the meeting for want of a quorum.

## VI. JOINT BOARD EXECUTIVE COMMITTEE

The joint board created herein shall appoint from their number an executive committee and vest the same with such powers and duties as the joint board may from time to time delegate thereto, in order to facilitate the duties and work of the joint board in connection with the business affairs involved in the development and implementation of a comprehensive water management plan for the entire Red River Valley.

## VII. BUDGET

The Red River Valley Joint Water Management Board shall, by resolution on or before July first of each year, adopt a budget showing estimated expenses for the ensuing fiscal year and the contributions of each member district. Such budget of the joint board, and the contributions of each member district, shall be determined each year by the joint board upon a vote of three-fourths of all of the members on the joint board.

In the event that the Joint Board proposes to construct any water management works or project of any nature the Joint Board may utilize the powers and procedures for projects constructed by individual water management districts pursuant to Section 61-16-21 through 61-16-35 of the North Dakota Century Code.

## VIII. TERMINATION OF AGREEMENT

This agreement shall be terminated only upon a vote of approval of three-fourths of all of the board of directors on the joint board. In the event that this joint powers agreement is terminated, termination shall be carried out according to the following terms:

1. Any property acquired as a result of this joint powers agreement which is not part of an existing water related project shall be sold and the funds received therefrom together with any surplus moneys held by the joint board shall be returned to each member district in proportion to the contributions of each member district. Any real property sold by the joint board shall be offered for sale, in a manner consistent with law, to the party from whom it was purchased at a reasonable price.

2. A levy sufficient to cover the costs of operation and maintenance of any project, including any water management works, which have been initiated, developed and constructed by the joint board, shall be continued by each member district to insure the continued operation and maintenance of such project. The joint board shall make provisions to determine who will be responsible for carrying out operation and maintenance functions. The revenues collected from such continued levy shall then be paid to the entity or individuals responsible for operation and maintenance of said projects or works.

3. If any contract shall have been made by the joint board before the termination of this agreement, provisions shall be made to continue to pay any tax levies required to meet the obligations of any such contract, or to take any action necessary to meet any other obligations which may have been incurred thereunder.

Any water management district may be allowed to withdraw from this agreement, only upon the following terms:

1. Any Water Management District in the Joint District not benefited or not to be benefited, in whole or in part, by the establishment of the Joint Board pursuant to this agreement may be excluded from the Joint Board. The member district may file with the joint board a petition which shall state the specific reasons why such water management district will not be benefited by the establishment or continued existence of the joint board.

2. Within sixty days from the date of filing a resolution and a petition for exclusion from the joint board the joint board shall meet to consider such petition. It may grant such petition or it may fix a time and place for a hearing thereon. If a hearing be set, the secretary of the board shall cause notice of the filing of such petition for exclusion, and of the time and place for a hearing, to be published once each week for two consecutive weeks in a newspaper of general circulation printed in the district. The hearing mentioned in such notice shall be held not less than ten nor more than twenty days after the last publication of such notice. The notice shall state that any person, corporation, municipality and county in the district may appear or be represented at the hearing and show cause why the petition should or should not be granted. The board shall hear the petition at the time and place mentioned in the notice.

3. If after the hearing on the petition the joint board of directors shall determine that the water management district requesting to be excluded from the joint board will not be benefited the joint board shall by resolution grant the petition and shall direct the chairman and secretary to execute the order of the board excluding such water management district from the joint board. If, however, the joint board shall decide that such water management district will be benefited it shall deny the petition and direct the chairman and secretary to execute its order refusing to exclude such water management district from the joint board. A water management district excluded from the joint board shall not be liable for any obligations incurred by the joint board after exclusion but shall be liable for and shall pay to the joint board any obligations incurred before exclusion.

4. If any contract shall have been made with the United States or any agency thereof, or any state, or person, before such petition is filed, such petition shall not be granted unless consented thereto by the appropriate agency of the United States or the state or person and if such agency, state, or person gives its consent upon condition, such conditions shall be included in the order of exclusion and the water management district may be required to and in that event such water management district shall continue to pay any tax levies required to meet the obligations of any such contract.

#### IX. MODIFICATION OF AGREEMENT

In order for any modification or amendment to this agreement to be effective, it must be reduced to writing and signed by all the signatory parties to this agreement.

Mr. STANGELAND. Mr. Fahy, then you are over the water management district? Do you have any control or jurisdiction over them, or are they just separate entities created by statute?

Mr. FAHY. In certain instances their actions require my approval. In other instances they do not. Drainage is an example wherein any items related to drainage do not require my approval.

Mr. STANGELAND. You have no drainage control?

Mr. FAHY. Yes. We have some drainage control. But it has to be in specific areas—meandered lakes, declared recreational areas, that sort of thing. But where it is not that type of consideration, then the water management district itself has the decisionmaking power.

Mr. STANGELAND. I understand the Upper Red-Rainy-Souris—what used to be the Upper Red-Rainy-Souris Basin Commission is now a part of the Upper Mississippi Basin Commission; is that correct?

Mr. FAHY. Yes.

Mr. STANGELAND. Are you at all involved with that?

Mr. FAHY. At the present time, I am chairman of the regional office, the Souris-Red-Rainy regional office.

I don't know if you are asking for a comment on that. It does provide an opening for my very personal firm belief that we are operating at less than maximum benefit to both States at the regional office because of the unique situation of these river basins. I believe we deserve river basin status. Our Governor agrees with that position, and we are going to do our best to re-create the Souris-Red-Rainy River Basin Commission so that we have direct input from Federal agencies. As a basin is created, the Federal agencies are required to serve it, and we can get advantages of all of the services. We are not relaying problems. We are taking them directly to a basin commission. These are the advantages that the Basin Commission has. Also, it brings in our Canadian neighbors as a part of the basin observance.

So, we in North Dakota are pushing very hard for re-creation of the Souris-Red-Rainy River basin so we have the tool to work with.

Mr. STANGELAND. And that recreation would take Federal action?

Mr. FAHY. It would take an Executive order; yes, sir.

Mr. STANGELAND. I see. But the Congress would not be able to implement it?

Mr. FAHY. It is an Executive order creation, so it is administratively created. I am sure if Congress were to support it—well, I shouldn't say I am sure, it could go either way.

Mr. STANGELAND. Congress would have to fund it.

Mr. FAHY. Yes.

But we had it funded at the time that is was a full Basin Commission. It was created with a termination date; it existed for 6 years and was then terminated.

By the way, it is the only Commission that ever produced a product so far. The other commissions are rapidly getting it now. That Commission actually came out with the framework product and went to public hearings with it.

So, it was a very successful effort, but it was limited effort.

Mr. STANGELAND. That product you speak of, was that a product to control drainage, control flooding?

Mr. FAHY. It was a general water management plan designed on two bases. In order to accommodate the emerging environmental considerations at that time, the plan considered economic factors as one area and environmental factors in another, made recommendations leading to those alternatives and then went out to public hearings with them.

Mr. STANGELAND. Any questions?

Mr. HAGEDORN. Yes. I have a couple.

At one time I understand the State of North Dakota was considering taking legal action against the Minnesota dikes.

Mr. FAHY. Yes, sir.

Mr. HAGEDORN. What is your current position on that?

Mr. FAHY. Well, if you look at that map over there, Congressman Hagedorn, you will see that there is a vast area of Minnesota protected at the expense of the other side. In other words, it is going to push water to the other side.

I suppose that puts me in the position of having to make a decision at some time or another on what kind of a recommendation to make. No doubt I can ignore the situation or I can take some action to protect the people on our side of the river.

You have heard or probably have seen the hearing examiner's report where he felt that the criteria we have developed were adequate, sufficient, applicable. However, he recommended an 18-month delay. What he is saying in effect is that legally the people in North Dakota might have two more spring floods to go through before anything can be done.

I have high hopes that we will get the coordinating boards together, Minnesota and North Dakota, and discuss this problem with them. There is nothing about me that is more intelligent than anyone else, so I am going to look for all the help I can get.

So, I hope to get the two boards together ultimately and really discuss this thing, not from the standpoint of animosity or from the standpoint of "you did it to me," "I am going to do it to you," but from the standpoint of what the devil can we do to arrive at a solution that is going to be satisfactory to the farmers who are trying to protect themselves, but also not increase stage heights so they are overtopping the dikes at Grand Forks or overtop them at Oslo or we build a shoot that causes problems in Canada. There has got to be a way to resolve these issues in some fashion or we are all going to have to make sacrifices. We are not all going to get what we want. There has to be a way to resolve it.

Mr. HAGEDORN. You mentioned the 10-year flood level as a goal that you would establish. Yet in testimony from Mr. Erkman earlier he indicated that in the last 4 years it has flooded above the 10-year flood level three times, six times in the most recent 14-year-period, for an average of four times in 10 years. I suppose that reminds us of the old story that a person can drown in a 6-inch river provided that it is deeper in one spot. And that appears to be the case here. Your averages in recent years seem to be higher than the 10-year average, which was calculated on historical evidence.

Is there reason to believe that this is going to continue in the future or is it abnormal that you have had six floods above the 10-year flood-level stage in the last 14 years?

Mr. FAHY. Congressman, if you go back to the early records you will find we have cluster floods in both the Red and the Souris Rivers.

Yes. You can anticipate—I think if you get a flood you are going to get a couple of more in that same period of time.

I think the 10-year frequency was one that we felt that we could live with. You see the setback that exists over there, if you go beyond that, you are putting behind the dikes so much land that your farmers certainly would object to that.

Mr. STANGELAND. How much land are you putting behind the dike?

Mr. FAHY. It is variable. And keep in mind that that map over there represents an approach where it is centered on the river. There may be instances where it may not be. So, that is just a generalization,

But I think, from testimony that was given, it would run from 1,300 feet to around 2,500 feet.

Dave, you may want to comment on that.

Mr. SPRYNCZYNATYK. A 1,300-foot setback is an average. There are areas on that map where the setback would be less than 1,300 feet, but they do run as far as 2,500 feet from the river.

Mr. HAGEDORN. In other words, about a mile.

Mr. SPRYNCZYNATYK. A mile.

The flood corridor, the dike corridor, would be approximately a mile wide, right.

Mr. STANGELAND. What is the average setback now?

Mr. FAHY. Well, the dikes now are built pretty much right up the river.

Mr. STANGELAND. I have other questions.

I wanted to follow up and I penciled in here that Mr. Ekman talked about 4 years out of the last 10 and you speak, Mr. Spry, about the periods, I think it was—was it 19 years, 25 years?

Mr. SPRYNCZYNATYK. Yes.

Mr. STANGELAND. Those are the years we do not need dikes and if we build dikes and they only work on an average of 60 percent of the time, then I think we really have to look for more solutions than just the dikes really.

Let me ask you a question, Mr. Fahy.

You are familiar, of course, with the Minnesota watershed district law and the way watershed districts are made up in Minnesota and the statement that water does not stop at a boundary line but it continues to flow.

Is the county water management system really the best or is not district management better where you cover a drainage area?

Mr. FAHY. I suppose, Congressman, it would depend on who you ask. It is like which is the best car, the Ford or Chevy. There are advantages to both.

The advantage that rests, of course, in the county system is the easy administration. Your ad valorem taxes are not fractured by lines and that sort of thing. So, there are some advantages there. It is a unit of government that can levy by itself.

I think the watershed approach that we are attempting to work now for this specific problem is the way to go, a coordinated approach. But I would not want to belittle the county approach to water management.

Mr. STANGELAND. I think it brings it on a more local level. I would agree there. But where you take Grand Forks County and then the next county west and if the next county west is draining whatever it pleases in willy-nilly, it is just causing Grand Forks County problems that they cannot cope with. They have no way of coping at all.

Mr. FAHY. That is the reason for the legislature passing the law that it did allowing for the joint use of powers. It was to get at those things that need a common solution.

Mr. STANGELAND. Do you have any questions?

Mr. YATES. If I may, just one question, Mr. Fahy.

Are you working toward an umbrella-type organization for your water management districts? And I assume that is the same as the drainage districts we have been talking about.

Mr. FAHY. As we understand it, and we have not yet had an opportunity to become exposed to it—what you have on the Minnesota side

is an overall board that is comprised of representatives of the individual watersheds and we hope to arrive at that in North Dakota so that we have counterparts that can meet and discuss problems, and do some planning work with the corps. So that we are dealing pretty much on the same basis.

So, yes.

Mr. YATES. You have a small group representing the wishes of a larger group?

Mr. FAHY. Right.

Mr. STANGELAND. Thank you.

Mr. FAHY. One more comment.

Mr. DWYER. I would like to say one more thing.

When you talk about drainage districts in North Dakota, it is water management districts. There are some drainage districts that have the authority to build these drains, but that is it. But the water management districts are the local delegates that have the authority for water management, flooding, drainage, whatever.

I explained to you—and I think Duane Ekman could elaborate on what Minnesota has done on their side of the river—how the two sides of the river at the local level are coordinating so that they can get together and perhaps come to an approach. But there has also been the question raised of what can the States do and I think that it is important to emphasize that the joint agreement that Minnesota and North Dakota entered into 2 years ago exactly something that States could do. That was a cooperative effort to work toward resolving these problems, and establishing dike criteria was only the first step.

The agreement also contained provisions so that other water management problems would be addressed such as they are now by forming the local board. So, it was not just limited to that criteria.

In addition, I just have to respond to Mr. Ekman's statement that Minnesota and North Dakota took an adversary position when they entered into this joint agreement. He read the statements of then Commissioner Bob Herbst and Vern Fahy that criteria that were going to be developed in those dikes that were unauthorized or did not meet the criteria would have to be altered or removed.

I don't think that that is an adversary position. I think that that is a position that would be consistent with Mr. Ekman's statements that other management laws of the State should be administered and enforced. I mean Mr. Ekman said that North Dakota has a drainage law that should be enforced, it should be administered. North Dakota also has a dike law, so does Minnesota, and those laws should be administered, of course, no less than drainage laws or any other management laws.

So, in order for there to be consistency, I do not think the statements that the dike laws should be administered or enforced is an adversary position.

Mr. STANGELAND. I think it depends on, I guess, somewhat adversary in his interests, in the interests of the people he represents. I think they saw they were not getting assistance any other way and then they felt if they had to give up those dikes that was an adversary.

Mr. KROUSE. Mr. Chairman, just for the record: Has the State of North Dakota formally adopted the criteria?

Mr. FAHY. No.

We are not in a position to adopt the criteria until we see what arrangements we can work out with Minnesota. We could not enforce those criteria now without exposing our people to the Minnesota dikes.

So, the North Dakota position has been a reactionary position.

Mr. KROUSE. The criteria are acceptable except for this 18-month moratorium.

Mr. FAHY. Yes. And the Minnesota hearing examiner has said the same thing. They accept it.

So, we need to see what DNR is going to do.

Mr. KROUSE. Thank you.

Mr. STANGELAND. Thank you, gentlemen, very much.

We are going to deviate now from our agenda today and I am going to call on Mr. C. P. O'Neill, the mayor of Grand Forks and Frank B. Orthmeyer, director of public works, city of Grand Forks. I understand they have to catch a plane. Therefore, we are going to allow them to step in here now.

You may proceed.

#### TESTIMONY OF FRANK B. ORTHMEYER, DIRECTOR OF PUBLIC WORKS, GRAND FORKS, N.D.

Mr. ORTHMEYER. Thank you very much, Congressman.

I appreciate very much being able to appear out of order because I do have a plane to meet. I did present my paper to you, but I would not be open for questions if I could not appear. I appreciate that very much.

I am a civil engineer and have been employed as a city engineer and director of public works for the city of Grand Forks since 1970 and before that I was the city engineer and director of public works for the city of Mitchell, S. Dak. for 4 years. I have a degree from the North Dakota State University in civil engineering and have been employed in city engineering work since my graduation in 1949.

Most of my remarks will be about effects to the city or cities.

Flooding and threats of flooding were only newsworthy to me before coming to my present employment with the city of Grand Forks. Since my employment in 1970, we have had several major floods, most recent in 1978, floods in July and April of 1975, a flood in 1969, 1966, 1965, 1950 and so forth and the largest flood of all was in 1897.

My statement will be from my own personal observations because I have not had the authorization of the city council to speak for them. I have given these remarks to the mayor and he has approved them.

Second, my testimony will be divided into four categories. I will touch briefly on the farm diking problem, I will touch second on the flood insurance problem, thirdly, on Public Law 99—use of emergency funds, and the fourth part will be on the proposition that the Federal Government should adopt regulations establishing responsibility for the control of the runoff for each drainage system.

Concerning the farm diking proposals which are being proposed by the North Dakota State Water Commission and the Minnesota Department of Natural Resources in a joint cooperative agreement for establishing criteria for diking, it is my opinion that the cities will not be affected adversely since the proposed rise is only a half

a foot for a 10-year storm, which means that the free board on our existing dikes would be adequate. However, if the rise was greater than a half a foot, our existing dikes and all future dikes would be adversely affected. And the city of Grand Forks has gone on record as supporting the concept of the farm diking.

On the flood insurance program, the Federal flood insurance program has pushed the local cities into a program which has done a good job in preventing homes and buildings from being built in the 100-year flood plain and we are to commend the program for that. However, in the homes that are existing in the flood plain, the correcting procedures of the program which provide that any home which has been damaged 50 percent or more cannot be rebuilt is very slow in correcting the problem of having the homes within the flood plain. The provisions of the insurance, even though subsidized, do require the person living within the flood plain to partially support their own damages. I feel that part of the program which was designed to remove the existing buildings and homes within the 100-year flood plain by eventually eliminating them is a very weak part of the program and, in fact, very little is being done about clearing the flood plain in this manner.

It would be my recommendation that part of the moneys being used to subsidize the program by the Federal Government should be placed in a set-aside program that would make it available so that the flood plain could be cleared by condemnation and/or purchasing. I feel that condemnation and removing homes from the flood plain is the answer to our flooding in our cities.

#### PUBLIC LAW 99—USE OF EMERGENCY FUNDS

The third part of this testimony has to deal with the use of Public Law 99 funds which are emergency funds made available through the Corps of Engineers. The city of Grand Forks and many other cities in the United States have benefited greatly from the use of the Public Law 99 emergency funds in a manner of assisting the cities in preparing themselves to fight a flood.

For example, when an emergency is declared, the Corps of Engineers has emergency funds available to go in and do whatever is necessary to protect the property within the flood plain.

The city of Grand Forks had these funds available to them in 1978 when it fought the second largest flood on record. The funds were issued to raise the existing temporary dikes and construct other temporary dikes to protect a neighborhood within the flood plain.

The funds were also used in 1975 to build a temporary dike and earlier in 1969 and 1966. In the flood of 1966, a temporary dike was constructed in the Riverside Park area of Grand Forks. In 1969 the area, was permitted to flood. In 1971, 1975, and 1978 temporary diking was again built. These dikes protected a troublesome area from flooding. Public moneys spent in temporary protection could have been used to purchase the property and resettle the residents.

Fewer tax dollars would be spent for flood protection over the long haul. I think that the people of the Corps of Engineers realized this, but because of the way the regulations are written for the use of Public Law 99 funds, funds are not available for the clearing of the floodway.

This is another example where proper use of funds would be very helpful in reducing the damage from future flooding.

FEDERAL GOVERNMENT CONTROLLING RUNOFF FROM THE WHOLE DRAINAGE AREA

The fourth part of my testimony has to do with the control of the runoff itself. It is true that the greatest flood on record in this area happened at a time early in our history, 1897, at which time the ecosystem was almost in its natural state. From that date on man has changed nature in such a manner that the water is getting to the drainage courses at an ever-increasing rate.

From the time that the first drainage ditch was constructed to the present day, drainage ditches are being constructed to drain the fields in such a manner that the land will be available for them to plant at an earlier date. Every ditch that is constructed shortens the time it takes the water to run from the land on which it falls to the river. Consequently, floods become more frequent.

Just last week on a trip that I made through this area I noticed new drainage ditches that were not there last year as well as more land cleared that had not been cleared before all contributing to the ever-increasing magnitude and frequency of the floods.

My ideas on this may seem shocking at first, but in my opinion it has come to a point where the Federal Government must pass legislation which would make the landowner more responsible for the precipitation that happens to fall on his or her land.

What I am trying to point out is that if land is altered from its natural state, the increased rate of runoff is causing damage to the people downstream and that damage should be assessed to those landowners from where the water comes.

There are methods that can be used to retain the water where it falls and methods to control the rate of runoff to that rate of runoff that it was in its natural state. As an example, when a large shopping center asked to be incorporated into the city limits of Grand Forks, one of the stipulations was to control the rate of runoff from the 100-acre site, which is now almost all parking lot and roof, to the same rate of runoff that existed for agricultural use which existed before the shopping center was built. This was done simply by asking their consulting engineer to determine the runoff as it existed and to determine the runoff as it would be after completion of the shopping center and then to construct a holding pond with a discharge pipe of the size to throttle the runoff.

It is my opinion that these same regulations could be used throughout the entire drainage area. The use of soil conservation practices as well as water retention dams would allow for a controlled rate of runoff. This would mean then that the farmer could ditch and drain his fields, however, the water would have to run off over several days rather than in a few hours as it is doing now. This means that cities would have to store runoff on rooftops and in the streets, and in the storm sewers and retention ponds and lakes in the same manner so that the rate of runoff to the flooding stream would be controlled.

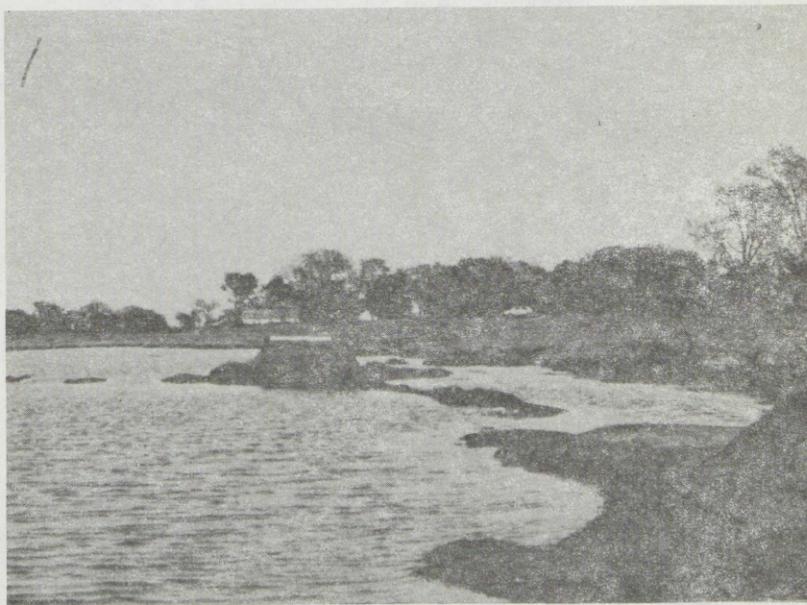
My thoughts have carried this concept even farther into a dream-world, you might say. It is my thought that a computerized model could be set up and used over the whole drainage area. In such a man-

ner all the information on the river basin such as rainfall, flow, slope of the river, the time of concentration could be put into the computer and the computer would call for the release of the water at a certain point in the river basin thus bring the water through the river system in an orderly manner.

The water could be stored or released in the farm retention dams, stored or released in the dams in the far reaching streams, stored or released on dams in the main stream, but in any case the rate of run off could be determined by the computer and it would be possible to calculate and regulate the amount of flow at any particular place or time. This means, of course, that the water in the downstream end of the river and in the short tributaries could be released first and be gone before the large flows of water reached any particular point.

Surely the scientific know how is available, accompanied with the use of computers that can send a man into space, into orbit, onto the moon, it is not too difficult to design a computer model which could regulate the hydraulics of a drainage area. Probably the most difficult problem with this idea is to convince the people that it is possible with a lot of cooperation and hard work.

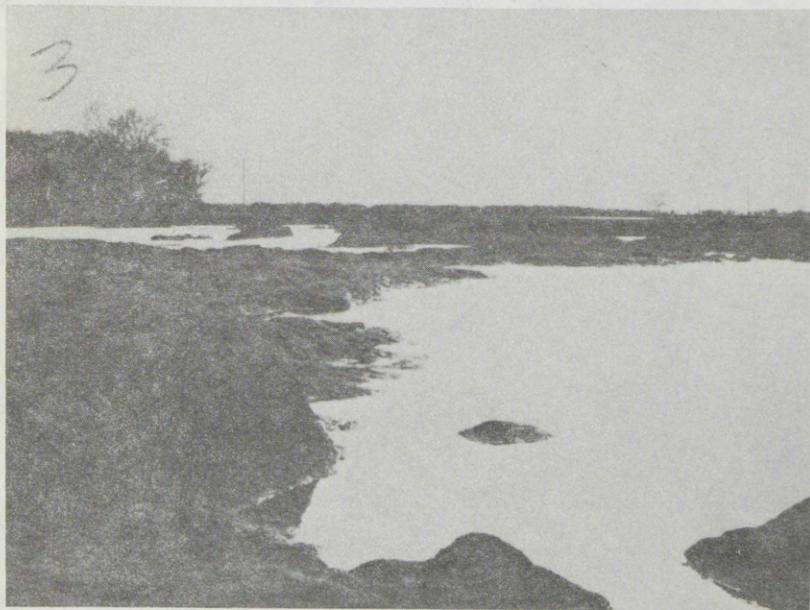
I would like to take a minute of your time now to summarize what I have said and to present you with some photographs of the area in Grand Forks and around Grand Forks during the 1978 Flood.



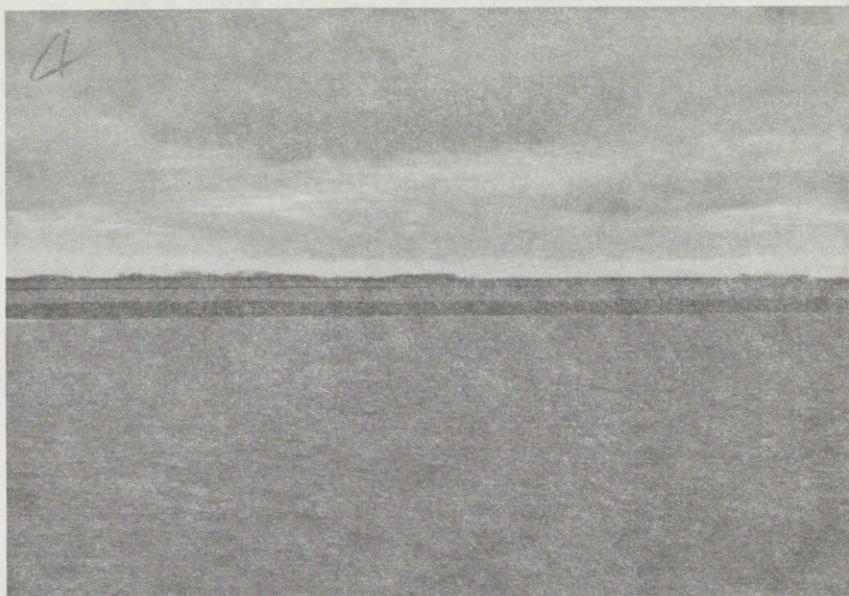
N. W. of Oslo, Minn., North Dakota side. Dike damage due to overtop.



Northwest of Oslo, Minn., dike overtop damage. (Note: The land used to be level with the land near the car.)



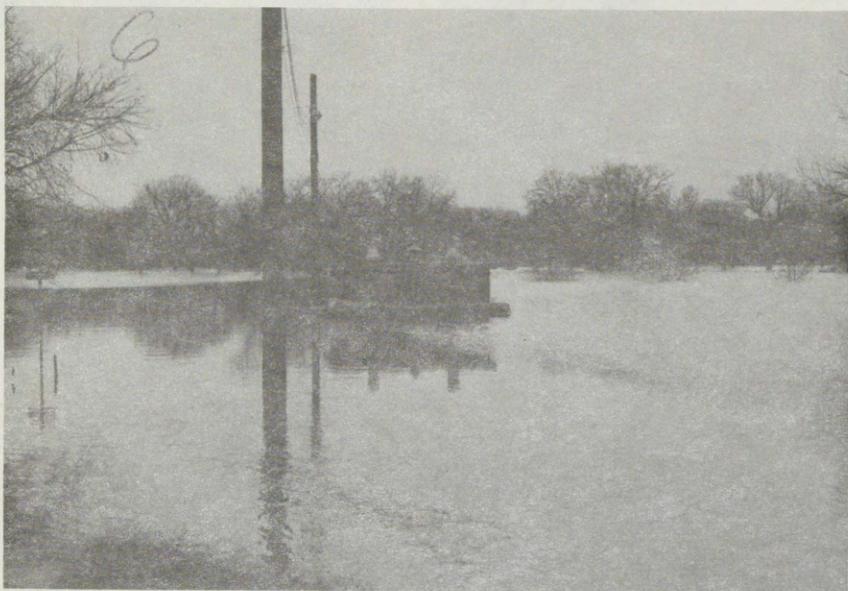
Northwest of Oslo, Minn., showing damage to farmland—North Dakota side. Dike overtopped.



Farmland flooded North of East Grand Forks.



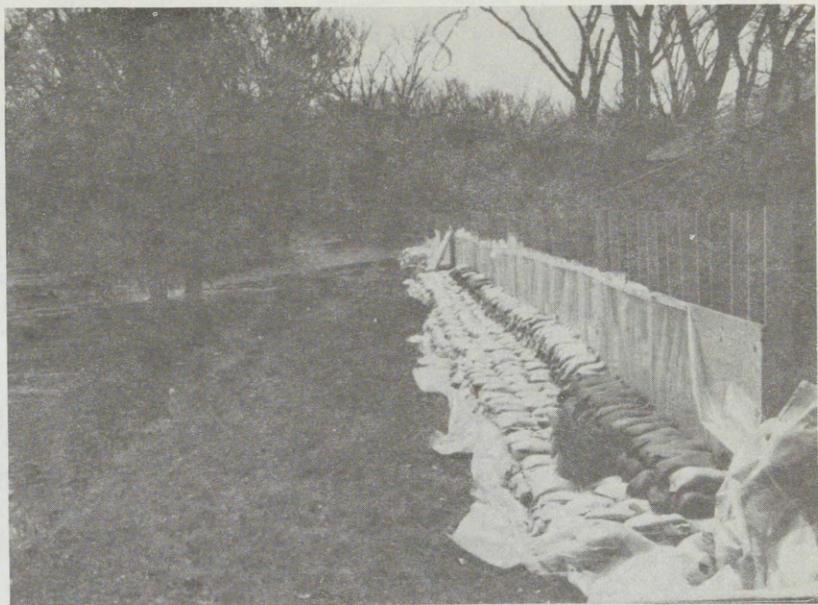
Home flooded on Belmont Road, Grand Forks, N. Dak.



15th and Belmont. Sanitary lift station flooded. Grand Forks, N. Dak.



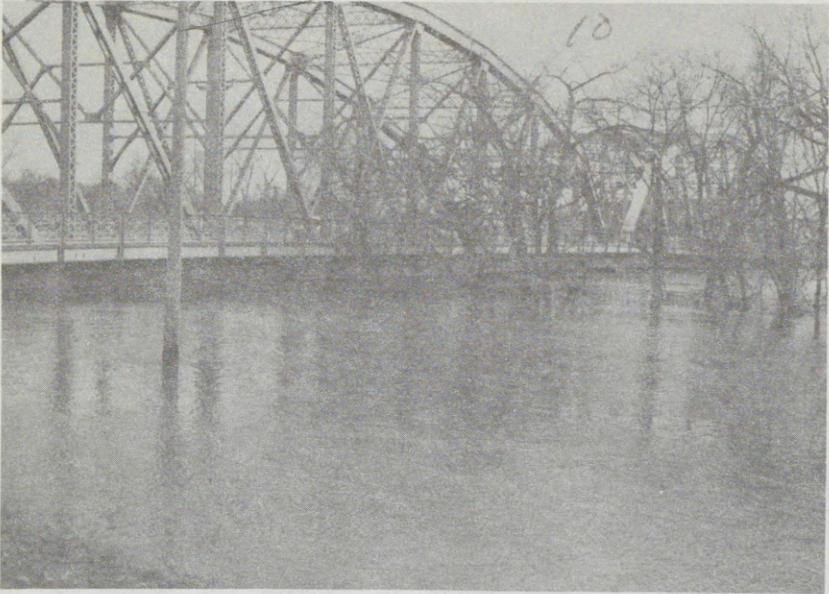
North of Point Bridge in Grand Forks, N. Dak.



1616 Riverside. Temporary dike protection.



1616 Riverside. Temporary dike constructed in middle of street. Grand Forks, N. Dak.



Demers Ave. bridge, Grand Forks, N. Dak.

Concerning the farm diking proposals, I support the concept of a joint control of the construction and building of the farm dikes. Three of the pictures which I have in my hand will demonstrate the need for the control. These pictures were taken on the North Dakota side of the Red River just west and north of Oslo, Minn. The pictures will show what can happen when the water overtops a farm dike which was not properly constructed. It shows very clearly that approximately 6 to 10 acres of Red River farmland has been destroyed and gone forever. Simply because the rushing water broke over a dike and eroded away the rich fertile land.

Concerning the Federal flood insurance program, it is my opinion that in order to decrease the cost of the Federal Government, State Government, individuals and loss of lives, it will be necessary to work out a program which would eventually evacuate the 100 year flood plain.

Concerning Public Law 99, what I have attempted to point out in my testimony is that if some way could be possible for the money which the Federal Government spent under Public Law 99 in 1966, accompanied with the funds that the city of Grand Forks spent on the flood of 1966 and add to that the amount of private funds spent to control the flood of 1966 in the Riverside area, of which I am speaking, all the homes could have been purchased in 1966, the land evacuated and consequently no more flood fighting funds would have been necessary for that area. This same condition holds true over and over again throughout the United States.

Concerning the control of the rate of run off from the river drainage area, it is my opinion that this problem is so vast and complex stretching intrastate that no legislation or controls would be strong enough if

they were not promulgated by the Federal Government. I feel that each citizen must shoulder his or her responsibility for the precipitation that falls on their land and not simply push the problem downstream onto their neighbors and friends.

I have several other pictures showing the flood in and around Grand Forks. The first three show the result of the overtopping of the dike near Oslo. I have several pictures showing the Red River Valley farmlands flooded. I have a picture showing how the temporary dike was being constructed again and again in the Riverside area of Grand Forks. A picture of the DeMers Avenue Bridge between here and Grand Forks showing how close the water was to the roadway of the bridge.

I would like to take this opportunity to thank the committee for their interest in these flood problems and for taking the time to hear my testimony. I will be available for questions.

Mr. STANGELAND. Thank you, Mr. Orthmeyer, for a fine statement.

You have some vision here that maybe takes some time in selling, but who knows, it may some day happen in our age of advanced technology.

I was at a meeting in Oslo while the flood was going on and it had been my intention two weekends to fly to the flood area but because of weather conditions we could not fly. But I was in Oslo and as a result of the meeting there I started to pressure for a hearing on the flooding Red River up here and one of the arguments I used for the hearing was that I saw the temporary diking being done in East Grand Forks and feeling that that is a waste—well, not a waste, but an unwise use of tax dollars when we could look to permanent protection and eliminate the ongoing temporary protection that it is costing us here.

How large or how long are your permanent dikes in Grand Forks?

You have some permanent diking up there; do you not?

Mr. ORTHMEYER. We have one permanent dike and that dike is approximately 3,000 feet long, about 3,500 feet, and we have also two areas now that are protected with temporary dikes which are for a 10-year flood.

Mr. STANGELAND. Those temporary dikes, if they are in there they stay, you do not remove them after the flood. They are there all the time.

Mr. ORTHMEYER. Yes. We have left them in place at our choice rather than remove them.

Mr. STANGELAND. How much additional diking do you estimate is needed to adequately protect the city of Grand Forks?

Mr. ORTHMEYER. Well, I think that the temporary dikes that we have are going to have to be all removed and rebuilt at a different location if we do to diking. There is one of the areas, which I call the Central Park area, where we use a temporary dike where I think it would be cheaper in the long run to evacuate. There are about 18 homes there that we think should be evacuated.

In the Riverside area, that dike needs complete rebuilding in order to protect for the 100-year flood.

Mr. STANGELAND. Do you have any way of projecting or contemplating the potential crest in Grand Forks had the dikes held on both sides of the river? Would it have been more? Would the crest have been higher than it was or would it have made no great difference?

Mr. ORTHMEYER. I have only my own thoughts on that.

In watching the river gauge as we do in flood times, there was a time when it seemed like the river was still rising and it just seemed to level off without any reason in the 1978 flood. My thoughts are that we were affected by the overtopping of the dike at Oslo at that time, although it would be hard for me to be able to prove that. But I think when those dikes overtopped we got a false crest early.

Mr. STANGELAND. Mr. Hagedorn.

Mr. HAGEDORN. I was just going to comment on your part II, dealing with the Federal flood insurance program, that in 1974 there was a new section passed in the Water Resources Act, section 73, which deals with the evacuation or relocation of the flood plain. I would guess that there is ongoing study authority that has been given to the Army Corps of Engineers in this area and that may be an alternative to building temporary dikes.

Are you aware of that?

Mr. ORTHMEYER. No, I am not, although we do have an urban resources study that the Corps of Engineers are doing for the city of Grand Forks, East Grand Forks. One of those problems that we asked them to address is the flooding problem and I am sure that when that report is complete that will have been addressed fully.

Mr. HAGEDORN. This is a new program that has only been authorized for one community in Wisconsin. It appears to be one which will be used more often in the future.

I have no other comments.

Mr. STANGELAND. Thank you, Mr. Orthmeyer, for your testimony.

Mr. ORTHMEYER. Thank you.

I appreciate very much you letting me on early, too.

Mr. STANGELAND. Then I will call on Mr. Seymour and ask him to come forward.

I would ask because we are running a little behind that perhaps we might consider some summarizing so that we can move along.

I would also like to make note now that we are going to try to get through the testimony of Colonel Gay, at which time we are going to break for lunch. I am told that the motel here has a buffet set up. It is \$2.35 with tip and we are not going to set a time as to how long we are going to break for lunch, but if we are all here, as soon as we are through eating we will just go right back to work again. We are not going to dally around.

Mr. Seymour.

#### TESTIMONY OF LAWRENCE D. SEYMOUR, DIRECTOR, DIVISION OF WATERS, MINNESOTA DEPARTMENT OF NATURAL RESOURCES

Mr. SEYMOUR. Congressman Stangeland, Congressman Hagedorn, members of the committee and audience: I am very happy to be here today to present the position of the Minnesota Department of Natural Resources, primarily relative to the criteria and our present considerations on them, but also to the broader flood problems and questions in the Red River of the North basin.

I do have some additional copies of my statement here if the staff would like to distribute them to anybody who would like to have a copy thereof.

Governor Perpich and the Minnesota State agencies involved with water resources management are certainly cognizant of the water resources problems of the basin of the Red River of the North. As was so graphically portrayed in the spring of this year, when a major flood comparable to 1969 occurred in the Grand Forks and Oslo area, and in about 18 other years of major flood since a river gage was established at Grand Forks in 1873, one of the major water problems has been, of course, flooding. I do not want to de-emphasize that there have been a number of localized or less major flood events that have occurred as well over a period of years.

In cooperation with the Corps of Engineers, a permanent municipal flood control project has been constructed at Oslo, Minnesota, and emergency dikes that do not meet Federal standards for permanent flood control works still provide some degree of protection to East Grand Forks, to St. Vincent, Noyes, and Halstad, all in Minnesota. Certainly more work is in order for these and other municipal protective works, but the thrust of this meeting, as I understand it, is to focus on the agricultural aspects of the flood problem in particular, to which I will direct most of my remarks.

Starting in 1975, our department as well as the North Dakota Water Commission, the Corps of Engineers, and the Upper Mississippi River Basin Commission became involved with the agricultural diking proposals and projects along the Red River of the North and we also became involved in the local, interstate, national, and international implications of this activity, which is very complex. If confining agricultural dikes are constructed close enough to the river or high enough or both, flood stages and velocities are increased for discharges in excess of bankful capacity and particularly for large floods in excess of 50,000 cubic feet per second. This effect we have already seen, as the 1978 flood, which is generally comparable in magnitude to the 1969 flood in the Oslo area, resulted in water stages about 1 foot higher than in 1969, and this occurred despite the fact that the stages were comparable downstream from the levee system for the 2 years.

Now, I do not mean to imply that the levee system was a sole cause, as the North Dakota witnesses pointed out, but it is something that should be considered and evaluated.

The Corps of Engineers has indicated to us that significant increases in flood stages reduces the degree of protection provided by the Federal projects at Oslo and at Grand Forks and Pembina, N.Dak., and that overtopping of municipal dike systems such as these would be worse than if the systems were never constructed in the first place.

It is probably true that Congress could consider authorizing the raising of these projects, but in these days of Government austerity, it is not known what the reaction to this approach would be, given that the agricultural dikes which cause the increased stages, at least in major portions, were constructed after the Federal works were already in place.

The problem is complicated because a policy of indiscriminate diking in either Minnesota or North Dakota would increase flood stages in the other State. In order to be effective, diking would have to be uniformly implemented in both States, in municipalities as well as in the rural areas, but this would ignore the potential impacts downstream of the

international border. Extensive diking in the United States could change the timing and magnitude of floods in Canada to the detriment of both agricultural and municipal interests there. International complications of this nature could require recourse to the Boundary Waters Treaty of 1909 with involvement of the International Joint Commission.

In fact, the IJC in its report to the Governments of Canada and the United States that was entitled "Coordinated Water Use and Control in the Roseau River Basin—IJC 1976," the following recommendation was made based upon testimony provided by a Minnesota representative, and this comes right out of the report:

That the Governments authorize and fund the Commission [IJC] to investigate and report on the cumulative hydraulic and environmental effects of current and planned major developments in the Red River Basin.

So that, we see that the IJC is interested.

As far as is known to Minnesota officials, there has been no followup on this recommendation, and this is a matter that this committee may wish to look further into.

In concentrating on the water stage characteristics, I do not want to underemphasize the impact of stream velocity increases which could in these valley clays that are so well known for stability problems, cause accelerated erosion that would threaten streambanks, bridge crossings, and riverside development.

Recognizing the foregoing problems, the Minnesota Department of Natural Resources proposed a set of criteria to regulate agricultural diking along the Bois de Sioux River and the Red River of the North and its major tributaries. These criteria were developed jointly with the Corps of Engineers and the North Dakota State Water Commission, and were the subject of 2 days of public hearings held in the valley in April 1978. The criteria were intended, as has already been described by the North Dakota witnesses here today, to provide guidance and regulation of flood control structures and measures along these rivers as a first step until a thorough study has been completed and beneficial and adverse impacts evaluated.

The hearing examiner assigned in this matter by the Minnesota Office of Hearing Examiners has basically recommended adoption of the criteria, with the addition of an 18-month period of delay or stay with respect to the modification or reconstruction of existing agricultural dikes, where this would be necessary. The decision of whether to accept, reject, or modify the hearing examiner's report is currently being considered by Acting Commissioner Joseph Alexander of the Department of Natural Resources and myself. Because of the complexity of the issues involved and the impact of our decision, we are proceeding very carefully and deliberately in this matter. In this connection, I have been cordially invited by Duane Ekman, who testified previously from Minn-Dak, to view the facilities with him, which I plan to do some time in October; and I also plan to advise Commissioner Alexander of this so that he may participate if his calendar will permit.

The decision on these regulations will be a difficult one in which all the local, interstate, and national interests must be weighed. If the criteria are adopted, existing dikes in both States may have to be moved back farther from the river and/or decreased in height. The net effect, assuming stability of the existing dikes, will be that more cropland

will flood more frequently than with the existing dikes in place, yet you cannot forget that less cropland will flood less frequently than was the case prior to dike construction. In making this decision, we must consider our responsibilities to neighbors, both within and beyond national boundaries, as well as local interests.

At the Minnesota hearings, one of the most often repeated contentions was that upstream drainage has drastically affected flood frequency and severity on the Red River. The arguments must have been very convincing, as they were strongly reflected in the recommendations of the hearing examiner. Unfortunately, there were no corroborative studies in the record by recognized hydrologists to this effect, and there are a number of recognized engineers who contend that channelization and drainage reduce, not increase, flooding in some areas through desynchronization of flood peaks, in effect moving tributary drainage out before the main-stem peak arrives.

In an attempt to resolve this question and to help reduce agricultural as well as urban flood damages in the basin, our Department is cooperating with the Corps of Engineers in their recently begun interim survey of the flood plain. Part of this study will be development of a complex hydrologic model which hopefully will shed more light on the extent to which, if any, past drainage and channelization practices, whether they were privately conducted or with local, State, or Federal assistance, have contributed to the current flood problem. In addition, we are hopeful that the model will provide guidance as to whether, and to what degree, upstream storage potentials can reduce flood magnitudes on the main stem and on the tributary streams.

Another issue that we would like to see explored in this and subsequent studies of the Red River Basin is the extent to which upstream storage can alleviate water supply problems in the basin, particularly in times of low flow in the natural river system. Municipal and industrial users have experienced periodic water supply problems, and, of course, water fall can also suffer in times of low flow. For example, if Fargo and Moorhead divergence from the Red River are augmented by Fargo from the Sheyenne River and by Moorhead from ground water and soon the Buffalo River as well.

These communities are attempting to secure the entire yield of these tributary watersheds during critical periods. Meanwhile there is irrigation development that is taking place upstream.

The Minnesota cities of Creston and East Grand Forks and others have water supply problems as well as Grand Forks, N. Dak. Basin studies must obviously address low flow as well as the high flow problem.

In summary, the Minnesota Department of Natural Resources is working diligently in cooperation with all interested persons and agencies to develop reasonable solutions to the complex problems of flooding in the Red River Valley. This will not be an easy process, we recognize, but we are hopeful that the data now being developed will provide the necessary technical basis to make the hard decisions which lie ahead.

Mr. STANGELAND. Thank you, Mr. Seymour.

Let me say in regard to one statement you made on the second page, when you talk about the magnitudes of the floods, and I do not know if what I contribute here has any offsetting point, but I think

you ought to realize that the dikes may have caused some of the problems of the 1 foot higher. But I think the weather bureau missed the Fargo crest by a substantial amount, and I cannot recall the exact figure. But the forecast of that crest, the contention was that the snows in early November were extremely wet, much wetter than we normally get, and that that moisture had somehow evaporated or dissipated over the winter, consequently there was not water in that snow. But they missed that crest by a substantial amount, and the people of the Red River south of Moorhead suffered substantial damage to homes because they did not anticipate the crest getting up into their houses, and they started sandbagging too late.

So, I think we had a flood in 1978 that a lot of people—I do not think you can blame dikes or anything else, but it was just more water than anybody realized was out there.

Mr. SEYMOUR. I recognize what Mr. Fahy said about there may be some other contributing factors, too, and we certainly would be willing to look at those.

Mr. STANGELAND. Can you tell us what is the status of the dike criteria for the State of Minnesota? When does the 18-month time period begin? Is that beginning now, or does that begin when you officially adopt—

Mr. SEYMOUR. With respect to that, that is a recommendation of Alan W. Klein, who is the hearing examiner in this matter.

Now, in my review of the record it appears that Mr. Klein based that recommendation upon testimony that was provided by acting director Jim Cooper of the division of waters which essentially indicated that the State of Minnesota officials would not act arbitrarily but would individually analyze specific dikes, would negotiate with local interests, and would get a real complete run down on a specific dike section before initiating any kind of formal order or before initiating court proceedings or something of that nature.

When Jim Cooper testified to that he was absolutely right. This is the only way to operate in a democratic society, especially with any kind of regulatory program, and we would do this as a matter of course.

So, there is substantial question in my mind as to whether or not we need to specify an exact time period; namely, 18 months or 3 months or 24 months or any other time period as long as the needed coordination is accomplished.

Mr. STANGELAND. Do you anticipate when you visit the scene and Mr. Alexander at the request and the invitation of Mr. Ekman the possibility of some modification of criteria? Is there a possibility of that visit resulting in some modification?

Mr. SEYMOUR. Well, I suppose there is some possibility, although we recognize that these criteria that are proposed were developed by recognized hydrologists and if there was some alternative criteria that would accomplish the same objectives, I suppose we would have to consider to what degree we would affect them.

Mr. STANGELAND. It was sometime ago that I contacted Commissioner Herbst, and I cannot recall the exact date, but I approached him on the feasibility of the possibility of doing some water impoundments, small water impoundments, temporary, on Fish and Wildlife lands, and he advised me that he would take it under consideration and perhaps it would be wise to have the Corps of Engineers go out

with their hydrologist to see how much water could be retained on those lands in the spring without damaging those lands for wildlife and then that water released at a later time.

Do you see any possibility of DNR with the State lands looking at this in a cooperative effort to try to hold back some water?

Mr. SEYMOUR. This matter came up in general terms in the deliberations related to the Roseau River project, as you are probably aware. And in that case some detailed studies had to be done as to how much water versus how much land and how high the water would be and what the impact would be on the river flow and also what the time period would be for release of the water. In other words, how long it would have to be retained before being released, whether that would, in fact, destroy the habitat or, in fact, let me say the habitat value of the land.

So, I guess my reaction to that is it is something that could and should be looked at, but it has to be done within the context of a proper base study, which takes personnel and money and all of those things, which I am sure you can appreciate.

Mr. STANGELAND. Well, I know in the case in Roseau, and this is why Mr. Herbst was considering a hydrologic study as to how much water can be held on the Federal lands without it backing up on to private land. And in the case of the Roseau River part of the impoundment proposal there would not only flood State lands, but they would also flood farmlands around. That is one of our problems in that. And there again probably in retaining some water in the spring is going to damage to a certain extent that DNR State land.

Mr. SEYMOUR. And the question is to what extent.

Mr. STANGELAND. But we have to balance economics as to damage of agricultural land without doing it. And I would be pleased if the Department would consider taking a look at this and perhaps trying to devise a way of determining. And I think if the public interest is served and the public is willing to contribute partial solution, perhaps we will find a willingness on the part of the private owners to also contribute something to that same solution.

Mr. SEYMOUR. I think your suggestions are well founded there and this issue may come up again in legislative and policy deliberations with the Legislative Committee and with the Water Planning Board.

Mr. STANGELAND. You made a statement: "One of the most often repeated contentions was that upstream drainage has drastically affected flood frequency and severity on the Red River." Then you say: "The arguments must have been very convincing, as they were strongly reflected in the recommendations of the hearing examiner".

Could you elaborate on that?

Mr. SEYMOUR. Hearing Examiner Klein in the first or second page of his report made some very strong statements to the effect that he believed that this was probably true. I asked people that were involved in the hearing whether or not these were substantiated on the record by hydrologic studies and the response I got was that they were not.

Now, there are pros and cons to the contention and I guess my point is that I would like the Corps of Engineers to try to come up in their hydrologic model with some kind of a definitive answer on this because it could be very important to the future policy determination.

Mr. STANGELAND. Just one more question.

You also state that "recognized agricultural and civil engineers who contend that channelization and drainage reduce, not increase, flooding in some areas through desynchronization of flood peaks \* \* \*."

Isn't that more true in a situation where you have a river running south instead of a river running north and that increased channelization, that crest hits virtually when the ice breakup comes. I mean it has to follow. You cannot reduce the crest ahead of the breakup.

Mr. SEYMOUR. To the extent to which it makes a difference whether the river flows north or south, I guess I am not prepared to answer at this time. I know that this factor was mentioned in the hydrologic report that was done for our department by the Corps of Engineers as part of their technical assistance of the State program.

I think it should be completely aired, you know, and give us some better direction on it than what we have right now.

Mr. STANGELAND. I am sure that if you got rid of the water at the mouth of a river faster, got it out of the way, you would reduce the flood as it comes down when the rest of the water flows through. But when you are going north and the river opens up slower, it does not help to channelize and rush the water up on the northern end of the river because it is just not going anywhere until that river opens. That river is not going to open until the main flow hits and starts to run off.

Mr. Hagedorn?

Mr. HAGEDORN. Mr. Seymour, if the Corps of Engineers were to order the diking system to be severed at Oslo, would the State allow the farmers to dike around that community, to keep their dikes in existence for an additional 18 months, as the hearing examiner has recommended, to permit the legislature to work out an agreement?

Mr. SEYMOUR. This is a significant policy question that crossed my mind at the time Duane mentioned that and I think our position would probably be, although it is not firmly determined, that we would require permits for any new diking and this would be considered, new diking.

So, to that extent we might become involved right away.

Mr. HAGEDORN. So, you, in effect, would circumvent the hearing examiner's recommendation.

Mr. SEYMOUR. Well, it is my understanding that the hearing examiner's recommendation was directed toward existing dikes rather than new dikes.

Mr. HAGEDORN. I understand that part, but is it not true that if you were to sever it at any one point, the dike is obviously then useless, it is rendered totally ineffective, and, therefore, you, in effect, circumvent the hearing examiner's recommendation of an 18-month moratorium?

Mr. SEYMOUR. Well, I guess the other side of it is that new construction is needed to do what was suggested and the hearing examiner also found that we had the authority to regulate new as well as existing dikes.

So, I do not see it as a circumvention.

Mr. HAGEDORN. Well, whether or not you are circumventing the hearing examiner, you are going against their recommendation.

Mr. SEYMOUR. I guess that I do not agree.

Mr. HAGEDORN. The hearing examiner could have suggested that the dike be immediately severed, could he not? And he could have

said that there should be no moratorium to allow the legislature to work out a solution.

Mr. SEYMOUR. Well, I think the hearing examiner was more concerned with the broad picture rather than the specific issue of 15 feet of agricultural dikes at two spots at Oslo.

Mr. HAGEDORN. I am not an expert on this problem, but as I understand it, if the dike is breached, then the whole diking system that is in place is absolutely worthless; is it not?

Is there any value to it if it is severed for 15 or 20 feet?

Mr. SEYMOUR. This is a good question.

Mr. HAGEDORN. Would you build a 48-mile dike, leave 15 feet unconnected, and think that it would work?

Mr. SEYMOUR. You have two competing interests here.

The effect of removing the connection at those two locations, if that was the only work that were done, would not have any impact in lowering flood stages along the main stem of the river, which is the objective toward which it is, I assume, directed, at least as an incentive for the local interests in that area perhaps to bring their dikes into conformance with the criteria.

I think, and maybe I am speaking out of place here and we should be directing these questions to Colonel Gay, but I somehow believe that if that order were enforced against Oslo, the intent would not be punitive against those two specific locations. It would be the kind of a thing that would be intended as an incentive to the local interests to perhaps bring a larger reach of dikes both upstream and downstream from Oslo into conformance with the criteria.

Mr. STANGELAND. If we diked according to the criteria from Grand Forks to Canada, would we have problems with the IJC?

Mr. SEYMOUR. I think you would.

Mr. STANGELAND. That would put the pressure on more water and more flooding up on the Canadian side?

Mr. SEYMOUR. Yes.

I mentioned it only as a policy determination without recommendation that this be done. But I think if it were done, that it would definitely result in problems with Canada.

Mr. STANGELAND. What role do you see the recently created Water Planning Board playing in the overall attempt to solve this problem? And do you see some potential overlapping or conflict between the board and the new board created to the umbrella board over the watershed districts, the Water Resources Board?

Mr. SEYMOUR. I guess I do not really see any conflict as to your second question.

As to the role in the Red River Valley—and Mr. Kalitowski is here and perhaps he can better answer these questions than I can—it is my understanding that Governor Perpich has assigned to Mr. Kalitowski the responsibility of developing some kind of proposals of things that we could do immediately to alleviate flood problems in the Red River of the North.

Mr. STANGELAND. Thank you, Mr. Seymour.

I would hope that you would take back to Mr. Alexander my request that in-house you look at the feasibility of retaining some water on DNR lands. I am going to pursue that on the congressional level, on the Federal level. We will be questioning Fish and Wildlife on the

same thing later on. But I think those kinds of discussions should begin.

Mr. SEYMOUR. I think that our biggest drawback to doing something like that is lack of personnel and funding and in that connection perhaps there is something this committee can do.

Mr. STANGELAND. I think if the agencies show a willingness I think we can make a case for the funding because of the cost to the agricultural lands here through flooding. I would certainly be willing to work on it.

Thank you.

[Related material subsequently submitted follows:]

STATE OF MINNESOTA,  
DEPARTMENT OF NATURAL RESOURCES,  
St. Paul, Minn., October 17, 1978.

Congressman ARLAN STANGELAND,  
Moorhead, Minn.

DEAR CONGRESSMAN STANGELAND: During the Congressional hearings that were held in East Grand Forks on September 30, 1978, you indicated an interest in obtaining testimony concerning changes in federal law that could provide solutions to the flood problems of the Red River. Staff from the Division of Waters has researched this topic and we offer the following suggestions:

1. Funding of Section 1362 of the National Flood Insurance Act of 1968 as amended by the Flood Disaster Protection Act of 1973.

Section 1362 authorizes the Secretary of Housing & Urban Development to purchase flood-damaged properties which have been damaged on at least three occasions over a five-year period or have sustained damaged to such an extent that rebuilding is prohibited by local code or ordinance. A further requirement for purchase is that the damaged property was covered by flood insurance.

The provisions of Section 1362 have never been implemented because funding has not been appropriated. There is some concern, on the part of the Office of Management and Budget, that this type of acquisition program would "break the budget." A recent study being done by the Federal Insurance Administration, indicates that the implementation of Section 1362 would, in the long run, be a viable hazard mitigation measure. For more specific information, you might want to contact Gloria Jimenez, the Administrator of the Federal Insurance Administration.

2. Appropriation of the authorized funding for loans for the elevation of damaged property. (a sub-part of Section 1362).

This section of the law authorizes the Secretary of Housing and Urban Development to make low-interest loans to homeowners for the purpose of elevating single-family dwellings located within the "regulatory floodway" and insured under the National Flood Insurance Program. This program could be extremely useful in the Red River Valley provided that the statutory reference to "regulatory floodway" could be changed to "regulatory floodplain." The Federal Insurance Administration has previously supported this change but the reorganization of their agency into the Federal Emergency Management Agency has resulted in a delay for proposed legislative changes.

In conclusion, the implementation of these programs would be consistent with the trend toward hazard mitigation and with the State's Flood Plain Management Act. We feel there would be numerous property owners in the Red River Valley that would avail themselves of the opportunities these programs would provide.

Thank you for the chance to provide additional testimony.

Sincerely,

LARRY SEYMOUR,  
Director, Division of Waters.

Mr. STANGELAND. We will now hear from Col. Forrest T. Gay III, and after that we will break for lunch.

**TESTIMONY OF COL. FORREST T. GAY III, DISTRICT ENGINEER, ST. PAUL DISTRICT, U.S. ARMY CORPS OF ENGINEERS, ACCOMPANIED BY PETER A. FISCHER, CHIEF, HYDRAULICS AND FOUNDATIONS BRANCH; ROBERT L. NORTHRUP, CHIEF, GENERAL INVESTIGATIONS SECTION, PLANNING BRANCH; AND MARTIN R. McCLEARY, CIVIL ENGINEER, GENERAL INVESTIGATIONS SECTION, PLANNING BRANCH**

Colonel GAY. Congressman Stangeland, Congressman Hagedorn, ladies and gentlemen: I am Col. Forrest Gay, district engineer of the St. Paul District of the Corps of Engineers. I am accompanied by Mr. Peter Fischer, Mr. Robert Northrup and Mr. Martin McCleary from my staff.

It is a pleasure and an honor to appear before this subcommittee today. I have been the district engineer since January 1976. I have had a chance to follow the proceedings here and the activities very closely and I have taken a keen interest in them. Although I have not become an expert, at least I have learned how to pronounce the name Sprynczynatyk. And I think I can say even better than that. I have learned how to spell it.

Flooding is a significant water resource problem in the Red River of the North basin. The magnitude of floods on the main stem is influenced by three unique characteristics:

- One: The northward flow of the river,
- Two: The flat topography of the basin, and
- Three: The limited channel capacity in certain reaches.

Floodwaters from melting snow in the headwaters to the south flow north into an area that may still be blocked by winter ice. The channel ice causes backwater and localized increases in flood stages. In the area from Grand Forks to the international border, the channel capacity is smaller than in areas upstream or downstream, causing floodwaters to spread out over the flat valley and inundate large areas adjacent to the river.

In the past 15 years, 6 large floods occurred on the Red River resulting in damages to agricultural land and urban development. The 1978 spring flood inundated 553,000 acres of land in the Red River basin. Two lives were lost and an estimated \$13 million in damages was sustained, 80 percent of which was agricultural damage. Advance planning, accurate forecasting, and permanent and emergency flood control works prevented nearly \$29 million in damages and protected about 100,000 acres of land. Locally constructed agricultural levees on the Minnesota side of the river were generally effective in protecting farmlands, but North Dakota farm levees were either breached, overtopped, or outflanked by floodwaters from the Red River and tributaries in North Dakota.

Moderate flooding was sustained along the main stem from Wahpeton-Breckenridge north to Grand Forks. However, in the Grand Forks metropolitan area, the 1978 flood was the highest of the century. North of Grand Forks floodwaters spread out an average of 4.8 miles,

inundating farmland, roads and rural homes. Downstream at Oslo the 1978 flood levels on the Red River were the highest ever recorded. The 1978 discharge at Oslo was the same as that in 1969, but the flood stage was 1 foot higher. The only significant change from 1969 was the agricultural levee system. Therefore, the increased flood stage at Oslo can be attributed primarily to the farm levees.

After the 1975 spring flood, farmers near Oslo constructed about 10 miles of continuous earth levees adjacent to the Red River of the North on the Minnesota side. These levees kept the floodwaters from inundating many fields during the 1975 summer flood. As a result, similar levee systems were built in other locations on both sides of the river. The levees now extend upstream and downstream of Oslo for 46 miles on the Minnesota side and 21 miles on the North Dakota side.

You will notice from the map on the wall those levees are shown in red, 46 miles in Minnesota and 21 miles on the North Dakota side. The fellow area is the Federal ring levee around the city of Oslo in Minnesota.

In response to concerns expressed by public officials and local citizens regarding the possible adverse effects of the farm dikes, the Upper Mississippi River Basin Commission sponsored several meetings to discuss the problem. The Corps of Engineers participated along with other Federal, State, and local interests and the public. Discussions at the meetings raised questions concerning possible adverse impacts of the diking, considered authorities under which State and Federal agencies could regulate dike construction, and documented the urgent need for a flood control program for the basin.

It was determined that the authority to regulate dike construction rests with the States. The Corps of Engineers does not have jurisdiction to regulate these activities. However, the States requested that under our technical assistance program we provide a preliminary hydrologic analysis of the diking problems.

In 1977 we completed the analysis of the hydrologic conditions on the Red River main stem downstream of Grand Forks and furnished a report to the States. The report:

- (1) Describes the characteristics of historic and projected floods on the Red River main stem from Grand Forks to the international border;

- (2) Establishes the extent and location of existing and planned agricultural levees;

- (3) Evaluates the potential impact of the levees; and

- (4) Establishes tentative setback limits for use in developing levee criteria.

We are concerned about the potential adverse impacts which could result should construction of farm levees continue uncontrolled. Such levees, if built high enough and close enough to the riverbanks, could cause significant increases in flood stages and velocities for flows greater than channel capacity. The increased flood levels would reduce the degree of protection provided by the federally constructed levee projects at Oslo, Grand Forks, and Pembina, and expand the potential for flood damages. The greater velocity of the floodwaters would increase the erosion potential, threatening streambanks, bridges, and riverside communities. Erosion would significantly increase the sediment load of the river, resulting in impaired water quality and deposi-

tion of silt on farmlands downstream of the levees. Removal of a major part of the natural overbank storage of floodwaters could increase downstream flood stages and discharges possibly extending into Canada.

Manitoba Provincial authorities have indicated a definite interest in our studies and the ultimate resolution of the levee problem. The 1909 treaty between the two countries providing for the establishment of the International Joint Commission states in article IV that the two countries:

Will not permit the construction or maintenance on their respective sides of the boundary of any remedial or protective works or any dams or other obstructions in waters flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary unless approved by the Commission.

We are encouraged by and support the activities of the two States in cooperation with local officials and citizens to develop joint criteria for regulating dike construction. We recommend that the joint criteria for further levee activities be implemented. These criteria will provide sufficient guidance and regulation of flood control measures along the Red River of the North until a thorough study of the flood plain has been completed and the potential adverse and beneficial effects of such measures have been determined.

Our ongoing study of the Red River main stem was undertaken at the request of local citizens and public officials at many levels, who are concerned about the agricultural flood problems along the Red River. The study involves a thorough investigation of the Red River main-stem flood plain from Wahpeton-Breckenridge to the international border. The investigation will include a detailed examination of the agricultural levees near Oslo and development of a hydrologic model for use in comparing and evaluating flood damage reduction alternatives.

Solving the flood problems on the Red River of the North will require investigation of solutions outside the main-stem area as well as extensive coordination and joint planning among State governments and local interests on both sides of the river. This past June, we completed the plan of study outlining the objectives and procedures for the investigation. The report was reviewed in draft by concerned interests at all levels.

We organized a Red River Flood-Plain Study Board to serve as the citizens committee for the study. The board is composed of representatives of all local government units—watershed districts, water management districts, and flood-plain communities. The study board is currently reviewing alternatives and assisting in data collection. Technical assistance during the study is being provided by a technical agency advisory team made up of representatives of Federal and State agencies. The Souris-Red-Rainy regional office in Fargo is providing assistance in carrying out this complex and detailed public involvement program.

The main stem study is scheduled for completion in 1981.

I would like to mention that on the map to your rear the main stem study area is outlined in red.

In the Grand Forks-East Grand Forks urban water resources study, we are investigating the feasibility of providing permanent

flood protection for Grand Forks. In areas where permanent protection is not economically feasible, a flood emergency plan of action will be developed to assist Grand Forks during floods which exceed the protection of emergency and permanent works. The need for such a plan was demonstrated during the flood this spring. The study is scheduled for completion in 1980.

In the predominantly agricultural area drained by the Goose River, spring flooding is a major problem. One of the goals of our Goose River study is to develop a plan to provide flood protection for the residents of the area. A number of potential alternative plans were developed through extensive coordination with local interests. We are currently reviewing and evaluating the preliminary alternatives. Plans which show the most promise will be studied in greater detail during the remainder of the investigation. The study is expected to be completed by 1980.

Authorized projects on several tributaries of the Red River of the North would provide limited flood damage reduction along the main stem. You might want to follow this on the map. These projects include reservoir development on the Pembina River in North Dakota and on the Wild Rice River in Minnesota, and a local protection project on the Park River at Grafton.

We also have an authorized reservoir project on the Sheyenne River.

Changing social and environmental considerations since authorization of the project in 1970 point to the need for a complete reevaluation of the project.

We are currently evaluating all flood control alternatives to determine which of them will best satisfy the needs for flood damage reduction and related purposes.

A complete solution to the flood problem on the Red River of the North probably cannot be obtained within the limits of economic feasibility and social and environmental acceptability. The best we can expect is to prevent the overflows and associated losses in rural areas caused by the smaller, more frequent floods. Flood damages in urban areas and in concentrated industrial, business, and residential areas can be largely eliminated by constructing levees, floodwalls, and interior drainage facilities where economically and environmentally feasible, or by nonstructural actions such as flood proofing, evacuation, zoning to restrict development of flood-plain lands, and enforcement of land use regulations.

The Corps of Engineers will continue to work with State and local authorities in developing workable solutions and, when authorized and funded by Congress, to implement them.

That completes my statement.

Mr. STANGELAND. Thank you, Colonel.

We heard testimony that the corps should consider the flood damages on the Red River as part of the cost-benefit ratio for upstream flood control structures.

Do you care to comment on that?

Colonel GAY. I think that the question goes to the secondary damages. We do consider the primary damages. We do not consider the secondary effects, either on the benefit or on the cost side.

Our cost accounting is spelled out in the principles and standards which were promulgated by the Water Resources Council nearly a decade ago.

Mr. STANGELAND. What do you mean by "secondary damage"?  
What do you mean by "secondary benefits"?

Colonel GAY. He was talking about the drainage upstream, the damages upstream, and we are talking about the area in which we are concentrating our studies, say in the Sheyenne Basin. We would be looking at the damages in the Sheyenne Basin and maybe not in the headwaters or some lesser tributary of that area.

Mr. STANGELAND. What about the damages on the Red, the effects on the Sheyenne?

Colonel GAY. Those would be counted.

Mr. STANGELAND. If a flood control structure was put on the Sheyenne, the benefit of that structure to the Red would be counted as part of the cost-benefit ratio?

Colonel GAY. Yes, it would.

Mr. STANGELAND. Mr. Orthmeyer testified on the lack of funds for clearing a flood plain, 100-year flood plain.

Could you comment on what might be available for this purpose?

Colonel GAY. Yes.

Mr. Hagedorn spoke of the 1974 act which gets into nonstructural alternatives and I could see as a result of the urban study that as a part of the overall flood damage reduction plan there might be a non-structural piece or two where it would be cheaper to buy up properties and remove them or destroy them, and relocate the families, rather than build a levee or some other expensive structure. This is what we found to be the case in Prairie du Chien. The cost of flood protection in Prairie du Chien for a levee and floodwall was about \$4 million, but we could buy up the flood plain for about \$4 million.

The degree of protection was a little bit different there. However, the principle still exists and it could be applied, at least in part, perhaps in any area. More specifically it might be applicable in Grand Forks.

Mr. STANGELAND. You speak of the main stem basing study that you are going to complete in 1981.

When did that begin?

Colonel GAY. Bob, do you want to comment?

Mr. NORTHRUP. I believe that was about 1 year ago.

Mr. STANGELAND. How long would you anticipate a complete study, a complete analysis of the Red River drainage basin would take? Just how long?

Mr. NORTHRUP. Well, this Red River main stem study is just dealing with the main stem problems.

Mr. STANGELAND. I realize that. I am asking about a study to review and look at the potentials for preventing flooding throughout the whole basin, as to where the potential is for holding some water, whether it be small ponds, just an overall study to try to reduce the amount of flooding we see right here on the main stem on the Red.

Mr. NORTHRUP. We plan to do that with this study; to evaluate the beneficial effects of tributary storage, small impoundments, and alternatives on tributaries that would have an impact on the main stem.

Mr. STANGELAND. But that would not include the amount of drainage that is being done, where you might hold water. It will just show you the benefit that can be derived or the problem that is there really.

Mr. NORTHRUP. Over past years there has been a number of studies of specific tributaries that have been conducted where there has been

an investigation of small impoundments, main stem impoundments on the tributaries. The Sheyenne River is one that is ongoing. A feasibility study was completed in 1969 and that is being updated under phase I, GDM, at the present time.

In that particular study they have already assessed the potential of about 200 small contributory reservoirs on the Sheyenne River itself.

So, there is a lot of data available that we will bring together in this particular study.

There are studies that have been done on the Red Lake River, the Pemilaya River, and the Forest River. We will pick up all that past data and we will coordinate with the Red River Management Board on any other potential impoundments or alternatives involved as part of the study effort.

Mr. STANGELAND. So, eventually we will have a picture of this whole basin and the potential for impoundments here and less drainage there and whatever. But we will have a picture of that whole basin to get at the problem at the root instead of trying to attack it at the peak right here.

Mr. NORTHROP. Right.

Colonel GAY. Mr. Fischer, I think you wanted to add something to that.

Mr. FISCHER. I believe the studies on the total model and the total basin to look at alternatives will be about 1985, will it not?

Mr. NORTHROP. Well, I think for this study 1981, but for the Red River North basinwide study, which will be a condensation of all of the interim studies that have been done over the past, plus the studies that were done to determine what the direct impact on Red River main stem would be of tributary impoundments and tributary alternatives as well as main stem alternatives, would be done at a much later time. But we should have the answers for the effectiveness of tributary solutions as well as main stem solutions to the main stem problem completed in 1981.

Mr. STANGELAND. Will you be the agency to pull that all together in one coordinated effort and will you be looking for assistance from say the watershed boards and the North Dakota Water Resources Commission and will they have input into that?

Mr. NORTHROP. Yes.

We formed a Red River of the North Water Study Group. They will be involved. We formed actually two institutional kinds of groups. One is the Red River North Main Stem Study Board, which is composed of 7 watershed districts from Minnesota and 7 water management boards from North Dakota, plus I believe there are 19 communities. So, it is a board of 33 people up and down the main stem representing each tributary. That group will be meeting on a very regular basis and going through the whole planning process, the merits of alternatives, the criteria for screening them, and even move to selection of a plan.

The other group that is being formed is, as Colonel Gay has mentioned, a technical advisory board that brings together the technical staffs of different State and Federal agencies that have been involved and been concerned and provide input into the study technically.

Mr. STANGELAND. Do you have the authorization or the money to do this or are these hydrological studies being done with this framework, within this plan to foresee water retention?

I referred to Mr. Herbst and to the DNR, the need for hydrological studies to see how much water can be held in a certain area without doing harm and damage.

Colonel GAY. We have a Red River authority and we are funded under that authority with several subheadings. One of them is the urban study. Another is the Goose River.

Maybe you can expand a little on the funding.

Mr. FISCHER. Well, I guess I could expand a little bit on the implications of developing a rather sophisticated model to determine the hydrologic regime in the basin going to the exactness of determining the impacts of various drainage measures or the impacts on past drainage measures.

The studies and the funds that are included in the study documents now do not include that sophisticated a model for basinwide.

Mr. STANGELAND. Would that require more authorization than appropriation?

Mr. FISCHER. I do not know about the authorization, but it certainly would make a change in the budgeting and funding requirements.

Mr. STANGELAND. Mr. Seymour of the Minnesota DNR related that although the contention that upstream drainage drastically affects the frequency and severity of the floods—and that was many times repeated—there were no corroborative studies furnished.

Can you enlighten us on that?

Colonel GAY. Well, that has been a contention not only in the Red River Basin but also in the Souris Basin.

If it could be shown that drainage was causing increasing flooding, for instance, in Canada, then some action could be brought through the International Joint Commission. Such has not been the case so far.

Mr. Fischer is our senior hydrologist and he and I have had a lot of discussions about drainage. Maybe he would like to add something to that comment.

Mr. FISCHER. I think in a basin the size of the Red River of the North, when we try to make one simple statement on the impact of drainage we oversimplify that situation greatly. I do not think anyone knows specifically if the tributary drainage that has been done over the years, in fact, has an impact on either raising the stages or lowering the stages on the Red River of the North. I think the only thing we can say with confidence, and it is not really an answer, is drainage sometimes increases flooding and sometimes decreases flooding depending upon the specific situation. But to imply, in any general case on a basin that size, that drainage is either helping or hurting you, I think it is a gross oversimplification.

Mr. STANGELAND. Let us suppose that drainage has not increased the incidents and the severity of flooding, but looking at the picture of producing food and fiber and looking at the cost of operation and looking at the value of the land in the Red River Valley Basin, if we have increased the severity of flooding by drainage perhaps we ought to be looking at ways to decrease the severity because of the economics involved.

Colonel GAY. Well, that is the thrust, of course, of our studies, to determine economic feasibility for providing flood damage reduction throughout the basin.

Mr. STANGELAND. Mr. Hagedorn.

Mr. HAGEDORN. Colonel Gay, did the Corps of Engineers have any contact with the farmers when they were constructing these dikes?

Colonel GAY. Although I was not here at the time my predecessor found out about the construction I believe in the fall or right around the summer and decided to issue this order in November about severing the connection, I am not sure exactly how the corps did discover that that was going on.

Can anybody here answer that?

Mr. McCLEERY. I believe there was one of our people in the field looking at the levees and the capability.

Colonel GAY. Was that after the summer floods?

Mr. McCLEERY. That was in the fall of 1975.

Colonel GAY. It probably preceded Colonel Lowell's letter by about a month or so.

Mr. HAGEDORN. Thank you.

Colonel, for the record would you state why, while the Corps of Engineers is studying the whole Red River of the North, that you do not have jurisdiction over diking?

Colonel GAY. Yes, sir.

The corps has two authorities to regulate construction in waters. One is an authority, section 10 of the 1899 act, sometimes called the Refuse Act, in which we can regulate the construction of objects in the navigable waters of the United States.

The other is section 404 of the Federal Water Pollution Control Act Amendment of 1972, in which we can regulate the placement of material into waters of the United States and their adjacent wetlands.

In the case of the dikes being constructed here in the Red River Valley, all of the dikes are above the ordinary high water mark and none of them, therefore, exceed our section 10 jurisdiction and none of them are in the wetlands surrounding this river nor its lakes and, therefore, they are outside of our 404 jurisdiction.

Mr. HAGEDORN. Would you just quickly define the high water mark?

Colonel GAY. The high water mark is a statistical measure of the average upward reach of the river in an average year.

I cannot get more specific than that.

It is a legal definition also.

Mr. HAGEDORN. And what is the corps position on the criteria that have been discussed here this morning?

Colonel GAY. The corps assisted in the development of the criteria and laid out for the States what the setback distances should be for various flood frequencies—the 5-year flood, the 10-year flood, the 20-year flood, the 50, the 100—and the trade offs. Therefore, do you put these levees closer together and provide greater degree of protection for large areas, farmland, for the smaller floods or do you set them way back and flood more frequently large regions of agricultural land, but for the balance have a much greater degree of protection?

The States chose the 10-year flood protection as the alternative that was the best compromise. It provided for a high degree of land to be protected, but from a more frequent flooding.

The corps did participate and the corps recognizes the setback distances and the other criteria as viable.

Mr. HAGEDORN. Thank you.

I have no further questions.

Mr. STANGELAND. I guess I have maybe only one, Colonel Gay.

In looking at the criteria and listening to Mr. Ekman in his statement of virtually 60-percent protection with these dikes, were those criteria primarily established based on the level of the Oslo dikes that the corps constructed and to hold those dikes down to a point where they would not do harm to the dikes constructed around the city of Oslo?

Colonel GAY. Well, of course, the Federal project was the initiator of all of this activity on the Federal side in 1975. However, had the criteria that were selected been for say the 100-year flood or the 50-year flood, it would provide for maintaining the high degree of protection at Oslo which was designed. As it exists now the protection at Oslo, which was designed for something in excess of a 200-year flood, is considerably less than a 100-year protection right now. In fact, if all of the dikes which were planned were constructed, that degree of protection would be something like a 12-year flood.

Mr. STANGELAND. How many more levees are planned that you know of? Are there more dikes planned to be constructed?

Colonel GAY. I do not have the total mileage, but that analysis was based on surveys. I think Minn-Dak was a participant in that in 1975-76, and we came out with that statement in 1977 reflecting all the know dikes and those which were programmed but had not yet been constructed because of the moratorium.

Mr. STANGELAND. And now if there were more dikes to be constructed say this fall, they would have to conform with the criteria or do you not have the authority?

Colonel GAY. The corps does not have the authority to say yes or no.

Mr. STANGELAND. But the States do.

Colonel GAY. But the States do.

Mr. STANGELAND. I see.

Colonel GAY. As I understand Mr. Seymour, he is saying that if farmers want to put up new dikes they will have to follow the criteria.

Mr. STANGELAND. Any more questions?

Mr. HAGEDORN. Do they have to get permits to do that?

Mr. Seymour, do they have to get permits?

Mr. SEYMOUR. Yes.

This was the finding of the hearing examiner; that the State had the authority to require permits.

Yes. They have to get permits.

Mr. HAGEDORN. Would the State approve those in an expeditious manner?

Mr. SEYMOUR. Yes. If they are consistent with the criteria.

Mr. STANGELAND. Does the 18 month moratorium just hold for the existing dikes?

Mr. SEYMOUR. This is my interpretation.

Mr. STANGELAND. I guess I have no further questions.

Thank you very much, gentlemen.

We will break then for lunch and as soon as we are through the line we will come back.

[Whereupon, at 12:40 the subcommittee recessed for lunch.]

#### AFTERNOON SESSION

Mr. STANGELAND. We will call the meeting back to order.

We still have quite a few witnesses to go and we want to have as much time as possible for anybody who cares to offer testimony.

Because some of the witnesses have to make a plane about 3 o'clock, we are going to revert in order and I am going to call Mr. Richard Berry and Mr. Aultfather. Mr. Berry is from the Minnesota Field Office of the Fish and Wildlife Service and Mr. Aultfather is from the North Dakota Area Office of the Fish and Wildlife Service. We will take their testimony now.

Replacing Mr. Aultfather is Mr. Merrill S. Zschomler.

Whichever one would like to proceed first may do so.

Mr. Zschomler first.

**TESTIMONY OF MERRILL S. ZSCHOMLER, AREA SUPERVISOR, BISMARCK, N. DAK., AREA OFFICE, U.S. FISH AND WILDLIFE SERVICE, AND RICHARD F. BERRY, SUPERVISOR, ST. PAUL, MINN., FIELD OFFICE, U.S. FISH AND WILDLIFE SERVICE**

Mr. ZSCHOMLER. Thank you, Mr. Chairman.

My name is Stan Zschomler and I am taking the place of Bill Aultfather who could not attend this afternoon.

We were asked to provide this statement from the prospective of the Fish and Wildlife Service regarding flood control planning along the Red River of the North, and, as requested, this statement represents the views of the service and has been coordinated between our Denver and Twin Cities regional offices.

With me here is Rick Berry of the St. Paul field office and between us we will attempt to answer any questions you may have.

Flood damages in the Red River of the North basin are largely due to the basin's extensive flood plain and the flood plain development which has occurred in the recent past. We feel that the two major areas are key to identifying causes of the flood damage problem—one being the fact that the river flows north into receding ice conditions; and, secondly, that the ability of the river basin to retain snowmelt and spring runoff has been significantly reduced through major losses of wetlands, timber clearing, fall tillage, conversion of grassland to cropland, and the channelization of tributary streams.

Conflicts resulting from flood damages are continuous between up and downstream interests, as well as between the two States of North Dakota and Minnesota and between the United States and Canada. Rural and urban interests each blame the other for increased flood stages and rapid runoff due to tillage and drainage activities by both sides. Frequently, federally assisted programs are identified as working at cross purposes to flood damage abatement. The Red River of the North flood plain is a classic example of fragmented planning and lack of comprehensive flood damage reduction programs.

We believe that a comprehensive basinwide flood damage abatement program, designed to address the problems in both urban and rural areas, should be initiated with maximum citizen involvement. Measures to prevent unwarranted losses of fish and wildlife resources, to compensate for unavoidable losses of habitat, and to provide reasonable habitat restoration actions should be incorporated into all plans for flood damage reduction. Federal and State agencies should be mandated to develop a concerted plan to protect agricultural land and urban areas, redesign drainage programs, and restore wetlands and bottomland hardwoods and other riparian fish and wildlife habitat if

flood protection is to be effective on a long term basis. A moratorium should be declared on all privately initiated flood control measures, pending the completion of a comprehensive basinwide study.

The Fish and Wildlife Services believes strongly that the conservation and restoration of wetlands and bottomland hardwoods and other riparian fish and wildlife habitat should be an important aspect of any comprehensive plan. In addition to their more obvious value as productive fish and wildlife habitat, wetlands serve many functions important to the maintenance of a quality environment, which can include the reduction of flood damages. Known functions include the retention of the water that in fact results in flood damages, recharging ground water aquifers, and acting as sediment and nutrient traps, thus improving the water quality of the Red River of the North and its tributaries.

In conclusion, the Fish and Wildlife Service would support a comprehensive planning effort for flood damage reduction in the Red River of the North Basin. We would advocate nonstructural solutions, as we feel strongly that both the long term flood damage reduction benefits and the retention and enhancement of fish and wildlife resources generally associated with these measures better serve the public interest. We would like to become definitively involved in all the planning process from its beginning. We believe that all interests should work toward insuring that resource oriented legislation and directives are adhered to during this planning process. Examples of such legislation include the Water Resource Council's Principles and Standards for Planning Water and Related Land Resources, the National Environmental Policy Act, the Fish and Wildlife Coordination Act, and the President's Executive orders regarding federally assisted development in flood plains and wetlands.

Finally, we must note that nature has a way of reclaiming that which is hers. Flood plains belong to the river and the river will attempt periodic reclaiming. Planning efforts regarding flood damage abatement in the Red River of the North basin should reflect this perception.

Mr. STANGELAND. Thank you, Mr. Zschomler.

Do you have a statement, Mr. Berry?

Mr. BERRY. No. We worked together on this one.

Mr. STANGELAND. I see.

You state that federally assisted programs are identified as working at cross purposes to flood damage abatement.

Can you give us an example of what federally assisted programs are working at those cross purposes? What did you mean by that?

Mr. ZSCHOMLER. Well, looking at the immediate past, it might not be as true at the present time, but in the past some of the programs that were sponsored under the Department of Agriculture provided for drainage of wetlands with technical assistance, while, on the other hand, for example, Fish and Wildlife Service had an acquisition program. That is one example.

Mr. BERRY. Also we are now looking toward things like Federal highway projects, support by the FHA or HUD with respect to development of the flood plains, thus ending up with the reason for some of the flood damages. To a large extent that hopefully is a thing of the past, but it is one of the problems we are working on.

Mr. STANGELAND. You also state here "A moratorium should be declared on all privately initiated flood control measures."

By that do you mean that there should be no diking even with the criteria?

Mr. BERRY. What we are attempting to say there, I believe, is that we feel there is a strong need to look at the basin as a whole, and measures taken should be from that standpoint.

The States and so forth, I am not really that aware of the criteria you are speaking to, but certainly if that criteria is concurred with by the corps, and the Service has a chance to look at it and so forth, I do not think there is a real problem.

What we are trying to do is to emphasize the fact that we feel that the planning efforts in the flood plain have been fragmented in the past, and again that is part of the problem we are living with at present.

Mr. STANGELAND. How do you see a compromise on the question of benefits, flood damage reduction benefits, to Fish and Wildlife land and also flood reduction benefits to prime agricultural land?

Mr. BERRY. Would you repeat your question, sir?

Mr. STANGELAND. How do you assess the benefits?

You retain water in the upper reaches to benefit the prime agricultural lands, yet that retention may cause some deterioration of Fish and Wildlife lands.

Can we assess benefits? That is, is Fish and Wildlife willing to take a look and say we have wildlife habitat here, and we will just depreciate that somewhat and, on the other hand, we economically are going to benefit the prime agricultural lands if we do?

Is there a willingness on the part of Fish and Wildlife to compromise out some of these things?

Mr. BERRY. OK.

Certainly the Fish and Wildlife Service is an advocate of attempting to retain the water where it falls. We would support actions by the Soil Conservation Service with respect to tillage methods and so forth that attempt to do that, contour plowing and these types of things. If you are speaking to the notion of utilizing Fish and Wildlife Service lands for flood control purposes, I get the impression that that is what you are getting to—

Mr. STANGELAND. Well, I am wondering, in your opinion or in your estimation, is there a great deal of damage done to Fish and Wildlife lands with—say you have an area out here that is somewhat marshy. You raise the level of the water in there for a foot or 2 or 3 or whatever for a week or 10 days in the spring or whatever. How much damage have we done to that as far as wildlife habitat?

Mr. BERRY. Well, it depends quite significantly on a number of items, one being the time of the year that inundation takes place. In other words, if you raise that level in the marsh a couple or 2 feet at a time of year that waterfowl are around the fringes of the marsh, not in the water itself but right adjacent to it nesting, that could have a large damage. It also depends on how deep the water is and it also depends on how long the water stays at that depth.

Mr. STANGELAND. Well, I think we are talking—I am talking at least thinking primarily of spring flooding, as a retention in the spring when there is no waterfowl there.

Mr. BERRY. We tried to stress in our statement that wetlands in addition to the myriad of other benefits do serve as water retention structures in their natural state, and that value or that function is served no matter who owns the land, whether it be owned by the Fish and Wildlife Service or the State or privately owned. It still serves that function.

If you wanted to get to the point where those small potholes were storing more water, I would suspect the chances are good. You would have to put some sort of structure on it because the pot holes are going to store water to their natural capacity and then they are simply going to overflow.

Mr. STANGELAND. And they are doing that now?

Mr. BERRY. Certainly.

Mr. STANGELAND. So, it would require some low head structure to raise that level for that period of time.

What percent or do you have a percent of the Red River basin that is owned by Fish and Wildlife?

Mr. BERRY. I certainly do not.

Mr. ZSCHOMLER. I do not believe we have that broken down within a basin boundary.

Mr. STANGELAND. Would that be difficult to determine on a rough guess and the same way with the State DNR lands?

There is a great deal of land held by the Federal and State Governments in northern Minnesota, but I do not know how much of it is in the Red River Basin. You do not have much here in Polk County surely or Marshall County.

Mr. BERRY. There are certain lands that have been purchased in the Red River Valley by the Fish and Wildlife Service either through fee or through easement. How much or what the percentage of the total basin is, I simply would not know, although we can certainly find that out.

Mr. ZSCHOMLER. The percentage would be extremely low, but I could not venture a guess.

Mr. STANGELAND. It would be interesting if you could make a rough estimate and submit it for the record. It would be interesting to see.

I know that Fish and Wildlife is continually attempting to purchase habitat and wetlands and running into no small problems in Minnesota now.

Mr. ZSCHOMLER. And North Dakota.

Mr. STANGELAND. I am wondering if—and this is something I think Fish and Wildlife ought to analyze and assess—the need to be a good neighbor. And, of course, I am sure that works both ways, but I hear complaints about Fish and Wildlife not taking care of their lands, not mowing the weeds, and this type of thing. But it is my feeling that if Fish and Wildlife shows a willingness and can consider some degradation, if you want to put it that way, to Fish and Wildlife lands in the spring when they are not really utilized for nesting areas and habitat because the wildlife is not there—but being that kind of a good neighbor to at least look into it and consider the possibility of attempting to reduce flood damage, you might find the neighboring farmers more willing to sell, and we might find the neighboring farmers more willing to do it themselves.

I think the watershed districts are going to have to do a selling job throughout the whole watershed of everybody cooperating, and we all know that the cooperation in the upper reaches is not as good because, frankly, they want to get rid of the water and they can farm, and some of those areas are wet to begin with.

I guess I would encourage you, as I did the gentleman from the DNR, and I have talked with Mr. Herbst just to have him consider this as just one of the things. It is one of the tools that we might look at to probably prevent the need for dikes down here in the lower basin as a means of holding back water.

I think the point that you make of nonstructural solutions you are talking there primarily of the type of tillage of the land.

Could you just maybe outline some of those nonstructural solutions you suggest? What would they involve?

Mr. BERRY. You would be looking at tillage of the land. You would be looking at the potential for moving people and structures and so forth out of the areas that are highly susceptible to flood damages.

Mr. STANGELAND. That would work in an urban area, but it does not work very well for the guy out here farming the land. He cannot move that farm and farm it up on higher ground.

Do you have any questions?

Mr. KROUSE. What is a pothole? Is a pothole a generic term?

Mr. BERRY. More or less.

A pothole is, in effect, an isolated wetland, a wetland that has its own usually very small drainage area right into it. There are myriads of them in certain portions of North Dakota. At one time, virtually the entire western portion of Minnesota was covered with these items.

They are extremely valuable from the standpoint of waterfowl. They have been termed the duck factory of the Nation, for instance.

Mr. KROUSE. A lot of the drainage is aimed at draining these potholes. Is that it?

Mr. BERRY. Yes.

Mr. ZSCHOMLER. That is correct.

Mr. KROUSE. Is there any significance in retaining water in these potholes as far as recharging underground waters, aquifers, and so forth?

Mr. ZSCHOMLER. That was in our statement. We believe there is a direct correlation.

Mr. BERRY. Some of these potholes are, however, in effect, sealed to a certain extent at least by very fine particles. So, the water does not really go through them too fast. Others are quite significant from the standpoint of recharging the ground water system.

Mr. KROUSE. Have you been able to make any determination of the relationship of drainage up to this point and what has been happening in subsurface water levels?

Mr. ZSCHOMLER. We have very little capability in hydrologic terms within our Service. We are mainly biologists rather than geologists or water origin people.

We are aware of preliminary studies across the country that indicate this, but nothing specific that I would give you at this point to the Red River of the North basin.

Mr. KROUSE. Thank you.

Mr. STANGELAND. I have no other questions. Thank you very much.

I would like, if you could, to give us a rough estimate of the amount of land and the percent of the basin. I think maybe the amount of land

that you hold. I think that would be something for the DNR to provide us as well, if it is at all possible.

Mr. ZSCHOMLER. You are speaking of fee title ownership?

Mr. STANGELAND. Yes. The land that Fish and Wildlife owns.

Mr. BERRY. OK. And this would be in the Red River of the North Basin, not just the flood plain.

Mr. STANGELAND. Yes. In the basin; yes.

Mr. ZSCHOMLER. In the basin, excluding tributaries such as Sheyenne?

Mr. STANGELAND. No. Whatever is drained, whatever moves into the Red.

Mr. ZSCHOMLER. With all its tributaries because the Sheyenne would bring you a long way back into North Dakota.

Mr. STANGELAND. Thank you very much.

Mr. BERRY. Thank you, sir.

Mr. STANGELAND. Yes.

Mr. SEYMOUR. Mr. Stangeland, I will acknowledge your request for information on how much land DNR owns in the basin, but I would also point out for the record that this is a matter of considerable controversy, as you are probably aware, on the question of land classification and whether or not substantial amounts of the State holdings, especially on what was called consolidated conservation land, ought to be turned back to the counties and private interests and so forth.

So, there is that element that has to be considered, too.

Mr. STANGELAND. You are talking that there are two classes of land.

Mr. SEYMOUR. Well, no. What I am saying is that there is a continuing controversy, of which I personally am not too well versed, but it involves whether or not substantial holdings of State-owned property in northwestern Minnesota should be turned back to local interests. That is not resolved at this point in time.

So, just a gross figure as to what the ownership is might not be that significant because there might be some other decisions that would affect that as well.

Mr. STANGELAND. Well, if you could give us what is current and see not and then in-house as you work toward some of these goals, if you would just consider this. I appreciate the fact that you want to be a part of an overall comprehensive plan in the planning process. Thank you.

Now it will be Mr. James Gander, the chairman of the East Grand Forks, Minn., city council. He is accompanied by Gary Sanders.

**TESTIMONY OF JAMES GANDER, CHAIRMAN, EAST GRAND FORKS, MINN., CITY COUNCIL, ACCOMPANIED BY GARY SANDERS, CONSULTING ENGINEER**

Mr. GANDER. Mr. Stangeland, members of the committee, we submitted a brief outline of the things that we wanted to talk about, but we will relate mainly to the problems faced by East Grand Forks. We do not pretend to know about all the problems in the whole drainage area.

But to start with I wanted to refer to some corps material here and the first one was the water resource study, stage 2 flood control, dated April 1978. That pretty much says it all.

The city of East Grand Forks is located on the bank of the Red River of the North at mile 298. This is a 30,100 square-mile-drainage

area concluding a 5,700 square-mile-draining area into the Red Lake River. At Grand Forks the Red River of the North is about 200 feet wide and 8 to 10 feet deep during normal times. This is situated on the old flat bed of the former Lake Agacie and with a channel bottom slope at Grand Forks of about one-half foot per mile. And that is our whole problem. This half-mile-foot slope in that river bottom is the problem.

I heard Colonel Gay mention Prairie du Chien. I am very familiar with that country. I was born and raised down there.

Down there you back up a mile from the river and you are up the side of a cliff, so to speak. I mean it is very hilly country. There is more slope. They have better drainage. They have a fast runoff situation where we have the opposite.

I would like to refer, Mr. Stangeland, to the map that I gave you as a flood profile. That profile, shows that the flood stage is 28 feet and that for approximately a month we exceeded that 28-foot level. You can see it on a day-to-day basis.

The problem here is that shallow slope of the river and the surrounding country.

In East Grand Forks one-third of the city lies within the 100-year flood.

Now, there was talk about vacating property along the river. It is easy to vacate one-half a mile of farmland if there is not anything on it. I mean if you can move in and out and farm it. But within the city it presents a completely different problem. What do we do with the houses that are there? It is an insolvable situation as far as the city is concerned.

When you move away from the river you have a little more slope on the land. You have approximately 1 foot per mile in this area and that is not enough to drain. In the average home your driveway, if it is 35-feet long will probably have an 8- to a 10-inch slope for drainage and that is concrete. We cannot drain the surrounding area. If we build dikes up to the 100-year level, our riverbanks would not handle them. Not only that, we have the problem of getting the water over the dikes, the rainwater, the surface runoff.

This situation—again I will refer to some corps material. On page 30 of the 1977 flood control appendix, the urban water resource study, I would refer to a list of the flood readings since the 1900's or since the 1800's I should say and for 50 years we did not have any floods. There was not even anything there that deserved honorable mention. We had 50 years without floods. Then in about the 1950's and 1960's the Government programs were started about drainage. And the old famine thing came along, about how we were going to run out of food, and should reclaim land, that they are not making any more, and all of this sort of thing. Well, all of this land was reclaimed or was claimed as farmland, agricultural land. It was at that time in 1950 that our history of high water really hit. Since 1950—I was not here in 1950, but I have been involved in every flood in East Grand Forks from 1965 to date—it is quite a burden upon the city and it is a burden upon the community.

We have been lucky. We have been very lucky. But, if things continue as they are, we cannot keep fighting it.

Now, I want to mention too before I forget it, Mr. Stangeland. You talked about everything in the Red River Valley being drained.

The agricultural land is all here. Well, that is not completely true because over to the northeast, if you look at that map of the drainage area of the Red Lake River, it encompasses all of the upper and lower Red Lake. It includes Marshall County and Pentington County. Hundreds and hundreds of acres have been reclaimed or have been turned into farmland in Pentington County and around Thief River, Marshall County. There is an underground water source northeast of Warren in Marshall County that the city of Warren gets its water from.

Also the rural water system, for Pope and other counties, real water comes from that area and the drainage system, the potholes, the feeding sources for that water right now, is being removed. This situation is going to get worse unless something is done. Something is going to have to be replaced.

It is fine to claim this land as farmland, but then an equal amount of water storage is going to be needed or our water table will disappear like it has in the Southwest where they have had vast irrigation projects.

You can read the newspaper and find that out. It is all there. And right now this is happening up in those counties. This was at one time considered marginal land not suitable for farming, but up in the Thief River and on north, all up in there, new acres every year being put into production.

Everyone is a little bit reluctant to say that this drainage has caused the river flooding, but that is the only answer we can see since 1950. That is the only thing really that changed. Our annual rainfall has not changed that much from the years from 1900 to 1950 and since 1950.

So, we have the same situation at Oslo. When Oslo's dikes were built they had not counted any other variables and what happened is Oslo's dikes now though they thought they had a protection against 100-year flood, are considerably short. The same thing can happen here. And we have an interest with one-third of the city lying within this 100-year flood fringe. If we do not do something we are all going to be in trouble.

I think we are firmly convinced that it is a whole area. It is going to have to encompass all of that area in the whole drainage system, not some little structures, one little one here and there.

Then I would also refer to this urban water resource study of 1977 on page 2. A large part of the urbanized area is subject to either direct surface water or indirect sewer backup. And this is where we come in. Approximately 1,000 structures would be subject to direct flooding on a 100-year flood. Similarly about 600 would be effected by indirect flooding.

This is where we come in, our sewer system. We have so much hidden damage from these floods that we do not know from 1 year to the next. We cannot evaluate these. Right now we are finding problems that are directly related to the flood of the spring in 1978. They are finally showing up now and they will keep showing up.

We have three bridges here between Grand Forks and East Grand Forks across the Red River to North Dakota. Only one of those bridges is high enough that it would be passable in this 100-year flood. The approaches would not stand that. You cannot just go and raise a bridge 5, 6, 8, or 10 feet. It is of no value if you cannot get to it.

We cannot blame our ancestors for building the city too low. The situation has changed in the last 50 years or since that 50-year period.

Our city clerk was supposed to have some figures, but he could not be here this afternoon and Gary will cover part of that.

But we have so many hidden costs involved here, as far as the city is concerned. All of our city crews are working to start flood preparation about a week to 2 weeks ahead of that 30-day period that is on that flood profile map. They work continuously with the floods throughout the whole phase of it.

We are reimbursed partly for some of our expenses, but for all of the city personnel for that 2 months who are not able to do or perform their regular jobs, it takes them a year to catch up.

We have vast amounts of land adjacent to the river that are not suitable for building. We spend thousands of dollars all year long cleaning up the debris. If we could have some flood control projects in the other drainage system, if we could affect that 100-year flood by 2 or 3 feet, the city would come out in good shape. And I guess that is what we want. What we are looking for is joint cooperation here. You cannot eliminate this flooding, but it can be reduced. I am sure it can.

I do not blame the farmer for building his dike. I think the farmer has a right to protect his investment. But by the same token I think that we have to get at the source of the problem.

With that I will turn it over to Gary and he will present part of Dave's material as well as his own.

Mr. SANDERS. Thank you, Jim.

The Federal Government during the floods since 1965 through 1978 has reimbursed the city of East Grand Forks approximately \$1,300,000. This is in damages to parkland, to sewer systems, to things like that. That is over a period of approximately 13 years.

The city of East Grand Forks in 1978 had a cost direct to the city of approximately \$62,000. That is not a great deal, but it is 10 percent of the general fund tax levy for the city of East Grand Forks.

That is a summation of what Dave Mack had.

The costs to the city were for dirt, for engineering, for their pension costs, et cetera. They all contributed into a fund for employees and things like that, gas et cetera.

I would like to go on to what I have to say about existing dikes within the city of East Grand Forks.

We have approximately 7,800 feet of dike. It is all temporary dike. We have an authorized project for diking within the city of East Grand Forks from 1951, I believe, which according to the Corps of Engineers is a feasible project if it is constructed under the interest rate in effect at that time, which was  $3\frac{1}{4}$  percent.

Now, they are using  $6\frac{1}{4}$  now. If you go back, if you could hold that interest rate, you could construct the project.

The problem with the authorized project is that it protects for about the 62-year flood. To protect for the 100-year flood you have to add to the levels and so on.

The cost to the city of East Grand Forks for the first mentioned flood control system is approximately \$500,000 of local share. If you go to the 100-year flood the estimated cost is \$2.4 million to protect the 1,000 homes within that area that would be flooded during the 100-year flood.

The only way the city of East Grand Forks could afford to do that is if they can use Federal funds matching, if they are available.

Now, according to the Corps of Engineers you can use Federal funds to match the Federal moneys that would come to fund it for the corps. The problem is, can the city get that kind of money through the Federal Government, through highway funds for whatever, to protect it?

The other alternative, because of flood insurance requirements within those areas, is to end up eventually abandoning those areas and turning them back natural or so on. The problem that represents to the city though is that if you go through this program where you buy homes and so on in flood prone areas, and move out the owners of the houses, the city still has millions of dollars invested in sewer systems, storm sewer systems, paving, lighting, wiring, et cetera. They do not have a reimbursement on that. They are going to have to go out and reconstruct all those facilities for new homes. It just turns it around again. The city ends up having to construct so many more things, even though the people are out of it. You still have to construct facilities for those people to live in.

Our biggest problem with our temporary dikes is that the banks are unstable, and we lack interior drainage systems that would come into play, if we were having a major flood and had a major storm of rain or snow, to pump that water over the dikes into the river. We could be flooded from behind with the system we have now. We do need the permanent diking with the ability to pump the internal drainage over the system, which is what the Corps' criteria would be for permanent diking. That is the major thing we lack as far as our dike itself. The interior drainage system is where we have the biggest problem as far as meeting corps requirements on permanent flood protection.

The city does have the flood plain zoning and the ordinances are in effect. They are limiting new construction within flood plain areas. The areas that are being developed are either out of the 100-year flood now or they are building the homes to the 100-year flood elevation or above by filling the area that they are building on.

The areas that exist have existed since, I imagine, it was started in the early 1900's. The homes were built in the areas then that are in the 100-year flood and those people have a great deal to lose by whatever happens unless we have permanent diking or we have lowered the stage of the 100-year flood.

It is like Jim said. If you could drop the 100-year flood stage by 3 to 4 feet East Grand Forks would have a much better chance of existing as they are in a more satisfactory condition for the people involved.

Mr. STANGELAND. What part of the authorization going back to 1951 was that permanent flood wall or is that not part of that?

Mr. SANDERS. That is part of it.

Do you mean the area now?

Mr. STANGELAND. Yes. Well, how much of the authorization back to 1951 accounted for that flood wall? Was that flood wall totally included in that authorization or what did the authorization of 1951 include? I guess that is the question.

Mr. SANDERS. The authorization of 1951 included permanent diking from the Souris Bridge to the Kennedy Bridge.

Mr. GANDER. That is about it.

Mr. SANDERS. So, approximately 400 or 500 feet of diking in that area.

Mr. STANGELAND. How does this last flood, the 1978 flood, compare to the 100-year flood.

Mr. SANDERS. The 100-year flood would be 5 feet higher.

Mr. STANGELAND. Five feet higher.

So, if you lower the 100-year flood 3 feet you still have a higher flood that you had in 1978; do you not?

Mr. SANDERS. Yes.

Mr. STANGELAND. You still have a substantial amount.

Mr. SANDERS. If you can go 1 to 3 feet, we will gladly take it. We know that.

Mr. STANGELAND. Well, I do not know what will be done.

Mr. SANDERS. One other comment. I missed one thing.

The last 13 years include 5 floods that are in the top 10 that have been reported in this area. When they assessed damages, potential damages by flooding, the Corps of Engineers would use an average annual damage to justify doing different things. If they go back to 1893 or whatever the last major one was and take it over that 70 year period our average damage assessment comes out much lower than if you go back to 1965 and extend that period of time.

If we are going to continue having floods like we have had over the last 13 years, over the next 100 years, the amount of money that the Federal Government is going to spend in temporary protection and so on and for reimbursement of damages is going to be substantially higher than what is projected by the corps.

I know that when they make projections, they have criteria that they make them by. But if this continues on the way it has, the damage assessment and the amount of money spent will be much greater than what shows up in the reports that they write.

Mr. STANGELAND. Did you say, Mr. Gander, that we could have that profile as part of the record?

Mr. GANDER. Yes. You can keep that.

Mr. STANGELAND. I do not know if you were here when we started this morning. We will keep the record open for 2 weeks. So, if you have any facts or figures that you want to present, just send them into us, and we will make them a part of the record as well.

I guess I do not have any more questions.

I want to correct the record for one thing though, Mr. Gander. I did not mean to mislead you to think that everything was drained in the Red River drainage basin. I was referring to the Red River Valley as the fertile valley. That is pretty much all farm. There is very little untillable in there that was tillable to begin with. So, I would just like to correct you on that.

I know that we have a lot of area up there that is not drained, and I do not think we ever want to drain a lot of it.

Thank you very much.

Mr. GANDER. Thank you.

Mr. STANGELAND. I will now call on Donald Ogaard.

I understand you have a Tom Kalitowski with you. If you would like, he can join you up there.

**TESTIMONY OF DONALD OGAARD, CHAIRMAN, LOWER RED RIVER  
WATERSHED MANAGEMENT BOARD, ADA, MINN., ACCOMPANIED  
BY THOMAS KALITOWSKI, STATE WATER PLANNING BOARD**

Mr. OGAARD. Congressman Stangeland, with me is Mr. Tom Kalitowski of the State Water Planning Board. He has a plane in 15 minutes. So, that does not leave him too much time to fill in. So, if I could, I will let Mr. Kalitowski proceed for a few minutes to say what the State is doing, and then I will proceed.

Mr. KALITOWSKI. Congressman Stangeland, for the record I am Tom Kalitowski, chairman of the Minnesota Water Planning Board.

Briefly, the Minnesota Water Planning Board was created by the Minnesota Legislature in 1977. The board is made up of the commissioners of Natural Resources, Agriculture, and Health, the directors of the State Pollution Control Agency and Energy Agency, and the chairman of the State Soil and Water Conservation Board.

The Water Planning Board was charged, first of all, with developing a framework water plan for the State of Minnesota. Second, the Water Planning Board was charged with generally coordinating all of the water-related activities of the various State agencies that have authorities and responsibilities.

In my capacity as chairman of the Water Planning Board, I was asked by Governor Perpich this past spring to coordinate an effort between the States of North Dakota and Minnesota to attempt to arrive at a stage program to reduce flood damages specifically in the Red River Valley.

He and Governor Link flew over the valley last spring. The Governor was very concerned at the extent of the damage and also at the frequency with which floods had obviously occurred in the valley. And he felt that perhaps there were some things that the two States could do jointly in a coordinated fashion that could reduce these damages.

We have had several meetings with local officials, local people from the watershed districts and Soil and Water Conservation Board, mayors, county commissioners, in an attempt, first of all, to come up with an institutional mechanism based on the local level that can represent the various local peoples on the Minnesota side of the Red River basin. And at these meetings it was determined that Mr. Ogaard's group, the Lower Red River Water Management Board, with additional membership from some of the counties in the southern part of the basin who are not presently in watershed districts, might appropriately represent the local interests in the valley and could be in a position to recommend specific actions the State might take to reduce flooding in the valley.

The Governor will be recommending a program to the upcoming legislative session, requesting an appropriation to take actions to reduce flood damages.

I am speaking in general terms because the specifics of the State actions have not really been determined as of yet. Some of the things that have been discussed at the meetings include perhaps assistance for ring dikes and farmsteads, assistance in setting up small holding areas in the uplands to reduce the flow into the tributaries in the main

stem, perhaps relocation assistance for particularly urban, but also in some cases, rural people on the flood plain. These are just some of the things that have been discussed and, of course, the specifics will be worked out later.

The idea then is to have this local group work in concert with hopefully a similar local group on the North Dakota side as was discussed by Mr. Fahy earlier.

I think one other point I would want to make is that the idea of the State is not to get in the same kinds of things that the Federal agencies, the corps, the SCS have been involved in, but rather to look for areas where currently the Federal agencies are not taking actions, and to take some very positive steps to reduce flood damages.

Mr. STANGELAND. Very good. Thank you.

Now, are you the one that would be working in coordination with Mr. Fahy, or would Mr. Alexander be doing that of the DNR?

Mr. KALITOWSKI. Of course, Mr. Alexander is a member of the Water Planning Board, but specifically, the Governor has asked that I work with North Dakota in developing this joint two-State program.

Mr. STANGELAND. Do you see a need and a possibility of coordinating efforts within the two States so that, like we said this morning, one was not draining while the other was retaining and vice versa?

Mr. KALITOWSKI. Absolutely.

As was pointed out, the water obviously does not observe county or State lines, and the problem is really basinwide. This is true on the Minnesota side to the extent that the problem is not just in the areas that have suffered flood damages, but the problem is also in the upland parts of the basin where the water comes from. This also is true in terms of the fact that the problem and the solution must be approached from both sides of the Red River, North Dakota and Minnesota.

Mr. STANGELAND. Thank you for being along today.

Mr. KALITOWSKI. Thank you.

Mr. OGAARD. I appreciate being invited to participate in this hearing. I was also invited to participate in the dike criteria hearings back in April. At that time we sat through an entire day of testimony, about 80 percent of which related to upland water management and upland water retention. And at this hearing today, I think we have had that reversed, and about 80 percent pertained to diking today, and that is all I am going to say on diking.

I also beg to divert from my prepared statement. You have the copies. I will only state that in the prepared statement I allude to the fact that we have historic floods. You have heard that a number of times. You have heard that the Corps of Engineers is active in various fields of endeavor relative to our flooding problems, and that it takes at least one productive lifetime to get a worthy project through. There is no sense in repeating that again, but I had to get it in one time.

The other agency involved primarily in agricultural floodflow reduction projects is the Soil Conservation Service. There are a number of projects on both sides of the river up here. But primarily it is another long, drawn-out process that has its specific criteria.

This brings us to one of the problems with the Federal agency approach, and that is that the criteria of each agency is different, the goals are different, actually the methods are different. So, given the same problem, you will usually end up with two different solutions, or possibly a solution that is hard to understand from either standpoint.

Consequently as a result, I imagine, of frustration over a period of time, the area on that map from the Canadian line on down to including the Wild Rice and Marsh Rivers has been covered with watershed districts which are a product of the Legislature of the State of Minnesota, vintage 1955. It makes it possible for the people within that area to comply with the proper avenues provided in State law and form a watershed district to deal with the problems they have had.

The Buffalo River watershed over the Buffalo area was added this past year and is just getting into a state of operation. The other area below that line, which is listed as Otter Tail River and Bois de Sioux, is not covered by watershed districts at this time.

So, the area of the Lower Red River Water Management Board, with the exception of an area in Roseau and Marshall Counties where the Tamarac River is up in there and a small number of landowners in that drainage area, is covered by watershed district, and under the Joint Powers Agreement pursuant to the legislation in 1976 that authorized the Lower Red River Water Management Board, is in a relatively cohesive water management unit.

The capability of the watershed district rests within the local area over a very broad plain, and I have a group of documents that pretty much—if they add meaning to your committee records, are available to you. They consist of the overall plan of one of the watershed districts which identifies the problems within it; the rules and regulations of one of the watershed districts which spells out the type of land use regulation that restricts the operation of individuals and/or governmental units within its boundaries and attempts again to bring under a cohesive unit the activities related to water management.

I also have the evaluation manual for the Lower Red River Water Management Board, which is a product of all of the watershed and county engineers in the area or nearly all of them, and the managers that formed the Lower Red River Water Management Board. It is the criteria for project selection.

I also have an example of two of the projects that have been brought before the Lower Red River Water Management Board for funding. And if they have value, I shall present them for your edification.

Mr. STANGELAND. We would like to have them. They will be made part of the committee files. Your prepared statement will be inserted at this point.

[The statement referred to follows:]

STATEMENT OF DONALD OGAARD, PRESIDENT—WILD RICE WATERSHED DISTRICT  
AND LOWER RED RIVER WATER MANAGEMENT BOARD

The Red River Basin has one of the two highest average annual flood damage potentials in Minnesota. High-water marks, stage records, and flow measurements at Grand Forks, Oslo, Drayton, and Emerson, Manitoba since 1873 reveal major flooding occurred generally in this reach of the river in 1882, 1883, 1893, 1897, 1916, 1943, 1947, 1948, 1950, 1952, 1965, 1966, 1969, 1970, 1972, 1974, and 1975. Major flooding occurred again in 1978, causing an estimated \$14 million in damages.

At the rate of current public flood control programs and practices, much damage (particularly agricultural) will not be significantly reduced. Most of the urban flood control projects have been examined, many urban and agricultural projects have been identified, in some cases planning has begun, but projects (especially agricultural) are not being quickly constructed.

Several public conditions have created this situation. First, the Federal Government, which traditionally provides funds for flood control programs, is moving very slowly. In Minnesota, two federal agencies are primarily involved: the

United States Army Corps of Engineers and the Soil Conservation Service of the United States Department of Agriculture.

The Army Corps of Engineers has completed eight flood control projects in the Red River Basin, the last of which was completed in 1965. These are primarily Ring dikes and levees on cities in the flood plain. Three flood control projects are underway and one authorized is not underway because no funds have been appropriated with which to start work. Two flood control studies; one multi-purpose study; and one comprehensive flood control study; are underway in the Red River Basin.

The Army Corps of Engineers process has been criticized as being unduly slow. The general planning process of the Corps involves a pre-authorization phase and a post-authorization phase. In the pre-authorization phase, a plan of study is developed; alternatives are identified and analyzed; detailed plans are developed; a plan is selected or a recommendation made; and a review process is undertaken. In the post-authorization stage, a General Design Memorandum must be completed to update the initial feasibility report and an Advanced Engineering and Design study developed. Only at this point is authorization for construction sought from Congress. Land acquisition and commencement of construction must await Congressional authorization. In the past, general investigation studies took 10 years or longer to complete. For example, a public meeting was held on the Red Lake River flood control study in March 1964; a mid-study meeting was held in March 1971; and the study was scheduled for completion in 1977. A local flood protection project on the South Branch of the Wild Rice River was authorized by the 1968 Flood Control Act, but initiation of construction remains contingent upon the allocation of funds. This project should be constructed in 1979 barring further roadblocks. The requirements imposed on project implementation by other Federal Agencies, principally EPA and USFWS cause further delays and escalate costs. The requirement, to provide mitigation lands to offset projects supposedly negative effect on our environment, is one example. Even when attempting to work together, the various Federal agencies have different guidelines, criteria and goals, therefore, they have difficulty in understanding each other. The easiest solution is stalemate—do nothing.

The Soil Conservation Service addresses flooding problems primarily through its small watershed program (P.L. 566). This program deals with multiple purposes, including water supply, recreation, and drainage. The Soil Conservation Service has received 78 applications for P.L. 566 projects in Minnesota, with 24 of these watersheds located in the Red River Basin. Three P.L. 566 projects have been completed in the Red River Basin; one project has been approved; but not completed; plans are currently under development on two projects; and five project applications are in the priority pool for planning. In addition, there are three P.L. 566 projects in the Red River Basin to which no priority is assigned for planning and one project on which planning has been terminated.

The planning process of the Soil Conservation Service is constrained by manpower and funding, with typical planning periods stretching over 10 years. In the planning process, following review and approval of a project application by the Minnesota Soil and Water Conservation Board, the application is sent to the SCS. The SCS holds a public hearing and conducts a field examination, targeted on the identification of problems and needs. After preparation of a field examination report, a study plan is prepared and planning authority requested from the Administrator of the SCS. If planning is authorized, a preliminary investigation report is developed, focusing on inventorying resources and formulating alternative plans. The preliminary investigation report is circulated for comment. In the final planning process, plans are studied in detail and the public invited to make its preferences known. (It would make more sense to get the public involved at the beginning.)

SCS provides the initial draft plan for local field review. Following local review, an interagency review is conducted and the selected plan forwarded through the Office of Management and Budget to Congressional Committees for approval and authorization. In the subsequent operations stage, detailed designs, construction drawings, and specifications are prepared and implemented. The Tamarac River project in Marshall, Kittson, and Roseau Counties was authorized for planning in April 1963; approved for operations in September 1965; under construction beginning in September 1971; and completed in July 1977. Reliance on Federal participation through either agency will give us more plans, plenty of study, but very little activity.

A third condition which has slowed progress in flood control relates to the capabilities of local entities. Local governments and special districts, which

sustain the important local sponsor role for most projects, are generally at a disadvantage in dealing with the complicated federal process. Consideration should be given to Federal funding of projects initiated by local units of government: Counties, Soil and Water Conservation Districts and Watershed Districts. Currently, this is done on a limited basis through the ASCS cost-sharing program (but still tied to SCS engineering).

In 1976, the Watershed Districts in the Red River Basin formed the Lower Red River Water Management Board. This organization was formed by Minnesota Legislative action, allowing the collection of an ad valorem tax over all of the area, to be used for construction of flood flow reduction projects. We are now building the first projects so funded.

The Watershed Districts that formed the Lower Red River Water Management Board are governmental entities, with geographic boundaries that coincide with the topographic perimeter of each individual subwatershed of the Red River. The Districts have the capability under Minnesota Law (Chapter 112) to adopt rules, regulating construction activities, initiate and construct water management projects, govern existing legal and private drains and conduct many other direct citizen oriented activities. In several instances, the main thrust has been to coordinate all water related governmental activities into one manageable unit.

I am proud of the fact that my generation of fellow citizens here in the Red River Valley recognizes *our* water related problem as something *we* should address *here and now* and not wait for the next generation to seek a mystic solution from *some* source, *somewhere*.

The accumulative task we face possibly has no *immediate* solution. We, the participants, feel, however, that with the information about our area that is presently available, we can intelligently work toward meaningful solutions to the major flooding problem we face. If it remains the policy of the Federal government to also seek solutions for the existing conditions, it would be well worth the effort to consider another approach to augment the existing agency efforts.

We have no major conflict with the current Federal agencies approach toward solutions or the end result. It is just *very* difficult to stand by, for a major portion of one's life, to see something happen.

The State of Minnesota (executive and legislative branches) is currently involved in discussion which, if they materialize, will result in substantial funding of localized projects.

After years of frustration, local cooperation is producing results, but slowly. Yet, not as slow as the Federal process. Would it not be better for our Federal government to get involved in accelerated flood prevention funding rather than pouring millions into our Red River Basin in the form of Disaster assistance, to clean up after the floods occur? Some of our Counties have had disaster designation in 14 out of the last 20 years. Disaster funding in 1978 totalled \$14 million dollars.

I request that consideration be given to the following:

1. Additional funding be provided through ASCS for construction of flood control structures on a cooperative basis with local units of government (not tied to SCS) and cooperating landowners.

2. Establish a special law under which the Corps of Engineers could act cooperatively with local units of government to fund and construct watershed projects that are not now considered because of established criteria. (Similar to repair proceedings under Public Law 99).

3. Somehow, accelerate and streamline procedures to allow the Federal agencies with capability to work toward constructive flood prevention projects, and provide funding rather than F.D.A. after the fact.

4. Consider funding projects cooperatively with the State of Minnesota directly to governmental units capable of initiating and constructing complete projects.

5. Enact legislation that would define the responsibility of individual landowners during the natural process of the transgression of water from high land to lower lands, taking into consideration the destruction caused, both material and social, and requiring compensation in the form of providing areas for water impoundment and allowing direct taxation to offset partially the cost of construction. (This is possibly a State jurisdiction, but it needs to be addressed.)

Mr. OGAARD. The Lower Red River Water Management Board in its first full year of capability has received approximately \$319,000 directed to the Board from a one mill ad valorem tax over that area. So, that did not include the Buffalo Watershed, Wild Rice, and North. An

equal amount, approximately \$319,000 stayed within those watershed districts. That fund is designated for construction. Any planning work, any engineering activity, except for related project investigative activities, must come out of the administrative fund of the district. It is 100 percent local taxation funding within the boundaries.

It is interesting to note the boundaries. There have been some questions raised during the day as to the magnitude of the districts. They are within the dotted lines. What is listed as basin boundaries on the Minnesota side is watershed boundaries. The basin boundary is a watershed boundary.

So, you can get the perspective of each management unit.

The individual watershed that I am chairman of is the Wild Rice and Marsh River, called the Wild Rice Watershed District. And directly to the north is Sand Hill, and then up from there the Red Lake and so forth.

The capability of a watershed district to function on a local level is, of course, restricted by its own range of activities in which you attempt to isolate individual problems in the form of—it could be all the way from erosion to flooding—and usually one is the result of the other, not always—and attempt to solve that problem by mechanical means.

The construction of some type of project to correct the individual aggravation can take the form of individuals petitioning for a project in which they will pay the major portion or it could take the form of the managers petitioning for, by resolution, a project and carrying it through from a managers standpoint. It can be the installation of a Federal project. We have two such projects right now, one SCS, one the Corps of Engineers.

A very wide and broad range of activities take place within those watershed districts. But the overriding factor is the capability to engineer, acquire land for proper water holding sites, and then to fund those sites. In three instances this past year we have used up to seven sources of income to pay for a given water retention site. This is one area that I think the Federal Government would do well to look at: the potential for giving less restricted funding back to a local water management unit, such as the watershed districts and also the Soil and Water Conservation districts, to attempt to get something done on a more direct, localized basis, with the coordinating group, the Lower Red River Water Management Board, attempting to work toward resolution of the flooding problem by stopping the water, or regulating the water I should say, at its source or near its source.

It has been the determination of the board as of this date that we must go back to work near the source of excess water flows to attempt to conquer them. Our expertise and capability does not include at this time the installation of projects of the magnitude which fall within the criteria of the Corps of Engineers. In some instances it is exactly the same as a Soil Conservation 566 project in size, but the funding is entirely different.

We have been able this past year to start proceedings to install two projects that were formerly rejected, SCS projects, on the same location of the same size, and fund them locally. So, they will be going in.

For every one project that ever carries forward that has been investigated by SCS less than 10 percent, I would say, ever see the form of a finished product and we are in the process of investigating those rejected sites for water containment projects.

One of the major problems we have is that age old controversy of high land versus low land. Also the laws that we work under, both State and Federal, which allow for the water to pass from high lands to low lands unrestricted. And when you put an obstruction in the way you are liable for it. That is essentially in very layman's terms what the law says. And we could use some help in that area, specifically defining the liability for the transgression of water as it passes from one area to the other. What is high land for Grand Forks would essentially be still low land to those of us in the southern basin. So, it would essentially include us all because anybody just this side of the border is also high land to Canada. If we are ever going to attack this problem in a meaningful manner we are going to have to have some assistance from within the realm of the legislative activities of the State and Federal Government—as I state in my paper—to enact legislation that would define the responsibility of individual land owners during the natural process of transgression of water from high lands to low lands, taking into consideration the destruction caused, both material and social, requiring compensation in the form of providing areas for water impoundment and allowing direct taxation to offset partially the cost of construction.

I realize that is possibly a State law situation, but it is a thing we run into constantly.

So, at the present time then we have a number of projects under way. We have a large amount of projects that utilize State DNR lands that are in various stages of development. The process is moving there. The relationships are being established to develop this. As of 2 weeks ago our own watershed district met with the U.S. Fish and Wildlife representatives out at Detroit Lakes and our opening avenues there are to get projects in on lands that have previously been undeveloped and are integral parts of the water drainage system within that area. So, we are attempting to do this type of thing.

It comes back to the overriding factor: How do you come up with the funds? \$319,000 does a lot if it is used as partial funding. That fund gets a project going after all other forms of funding have been exhausted, and \$319,000 does a considerable amount of activity within the watershed. It is \$638,000 more than was ever raised before in this Red River Valley by the people themselves to do their own thing and consequently I am very proud of the fact that the people of this area saw fit to work through the legislature to extract from themselves tax moneys to work towards solving their own problems.

There is a distinct possibility that we cannot find a direct solution to the flooding of the Red River Valley. That has been alluded to before. But we have found that in individual areas where the projects have been installed, there is no longer a localized flooding problem. Consequently it is our thinking that if enough localized projects are installed and completely eliminate the localized flooding problem, then that is bound to have an effect on the overall. We do not know. We do not have the capability to know.

Fortunately our criteria is at such a level that we can proceed without the study capability that is required of Federal projects and actually sometimes it pays to not know that answer because we can proceed and find out mechanically whether something will work without having to go through the study process and find out it would not work. Either way it costs about the same.

I might relate in this regard what brought about some of the thinking that went into the development of the Lower Red River Water Management concepts. And that was our own project on the Wild Rice River which is the Twin Valley Lake Dam project. If that project had been installed at its inception by the local people, it would have cost only slightly more to completely pay for it at that time than the local share will be today and we would have had twenty years use out of the project.

Mr. STANGELAND. Twenty years of benefits too.

Mr. OGAARD. That is what I mean.

But if the rate of inflation is to continue the same as it is today my thinking is, and it is shared by those on the board and the cooperating watershed districts obviously, that the same policy essentially exists today, possibly even more so, that a dollar spent today on a water management project very well could forestall a 10 dollar project 10 years from now if the rate of inflation stays at 9 percent. That all adds up.

So, we feel we should move now to the best of our capability.

Now, the Federal Government is the avenue that has been looked to continuously for aid and assistance. I know this is aside from your committee, however, one of the avenues used in our watershed district and others is the Agricultural Stabilization and Conservation Service (ASCS) cost sharing flooding for small water works. We have a \$100,000 project installed 2 years ago in our watershed district. 80 percent of it was special funding through ASCS. If 125 of those were to be installed in the lower end of the watershed you would see a significant reduction in the flow because that particular project completely eliminated a major flooding problem we had over an 18 mile reach of the subwatershed.

Mr. STANGELAND. What did that involve, Don, if I may ask?

Mr. OGAARD. What did it involve?

Mr. STANGELAND. Yes.

Mr. OGAARD. The water control project installed by SCS primarily funded with, like I said, ASCS agricultural funds, for about one hundred and some thousand acres—no, a 80,000 acre feet project. Essentially it fills up and drains down in about 3 weeks when the stream is large enough to contain the flows. Prior to that it flooded all over the country, 4 to 5 miles wide. Presently it stays well within the channel and is no problem.

One of the other projects that we have rolling right now is much smaller than that in acre feet, but our planning shows a flood flow reduction of 26 percent where it enters the river. Any time you can get a 26-percent flood flow reduction, you have a good project because actually, in our estimation, less than 10 percent of the flood flow of the spring is actually floodwater. The rest of it stays within the channel.

This varies by watersheds. This is one of the interesting factors. Each and every one of those watersheds has a different characteristic, a different water contribution pattern, and has to be treated differently.

There are areas where channelization is definitely an advantage in that it would put the spring runoff water essentially into the Red River channel ahead of the peak flows instead of, at present, where it goes overland and arrives at the same time.

So, like I stated before, our efforts on Lower Red River Water Management do lack the comprehensive study that is being done. We

utilize primarily the existing Souris-Red-Rainy Basin original study as a partial guide and whatever information that we can extract otherwise.

The main thing is that I feel we are doing something; we are making an effort, an honest effort, to attack the problem from a local basis, with local cooperation and usually with local support.

Questions?

Mr. STANGELAND. Yes—quite a number.

You said something about different agencies studying the same problem using different criteria and coming up with different solutions.

How do you see a resolution of that problem? What is a vehicle or means to do that?

Mr. OGAARD. Well, I am sure that members of the Corps of Engineers staff that are here would agree with me that if some method to streamline the activities under which they work could be accomplished they would be happier than I would be to shorten up the span that they work with.

Well, essentially, U.S. Fish and Wildlife can put restrictions on a Corps of Engineers project or an SCS project that is not included in its original state by the individual installing agency. Consequently, it requires a process of debate and a couple of years of meetings to resolve the issue and you end up with a compromise out of the situation.

How do you get the same criteria in the Soil Conservation Service, the Corps of Engineers, U.S. Fish and Wildlife, and EPA, which is another one? Water quality standards and their goals and methods for determining water quality are not necessarily the same as those used by another agency. Consequently, two water quality studies can be accomplished on a Federal project which are not necessarily compatible.

How to accomplish that is somewhere within the Federal process. I think how to get this resolved is beyond me.

Mr. STANGELAND. That is what I am wondering.

Do we set a lead agency, saying, this is the agency—the others are on this kind of a project and this kind of a problem and the other agencies have input, but in the final analysis, this one agency is lead? Or do we establish a coordinating agency, which means another or a little more bureaucracy, to stand over all the present agencies in a certain area—Wildlife, Soil and Water Conservation, Corps of Engineers? Something like you are operating right now with your Board over all watershed districts.

Mr. OGAARD. Right. Something of that nature would certainly help.

Like I said, I do not have the answer to this type of thing, but you can imagine the frustration of an individual citizen trying to work his way through the maze of local, State, and Federal regulations. I have difficulty with it and I have been on the Federal project for 18 years and devoted over 50 percent of my time in water management the last 8 years and still have a bit of a problem working a way through. However, I do work at it, as you well know.

But the problem is real. In some instances it delays projects considerably. To the individual agency delaying the project, they consider it a benefit and to the one that is on the receiving end of the delay, it is not a benefit.

So, within our Federal process we have built in a situation where a number of new laws over a period of time have put in new and string-

ent requirements under existing agencies and their activities, such as mitigation requirement on, say, a Federal project. That is a relatively new, as far as historic data goes, requirement and it is a real requirement. It is the law of the land essentially.

Mr. STANGELAND. What does the water management board consist of?

You are the chairman. What is the structure?

Mr. OGAARD. Each of those areas of watershed district appoints one individual to serve on the Lower Red River Water Management Board. Annually we elect officers. Currently I am chairman.

Mr. STANGELAND. Do they or have you ever discussed—maybe I will just ask you to give an opinion, your opinion—is there a method or is there a means working through the watershed districts or anywhere else of, say, reducing the level of the 100-year flood 2 to 3 feet as the gentleman from East Grand Forks suggested would be helpful?

Mr. OGAARD. Well, I would certainly hope there is because otherwise we are working within the realm of frustration if we do not have that as a goal.

I think the individual watershed districts, if they have the dedication and the support of the people to get the job done, can accomplish it. In that last one the support of the people was the difficult one. We have the traditional upland versus low land controversy. It is very difficult to find project areas.

I heard it alluded to earlier today about farmland being utilized, prime farmland for water control projects. We have been successful in virtually eliminating that aspect by looking for large natural basins that are not necessarily prime farmland. They possibly have uses for the livestock grazing and so forth. Numerous areas are out there that are natural holding areas that use various techniques and capabilities to reduce flood flows.

We had one project we were investigating and actually had proceeded to gain initial funding from the Lower Red River Water Management Board. When we advanced into the final stages of engineering we found out that we had a problem about 20 miles further upstream that we had to correct before we could possibly construct the project. In other words, we had to reduce flood flows at an earlier rate and regulate them or our project would not work. It would be running over the overflow area all the time.

So, given the entire Red River basin, subdivided into individual watersheds, each different watershed subdivided into subwatersheds, and then the various fingerling, coolies, and creeks and so forth that run into them, all have a characteristic of creating the overall massive problem we face and that is why I am repeating myself. In the earlier part of the statement I said we addressed those problems first. We have to get out to those fingerling areas and attack them because there are not that many specific large areas for water containment there. I think on the Minnesota side there are two that have been investigated and rejected and one is active for the possibility of Federal funds exclusively.

What interests me more is some possible avenue through the Federal process for getting funds back cooperating with the State of Minnesota. If the State of Minnesota does enact legislation putting funds into the local water management districts to accomplish this

means of flood flow reduction, how could that be augmented by the Federal funds?

I take note of the fact that \$14 million was applied for under FDAA funds. My own county has been declared a disaster area 14 out of the last 20 years. We are professionals at filling out disaster aid fund applications. I would sooner be a professional at filling out the project application form for a permit to construct.

We are construction oriented. There are those agencies that are not construction oriented. But if some method can be devised in the Federal process to put matching funds into the local process, as the State of Minnesota hopes to do—it would make a tremendous difference for us in our activity and capability.

Mr. STANGELAND. Do the watershed districts have power over drainage?

Mr. OGAARD. Yes.

Mr. STANGELAND. Any drainage done now has to be approved by the watershed board?

Mr. OGAARD. This is one thing that is optional with the individual watershed districts that I personally take exception to. I have a copy of the rules and regulations that specifically spell out a severe penalty to—what you would say admonish individuals who fail to comply with the regulations. Not all the watershed districts do that. It is an optional feature.

Mr. STANGELAND. Do you anticipate with the new water management board that that might be encouraged?

Mr. OGAARD. I would encourage the rest of the watershed districts to enact stiff penalties and very closely regulated criteria for them in their rules. Otherwise those of us who have adopted this—and the two central watershed districts have a very stringent regulation pattern—are not exactly too happy with another area that does not and consequently does not work toward water management in that respect.

There is still a large amount of area that is open for potential drainage. This has been addressed several times today. We keep a very close tab on this type of thing. The easy drainage work was accomplished with the aid and assistance of the SCS and the Federal Government cost sharing, as you well know, through the late 1940's and 1950's. It is primarily in the valley area, but up onto that Beech Ridge area and somewhat beyond. The more difficult drainage tasks are now in the hands of land developers who purchase land, drain it, clean the trees from it, hold it for a short period of time and capitalize on it or farm it, one of the two. This is an entirely different attitude and an entirely different area to attack from an administrative standpoint.

Mr. STANGELAND. You mentioned something and I am not exactly sure what you were getting at. But it had to do with the ability to cope with the problem between the upper reaches and the lower reaches and how the people in the uplands do not want to retain water or slow down water and, of course, the people in the low lands suffer. And I am not too sure if I understood you were looking for some kind of authority. This I think would be State more than Federal.

Mr. OGAARD. I stated that it is probably State more than Federal, but the problem is the watershed district has the capability to condemn lands for a water project. There are some mechanics involved that are

not exactly easy, but everyone is well aware of what condemn means. It starts out with a process of investigation.

We have had to have a court order to get in to survey an area to see whether it has potential.

Then starts the various processes of initiating the project and essentially we are fighting a battle all the time over social issues. See, water is no problem in itself. The whole thing is over people. There basically is not a water problem anywhere. That gets along just fine. It is people that are in the way or have gotten in the way or constructed something in the way and that is what we are dealing with today. We are dealing with an accumulative effect of our actions for the last 100 years.

So, the problem is there. The problem lies in the area of assessments on projects. The law is not exactly on the side of the low lying land areas, so when it comes to collecting taxes from the area from whence the water came it is essentially a major social problem that is a real hinderance. The awareness is not there as to the destruction caused. The sympathy is not there.

As a matter of fact, the usual dialog that takes place is not normally found in dictionaries when it gets into the discussion stage and it takes a lot of selling, a lot of PR work on the part of the watershed district or anyone else to get the projects installed.

It is impossible, but it is very difficult. The attitude is such that if you have your problem, deal with it; we moved up here or we live up on the high lands, we do not have the problem. And it is an age old problem that is probably more accentuated today because a lot of the land that was alluded to at times during today's testimony as being less than prime, I find a lot of that as being very prime. It is also very prime when the price angle comes around to return for dollars spent.

Mr. STANGELAND. I guess all land is prime to the guy that sits on it.

Mr. OGAARD. That is correct.

And that attitude—how can one overcome that legislatively—probably is a thing we will have to deal with the rest of our natural lives and probably should. To some degree restrictions must be placed on any individual group or government in their quest to gain their means for the protection of the general public.

But it is a difficult problem. It is one of the most difficult problems we face.

Mr. STANGELAND. Do these watershed districts have any kind of an inventory?

You were talking about some of the natural reservoirs. I like to look for natural reservoirs and natural pot holes rather than look at the condemnation route because that is a real problem.

Do they have inventories of potential storage areas?

Mr. OGAARD. Yes.

Nearly all of them employ or engage professional engineering personnel and do a very thorough job of investigating their watershed. They know it quite well.

That is one of the advantages. The placement of the managers within a watershed district is such that they know their individual areas quite well. When they meet and confer they do an excellent job of overseeing the area as well as understanding its capabilities and it fits in, I might say ideally. I stated we use the engineering capability we have plus that available to us. Consequently we can cooperate and understand things such as the Red River Study Board, which I am a

member of, and each of the other watershed districts also. We are involved in the Federal process. We are involved in the state process. And we are attempting to coordinating the whole works with capability at the lower level.

Our problem is primarily funding.

Mr. STANGELAND. Very good.

If you have anything else you would like to submit, we will be open for 14 days, as I said, and we would be most happy to receive it.

Your testimony is very informative.

I would envision or foresee the creation of that watershed management board as being a prime assistance in helping solve the problem.

Counsel would like to ask some questions.

Mr. KROUSE. You have obviously spent a lot of time studying the issues and I think you have been a very effective witness. One question has occurred to me.

You suggest a level of control of water extending back up to tributaries and even to what you call the fingerlings.

Is there any model, or any situation that you have observed anyplace where things are now being done the way you would like to see them be done?

Mr. OGAARD. There are a number of areas on a localized basis. None of those watersheds are completely harnessed. All of them are in the stage of development. The reason for this is time.

We are not that old. We have inhabited this area for 100 years and have only come to realize about 10 or 12 years ago that we had a real serious annual problem. What used to be a historic problem that grandpa talked about is now an annual problem that everybody knows about. And consequently our degree of awareness has come about in direct relation to that degree of awareness and no individual watershed has harnessed itself completely, but individual subwatersheds are.

Sure. We have a lot of model areas with individual projects that are functioning very well.

Mr. KROUSE. By "models" you mean within this basin?

Mr. OGAARD. Yes.

Mr. KROUSE. How about outside of this basin in some other State or some other watershed where you think the job is being done more correctly?

Mr. OGAARD. Right.

We have done a considerable amount of investigation on how things proceed in Nebraska, how things proceed in Ohio. Some individual areas specifically in Ohio that were very seriously flooded 30 years ago no longer have flooding problems at all. In that case too, by the way, that is where we got our model for lower Red River water management. They assessed themselves to get the job done. That is essentially where we picked that idea up originally. They did raise the local assessment. That is over 20 years ago.

Very few places in the country, you see, assess themselves for its water management in the exact manner in which we attempted it here and were successful in doing it.

The problem is there again even on our fund for the lower Red River water management. We have an area that was opposed to our formation, and opposed to the collection of that fund. And another area says it is too low, we should have twice the money to get the job done.

I am sure, like for East Grand Forks, they appreciate the fact that an effort is being made and it is an insignificant contribution, even though it is a meaningful contribution.

But this is essentially where we are at.

Yes. There are model areas. Engineers have various model areas to use in their determination of what is good for an existing situation.

I might close with one thing, if I may.

I was approached by the largest engineering firm in the United States to work toward the potential of a study for the entire Red River basin and I obtained an estimate of the cost of doing that. It only took the first 5 years of our mill levy to obtain the study and that is when we shelved the study. We went on to projects instead. We just eliminated the first phase.

Mr. KROUSE. Thank you, Mr. Chairman.

Mr. STANGELAND. Very good.

Thank you.

We are through with our formal witnesses now. We are going to call one more witness, but how many others would care to testify? Is there anyone who has something in addition to contribute beyond what we have had today at the meeting?

[No response.]

Mr. STANGELAND. Then we will call Mr. John Rolczynski up to the stand. We will ask you, Mr. Rolczynski, to summarize your testimony, please. The full text of your prepared statement will appear in the record at this point.

[The statement referred to follows:]

STATEMENT OF JOHN P. ROLCZYNSKI, FREELANCE WRITER AND PHOTOGRAPHER,  
MINTO, N. DAK.

Gentlemen: News releases concerning the testimony to be presented to representatives of two key subcommittees of the U.S. House of Representatives on September 30, 1978 at the American Inn of East Grand Forks, Minnesota, stated the objective to be as follows:

"Purpose of the session is to provide Congress an authoritative record of the flood problems besetting the area, the implications of agricultural diking as a response, state and Corps of Engineers efforts to regulate such activities, and what long-term water management measures may be needed in the Red River basin."

My work as a freelance writer-photographer has given me opportunity to research a number of aspects and interview a goodly number of people concerning flood problems of the Red River of the North. I've had occasion to write about such problems, as they exist periodically along the Red River's main stem and in the basin drained by its tributaries. My illustrated articles have appeared in weekly newspapers in both North Dakota and Minnesota as well as a regional magazine serving the farming interests of the Red River Valley.

Contacts with farmers as well as local, state and federal government officials coping with water management and flood control matters have given me an overview by discussing causes, effects and possible solutions to the flooding which more often and severely plagues those living in the rich Red River Valley. It is possible that my observations may help, in some small way, to find remedies having merit and serving the public interest. With this purpose in mind, I respectfully offer my comments for the consideration of those comprising and serving these important subcommittees of Congress.

UNIQUE NATURE OF THE RED RIVER OF THE NORTH MAKES IT WORTHY OF FAR  
MORE DIRECT INVOLVEMENT BY THE U.S. CONGRESS

NATIONAL FLOOD CONTROL POLICY INADEQUATE

For the first 150 years of this Nation's existence, Federal interest in floods was largely centered on the Mississippi River and on the effect of floods on navigation. Major floods recorded in the 1920's and 1930's demonstrated the major floods were

basin problems which could not be remedied as an adjunct to navigation. The constitutionality of Federal action on the broad front of flood control and water and related land programs is based on the authority of Congress to regulate commerce, to control public lands, and to provide for the common defense and general welfare.

The current flood control policy is set forth in the Flood Control Act of June 22, 1936. Since then, several changes in Federal policy allow the following:

(a) Cooperation with state and local interests to improve basic knowledge about flood hazards.

(b) Coordination and planning of new developments on the floodplain.

(c) Ability to provide technical services to managers of floodplain property.

(d) Movement toward a national program for flood insurance.

(e) Adjustment of Federal control policy to sound criteria and to change needs.

There is Federal cooperation in alleviating the losses due to floods through the following agencies: The Soil Conservation Service of the U.S. Dept. of Agriculture; the U.S. Army Corps of Engineers; the U.S. Geological Survey; the National Weather Service; and the U.S. Dept. of Housing and Urban Development (HUD).

The U.S. Dept. of Agriculture, through the Soil Conservation Service, administers the upstream watershed protection and flood prevention activities as an integral part of the total soil and water conservation job. The watershed projects of the agency are limited in size to 250,000 acres. The agency cannot provide any reservoir having more than 12,500 acre-feet of floodwater detention capacity in its plans. Benefits must exceed costs on such project construction.

#### *The U.S. Army Corps of Engineers*

When a need for flood protection is recognized, local interests may petition their representative in Congress. An act or resolution of Congress can then authorize the Corps of Engineers to investigate the problem and file a report. Unfortunately, we get more reports and studies than corrective action; for the process is time-consuming and complex. Each project selected must be complete in itself, economically justified, and limited to a Federal cost of not more than \$1 million.

The Corps also functions by providing floodplain information and guides provides flood hazard information for Federal, state and local governmental agencies.

#### RED RIVER OF THE NORTH DESERVES MORE CONGRESSIONAL ACTION

The Red River of the North is not only a river system whose main stem serves as an interstate boundary between two states of the United States (North Dakota and Minnesota) but it is also a river system which drops its water into the neighboring country, Canada. In this respect its flows are international in scope when it comes to matters of pollution or excessive water drainage causing damage in another country. By treaty the U.S. government must heed practices which do allow the Canadians to receive Red River flows which are not an endangerment to their interests.

Because of the unique nature of the river, it would seem that the U.S. Congress could act with more dispatch in meeting the needs of citizens which cannot readily and easily be met by any form of cooperative or coordinated action between the two states (North Dakota and Minnesota) and a foreign country.

The Red River Valley lacks political clout by its being basically an agricultural area with few large metropolitan areas. Drainage is a political hot potato; for politicians are aware that agreement is hard to find at the local or state levels of government when special interests are involved.

#### FLOOD CONTROL VS. GARRISON DIVERSION

It is ironic that the richest agricultural lands of North Dakota, those adjacent to the main stem of the Red River of the North, can find so little interest for their protection among state and Congressional leaders! Also, the large newspapers of the eastern portion of the state of North Dakota play down flooding—among their advertisers are those who sell real estate, and it's not easy to sell three and four bedroom homes in the Red River main stem floodplain in Grand Forks and Fargo, if the local press gives too much publicity to the flood hazards affecting such property. Newspapers in the larger cities, therefore, play down flood control matters. Yet, these daily newspapers thrive on subscriptions of a large farm block representing much buying power.

If flood control in the Red River Valley portion of North Dakota could have but one-half the interest displayed by state and Congressional leaders for Garri-

son Diversion, surely there would be a movement toward some positive solutions! At the moment, this writer finds Messrs. Young, Burdick and Andrews in the U.S. Congress giving far more attention to irrigating substandard soils through the pork-barrel legislation supporting Garrison Diversion than attention to preserving the topsoil of some of the richest farm land found anywhere in the world!

At the state level also there is more attention now given to Garrison Diversion than to flood protection for the eastern portion of the state of North Dakota. Governor Link appoints members to the North Dakota State Water Commission, and to this date he has not appointed ONE SINGLE MEMBER of this State Water Commission who can say that he is a resident of the Red River Valley! Western and middle-state interests monopolize actions of the state agency, and the rich eastern lands have not one single spokesman on this important board!

#### DIFFICULT TO WRITE ABOUT FLOOD MATTERS IN NORTH DAKOTA

It may interest the representatives of the two key subcommittees investigating Red River flood matters to know that freedom of the press is something of a sham in North Dakota. Access to the printed page on certain subjects is quite evident, so it is hard to keep the public informed on public matters, spending of public funds, and discrepancies in government action related to water management and flood protection. As a freelance writer-photographer who has tried to comment on these subjects, it is unfortunate that I must report that I've experienced the following:

(a) Denial of public records of local, county water management boards, when access to such records were clearly supposed to be possible "during reasonable office hours" as called for by North Dakota law. Only by the request of a newspaper publisher was the North Dakota Newspaper Association prompted to act on the matter. The NDNA investigated the public access to records, checked with the Attorney General's office, and issued a letter to two county water board attorneys (Walsh and Grand Forks Counties) telling them that such public records of their boards were not being made available as per the law and that the NDNA would seek a court order, if necessary, to make the records of such county water boards accessible. Only then were the records readily available to the public and press.

(b) At a public meeting of the Board of County Commissioners of Walsh County I announced that I would be recording with a tape recorder the statements about to be given by the Mayor of Minto, North Dakota, a man who came before the Commissioners to protest the lack of corrective action on a back-watering and flooding problem for his city, a matter which the Commissioners were asked to act on, since they appointed members to the County water management board, which had not acted on the matter to the satisfaction of the Minto mayor. A County Commissioner actually threatened to come over and break my tape recorder up, until the States Attorney advised that anyone could record the proceedings of a public hearing. The incident was incorrectly reported in the county official newspaper, doing grave damage to this writer's reputation and livelihood by publication of incorrect information on the incident. They did not print the fact that the Commissioners had their own tape recorder in use at the other end of their table during the course of the same meeting! The smear tactic was quite effective.

(c) This writer asked members of two county water management boards, at a public meeting, questions pertaining to their joint actions on a water problem on which they were acting cooperatively and with joint use of public funds. The information was not readily available from existing records in this case, yet this writer was criticized in a newspaper editorial for asking questions pertaining to the use of public funds. This related to construction of Lateral A, a man-made ditch which would have brought some of the floodwaters of the Devils Lake Basin, another watershed, into the Forest River watershed, indeed ending in the main stem of the Red River!

On the following page you will find the letter of the NDNA (North Dakota Newspaper Association) which asks one of the two attorneys of county water management boards involved in the matter of proper public access to public records.

It is interesting to note that the NDNA considered the incident unusual; for it seldom has had to act through an attorney to force the access to public records. The NDNA, which enjoys the privilege of representing all of the newspapers of the state, found no reason to issue a news release on the unusual

matter of lack of public access to county water management board records in Walsh and Grand Forks counties. Nor did the official newspapers for these two counties, the papers which pick up the lucrative legal notice advertising for said counties, mention anything about the NDNA action of threatening court action to get a court order, if the records weren't made readily available. If such a news release had been issued, it would be quite obvious why questions at public hearings had to be asked, as was the case on Lateral A in example C above. The NDNA did not support any writer who got involved in such a misunderstanding, wherein the organization played a key role in resolving the matter.

As a college graduate holding three full college majors and two academic degrees, I'm used to learning my facts. In our society today it is difficult, if not dangerous, to try to learn facts on public matters.

I've asked the newspaper publisher of the paper carrying the smear to issue a retraction, after presenting him via a lawyer with a complete transcription of the tape recording carrying the Commissioner's threat to break up my tape recorder. No retraction has yet been published. I've been libeled.

On another matter in the press, I published discrepancies in the giving of services to veterans at the public employment office in Grand Forks. Four newspapers carried the report, but the Grand Forks daily refused to carry the story. My report went to Washington and corrective action was demanded. As a veteran myself, I'm denied proper job placement services from this office!

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#### RED RIVER FLOOD CONTROL STILL A COMPLEX PROBLEM

(By John Rolezynski)

Each year it becomes more apparent that solutions must be sought to allow for more orderly and efficient water management and flood control policies in the Red River Valley. Frequent flooding, taking the form of spring runoff and seasonal floods along the tributaries and main stem of the Red River of the North, has become almost an annual occurrence. Yet, joint action on flooding problems in today's world is not as simple as convening some government leaders, throwing some ideas and money into a big, black pot, and following the directions to "stir, simmer and serve."

Every farmer who has suffered the ravages of flooding in the Red River Valley would like to think that leaders of state government, in both North Dakota and Minnesota, know the nature of the problem. Do they? Well, judge for yourself. Here are some meaningful excerpts, for example, from a report to the Governor of North Dakota on flood control, a report drafted by an engineer, Herbert A. Hard. He states the following:

"Vast areas have been flooded in several great floods and millions of acres more have stood under water for the simple reason that the small downstream channels of the Red and its tributaries are only fitted to carry the ordinary runoff of their streams and are far too small to hold the vast spring torrents. It is over 250 miles from the mouth to the headwaters of the Sheyenne. This and numerous other long tributaries keep the Red channel bank full or more for so long a period that, by the time the land can finally be drained, it is often too late for profitable seeding.

"Temporary storage of the flood water in reservoirs far upstream until the flat valley lands are drained in the early spring will prevent this overloading of valley streams \* \* \*.

"Flood control work is of necessity usually closely associated with drainage problems. No real grasp of our work is possible until it is comprehended that, while ordinary ditching may proceed independently, it is true that the larger drainage problems often shade imperceptibly into flooding problems and cannot be handled entirely separately. In fact, many of our flood problems are directly due to uncontrolled and ill-advised but elaborate ditch construction. Several of the most serious floods in certain sections are due to this fact that enormous canals and ditch systems have in North Dakota, and more especially in Minnesota, been constructed without any relation to the damage caused downstream.

"Millions of dollars have been worse than squandered in 'piece-meal' ditching done without any broad plan for the whole watershed of the valley in question. Such work may give temporary relief to one township or county—but at the expense of flooding those downstream. Then, when lands still further upstream are later drained, the main ditches through the land first drained are often

too small and the farms are again flooded, or at least left undrained in the spring, until the main channel has carried the water from upstream—too late for right seeding.

"Again, rivers with the small channels of those in the Red valley are kept gorged with water from ditches for upstream until long after seeding time for the lands near the mouth. Often these lands, which in early spring may have first drained out, are subjected to actual flooding when the "second flood" comes down one to two hundred or more miles upstream \* \* \*.

"Clearly the county drainage law should be amended to prevent such injustice as is thus worked upon one county by another. For, at present, it is neither possible for the people of Richland, Cass or any downstream county to even initiate proceedings whereby they may protect themselves by requiring the development of any small flood protection work in another county, even though they desired to pay the cost of construction themselves \* \* \*."

Engineer Hard also puts forth some ideas on how to resolve the problem when he states:

"It is here recommended that the statutes be amended to not only give justice as between counties but also to establish and define the duties of the State Commission and engineers over large drainage and flood control work in order to secure the protection needed.

"County work is at present independent, disconnected, and often one county is injured by the work of another to the extent of hundreds of thousands of dollars. This great evil should be remedied and the work of the different countries coordinated and systematically worked out in connection with a consulting state office \* \* \*.

Now, you farmers who have suffered flooding damage in the Red River Valley, would you say that Mr. Hard has a grasp of the problem as well as a way of resolving it? Whether you agree with his conclusions or not, you should know that the advice offered by Mr. Hard was given to the Governor of North Dakota in 1919! I repeat, in 1919! Where have our leaders of state government in North Dakota and Minnesota been for over 55 years?

Only in 1976 did seven Minnesota watershed districts organize a means of cooperative flood-control action by forming the Lower Red River of the North Watershed Management Board. As recently as August 30, 1978, representatives from 12 eastern North Dakota counties were still deliberating provisions of a proposed "Joint Powers Agreement," whereby the water management boards of said counties could join together to plan, build and regulate water management and flood control projects having inter-county significance. Only recently has any such attempt been made to organize the Red River Valley portions of North Dakota and Minnesota on a regional basis.

If the North Dakota counties can agree on a Joint Board arrangement, then hopefully the two state regional boards can meet to address water management and flood control problems requiring solutions through interstate cooperation and coordination. The idea is to see that each water management district (by county or watershed), on each side of the Red's main stem, have equal and direct representation through a member sitting on one of the two regional boards.

The State Water Commission of North Dakota invited the water management boards of 12 counties to become members of the Joint Board, not only to set policy but also to contribute tax monies to fund any projects undertaken to establish better water management or flood control. Sections of these 12 counties were defined as parts of the basin sending water down to the Red River main stem, where flood problems are compounded for lack for more effective and temporary water retention in uplands regions.

Although they contribute water compounding the flooding problems in counties downstream and more immediately adjacent to the Red River main stem, some counties at the August 30th meeting voiced unwillingness to join the North Dakota Joint Board. Cavalier County opposed participation in the Joint Board by stating that they had enough problems now in the county's effort to secure Channel A approval, a drainage project leading into the Devil's Lake Basin. Barnes County officials openly opposed the Joint Board idea at the August 30th meeting, saying that joining would require an additional \$33,000 in levies for the county, an expense they didn't want to force on their citizens. The views of Sargent County toward joining the Joint Board were not made very clear at the August 30th meeting.

Of more than passing interest, it should be noted that the Shyenenne River is more than 250 miles in length, from its headwaters to the point where it empties into the Red main stem. Portions of 8 additional counties (Sheridan,

Pierce, Benson, Wells, Eddy, Foster, Griggs and Stutsman) drain water into the Sheyenne above Bald Hill Dam, which sits in the heart of Barnes County. Why have they not been included in the plan? Quoting from a summary sheet given out at the August 30th meeting, the counties were not included as parties to the Joint Board "because the Bald Hill Dam effectively regulates and controls the flow of water and the water management activities of those areas in the Sheyenne River watershed above the Dam."

The claim that the Bald Hill Dam effectively controls the Sheyenne during peak flow periods on the Red River main stem is questionable. One party at the August 30th meeting said the Bald Hill Dam should have more storage for flood control, and he suggested that the area above Bald Hill Dam be included in the Joint Board plan. Further, a newspaper account of Feb. 15, 1978, spoke of "the possibility of raising the level of Bald Hill Dam near Valley City," as one of two alternatives to the Kindred Dam project. If it's true that these 8 counties above Bald Hill Dam contribute runoff waters affecting the flooding problem downstream, then some budgetary adjustments may have to be made. The North Dakota Joint Board, if formed, will have to iron out this problem. If any counties contribute uncontrolled waters that create complex flooding problems downstream, then they should as readily be expected to contribute funds to alleviate the problems caused. Higher state authority may be needed to work out a just solution to this matter.

Assuming that both regional boards will come into being, there is a tendency to believe that effective flood control projects can readily bring relief through joint funding efforts. Before expecting such miracles, one should realistically review the status of regional board efforts on the Minnesota side.

Although a 2 mill levy is picked up by those seven watershed districts comprising the Lower Red River Water Management setup, one half of the funds from this levy goes to the central regional board to fund flood control projects of common benefit to more than one member district. The other half of this joint action levy amounts to about \$300,000 annually, which must be shared by the seven member districts.

Ron Adrian, engineer for the Middle River-Snake River Watershed District, explained that his district's share of the \$300,000 would be about \$40,000. Beyond Public Law 566 money, this money available for local use is not much to work with to secure flood control. Adrian stated, "You're talking here moneywise about \$300-400 per acre foot for flood water storage, and when you figure that out, you can get some idea of what it would take for control."

Thus planning and joint-financing funds of regional boards cannot alone find cure-alls for the flooding problems in the Red River Valley, one of the world's richest farming regions. Support must come from other quarters, and this support must come in more forms than merely money. To find meaningful solutions, certain imbalances, oversights and abuses must be washed away at the federal, state and local levels. Here are but a few examples:

(1) On January 30, 1978, the U.S. Dept. of Agriculture stated, "Soil is being washed away on the nation's cropland at an average rate of nine tons per acre per year, nearly twice the rate considered acceptable by soil conservationists." Farmers particularly have lost confidence in the flood protection assistance offered by the U.S. Army Corps of Engineers and the U.S. Dept. of Agriculture's Soil Conservation Service. In testimony before a committee of the U.S. Congress in March, 1978, Mr. R. M. Davis, Administrator for the Soil Conservation Service, admitted an imbalance in his agency's Small Watersheds Program authorized by PL 83-566, a program whose main objective is to reduce flood and sediment damage and to stabilize watershed lands. In fact, for the 1979 budget period, he didn't want to see his agency have any new watershed planning or construction starts, so that the time lag between completion of plans and implementation (construction of ongoing projects) could be drastically reduced. To get an idea of what kind of backlog exists, Davis was asked to explain how soon construction starts would run out and be completed, assuming no more new planning was started. Davis replied, "Right now we have a backlog on our books of about \$1 billion for watershed construction, assuming it would all be viable, and assuming the same level of construction money utilized as was in fiscal year 1977, which was about \$84 million, it would take us ten years to eat up the backlog that is now authorized and now in the pipeline." Such Soil Conservation Service policy can't possibly help those seeking speedy flood control assistance in the Red River Valley!

(2) The Soil Conservation Service Watershed Program also drags around another ball and chain, which cuts into both the time and dollar factors of win-

ning effective flood protection. A new trend is eating away our chances of having this agency give us flood control as a first priority. During hearings for consideration of the 1979 budget, SCS told Congress the following: "Although watershed protection and flood prevention remain dominant objectives of the watershed program, multiple-purpose projects have increased from 21 percent in 1957 to 55 percent in 1977." While Red River Valley farmers scream for faster flood protection from the SCS Watershed Program, they should note the following SCS comment: "Multiple-purpose projects include at least one additional feature such as water supply, recreation, and fish and wildlife development." Should not faster flood protection for prime agricultural lands be the highest priority?

(3) There are those who also think the U.S. Army Corps of Engineers has gone off on a tangent in looking for solutions to Red River flooding. At the moment the Corps has embarked on a 3-year study of the Red River main stem, which means they may have some suggestions for flood control by 1981. John Rasmussen of rural Drayton, North Dakota is president of the Red River Flood Control Association, a farmer group having several hundred members in both North Dakota and Minnesota. Rasmussen recently said, "The studies on the main stem of the Red are, in my estimation, a waste of time and money. There have been excellent studies done over the years that have been set aside and junked. There is a past history of many, many dollars spent on studies and it's done nothing. The condition has worsened, because they haven't looked at the source of the problem; namely, uncontrolled peak flows coming into the main stem from the Red's tributaries. I'd like to see the Corps study control possibilities along the Red tributaries and forget the main stem study. The answer to water problems is found upstream, never downstream." At the moment, the Corps is proceeding with its study of the Red's main stem, which this writer finds rather removed from what Brig. Gen. Robert L. Moore of the Corps explained as necessary during a Congressional hearing in February, 1978. General Moore expressed concern about the existence of agricultural dikes put up by farmers along the main stem of the Red. He thought them to be detrimental to not only existing river lands and unprotected agricultural areas but also to the federally constructed levees (dikes) at Oslo, Minn.; Grand Forks, N. Dak.; and Pembina, N. Dak.

In answer to a question concerning an increase in the cost of the Corps study, General More said, "Sir, as I mentioned a moment ago, the main stem dike issue is very volatile and complex. In order to arrive at a permanent solution acceptable to the farmers, the cities, the States, and Canada we must make a thorough analysis of the factors causing the problems and the alternatives that could help reduce or eliminate them. Detailed hydrologic studies of the entire contributing area upstream of the dikes must be made, and this requires adequate topographic information." . . . Tell me, wouldn't the Red's tributaries be a part of "that entire contributing area upstream of the dikes?" Will the Corps start its study of the Red tributaries after 1981? If so, when can we expect recommendation on structural and non-structural remedies, eliminating existence of dikes along the main stem in the first place?

(4) At the state level, Governor Link of North Dakota could possibly expect more action from the N. Dak. State Water Commission, if he'd only appoint one member to the Commission who can say that he lives in the Red River Valley portion of the state. The eastern portion of the state needs such a member on the State Water Commission of North Dakota to push for faster and better flood protection measures in the Red River Valley.

(5) Representation on county water management boards is also an issue at the local level of government. In a recent letter directed to Governor Link of North Dakota, John Rasmussen, president of the Red River Flood Control Association, pointed out that, at present, only 2 of 15 men, comprising the county water boards of Pembina, Walsh, Grand Forks and Nelson Counties, can say that they reside in, or in close proximity to, the Red River main stem floodplain! The letter states, "We perceive this lack of representation on the water management boards by people who live and work in the Red River main stem floodplain as a deterrent to finding realistic and effective solutions to the main stem flooding problems." Of course, it should be pointed out that North Dakota law calls for those elected to the boards of county commissioners to appoint members of county water management boards. The governor cannot be held responsible, in this case, for lack of representation on such county water boards. This message must be brought closer to home, and apparently it will be. On October 30, 1978, the Red River Flood Control Association will host a public meeting at which those holding office as county commissioners or state legislators for Pembina, Walsh, Grand Forks and

Nelson Counties will be invited to express their views on needed flood control measures. Those aspiring to these public offices will also be invited to take a stand on vital issues concerning flooding. This meeting will be held in the City Hall of Drayton, North Dakota at 7:30 p.m. on October 10, 1978. The general public is urged to attend.

More than any other group, farmers, whose controversial dikes line sections of the Red River main stem, have called attention to a serious problem. The greatest ray of hope for flooding solutions comes with the announcement that representatives of Red River main stem floodplain farmers will be asked to describe their problems to the Subcommittee on Investigations and Review, Committee on Public Works and Transportation, of the U.S. House of Representatives. This official hearing will take place on Sept. 30, 1978 at East Grand Forks, Minn. Testimony before the Congressional committee will be by invitation only. Here farmer groups adversely affected by flooding will be able to present position papers and will have their answers to questions relayed to a subcommittee of the U.S. Congress. For those who are fighting for flood control, this is a milestone on the long road to solve a serious Red River Valley problem.

### TESTIMONY OF JOHN P. ROLCZYNSKI, MINTO, N. DAK.

Mr. ROLCZYNSKI. Mr. Stangeland, members of the committee, ladies and gentlemen: My name is John Rolczynski. I am an investigator, writer, photographer. The nature of my reporting is such that normally working free lance I have opportunity to interview a number of people. In this instance I have researched several aspects of the Red River flooding problem that I hope can shed some light not only as to the cause of the problem, but hopefully something with regard to its solution.

I would like to start, Mr. Stangeland, with some prepared text and I have shortened this particularly because I wish to leave some time if there are any questions and to make some comments from what I heard as testimony this morning and this afternoon.

On January 30, 1978, the U.S. Department of Agriculture stated, and I quote: "Soil is being washed away on the Nation's cropland at an average rate of 9 tons per acre per year, nearly twice the rate considered acceptable by soil conservationists."

Farmers particularly have lost confidence in the flood protection assistance offered by the U.S. Army Corps of Engineers and the U.S. Department of Agriculture's Soil Conservation Service.

In testimony before a committee of the U.S. Congress in March 1978 Mr. R. M. Davis, Administrator for the Soil Conservation Service, admitted an imbalance in his agency's small watersheds program authorized by Public Law 83-566, a program whose main objective is to reduce flood and sediment damage and to stabilize watershed lands. In fact, for the 1979 budget period, he did not want to see his agency have any new watershed planning or construction starts, so that the time lag between completion of plans and the actual implementation—that is, of construction of ongoing projects—could be drastically reduced.

To get an idea of what kind of backlog exists, within the organization of the Soil Conservation Service, Mr. Stangeland, I would like to indicate what Mr. Davis was asked to explain about these construction starts; namely, when they would run out and when they would be completed, assuming no more new planning was started. Mr. Davis replied to the U.S. Congress as follows, and I quote:

Right now we have a backlog on our books of about \$1 billion for watershed construction, assuming it would all be viable, and assuming the same level of

construction money utilized as was in the fiscal year 1977, which was about \$84 million, it would take us ten years to eat up the backlog that is now authorized and now in the pipeline.

Such Soil Conservation Service policy, Mr. Stangeland, cannot possibly help those seeking speedy flood control assistance in the Red River Valley, if I may express an opinion.

The Soil Conservation Service watershed program also drags around another ball and chain, which cuts into both the time and the dollar factors of winning effective flood protection. A new trend is eating away our chances of having this agency give us flood control as a first priority.

During hearings for consideration of the 1979 budget, Soil Conservation Service officials told Congress the following and I quote :

Although watershed protection and flood prevention remain dominant objectives of the watershed program, multiple-purpose projects have increased from 21 percent in 1957 to 55 percent in 1977.

While Red River Valley farmers scream for faster flood protection from the Soil Conservation Service watershed program, they should note the following Soil Conservation Service comment, and I quote :

Multiple-purpose projects include at least one additional feature such as water supply, recreation, and fish and wildlife development.

I ask: Should not faster flood protection for prime agricultural lands be the higher priority, if not the highest?

I would like to turn now to the U.S. Army Corps of Engineers who had an opportunity this morning to testify. I would certainly like to challenge them here or, if not, we can do it by written documentation, which I am more than happy to present for the record, to show the conflict existing right now in the tributaries between official reports of the U.S. Army Corps of Engineers and the Soil Conservation Service in studying the very same problems, which is unbelievable.

I would like to point out what Brig. Gen. Moore in testimony before the U.S. Congress had to say about the matter of the main stem study that was described, Mr. Stangeland, this morning.

At the moment the corps is proceeding with its study of the Red's main stem, which this writer finds rather removed from what Brig. Gen. Robert Moore of the Corps explained as necessary during a congressional hearing in February 1978. General Moore expressed concern about the existence of agricultural dikes put up by farmers along the main stem of the Red. He thought them to be detrimental to not only existing river lands and unprotected agricultural areas, but also to the federally constructed levees at Oslo, Minn. Grand Forks, N. Dak.; and Pembina, N. Dak.

In answer to a question concerning an increase in the cost of the corps study, General Moore said, and I quote :

Sir, as I mentioned a moment ago, the main stem dike issue is very volatile and complex. In order to arrive at a permanent solution acceptable to the farmers, the cities, the States, and Canada, we must make a thorough analysis of the factors causing the problems and the alternatives that could help reduce or eliminate them. Detailed hydrologic studies of the entire contributing area upstream of the dikes must be made, and this requires adequate topographic information.

I ask, Mr. Stangeland, must the Red's tributaries be looked upon as a part of that entire contributing area upstream of the dikes? I think

anyone would have to admit that it is probably the primary source of the problem at the main stem.

We have here the Corps studying the main stem which will be completed in 1981. Then am I to understand that they will start studying the tributaries after 1981? And when will they come up with some solution? And when they do come up with some solutions, they again must be acceptable to the people. They must also be acceptable within the framework of what funding is available.

Now, this is the end of my prepared statement, but let me point out one further thing. For the first 150 years of this Nation's history most of the work with regard to flood control and protection that has been done by the Federal Government has been related to the Mississippi River. And major floods, of course, in the 1920's and the 1930's brought attention to the fact that we cannot control floodings simply as an adjunct to navigation. The steam boats have long left the Red River. But we do have here a very important drainage basin. Some of the richest farmland in the world is being washed away and that is a heritage, I believe, that we should protect and I believe that we need right now some real hard solutions, and need to look at solutions in terms of the agencies that are available to us to help.

We have the local water board and, as Mr. Ogaard pointed out and I think very well, the handling of the watershed arrangement on the Minnesota side, it differs in that the North Dakota side has organization by the county.

Be that as it may, the two States have organized, are about to on the North Dakota side hopefully, a joint board to work cooperatively among these various groups within each State, hopefully for some interstate cooperation.

But let us look at the funding. Mr. Ogaard mentioned something like \$317,000. I heard something like \$300,000 coming from a one mill levy also in the Middle River-Snake River from Mr. Ron Adrian. And I do believe that the 1-mill levy that would be brought from the North Dakota side would be equivalent to that.

I do not believe that on storage, as Mr. Ron Adrian had pointed out to me in his particular area, that \$300 per acre-foot could allow very much construction even by this joint action. Therefore, we have to depend upon two agencies: The Soil Conservation Service and the U.S. Army Corps of Engineers. And I do not believe that the function under Federal law, which is basically laid out in the laws of 1936, the Flood Control Act of June 22, 1936, to be specific, which refers to the constitutionality of Federal action with regard to flood control, is related to flood control land programs based on the authority of Congress to regulate commerce, to control public lands, and to provide for the common defense and general welfare.

I do believe from the statements made here this morning that if there was any impression given by Mr. Northrup of the corps that—when you asked the very meaningful question, how long will it take to study the entire basin to know of all the problems in this affected area indeed there are problems that are beyond those that are of the main stem. There are rich farmlands upstream from the main stem that deserve attention. And in the folder that I provided, you will find, if you will give it a glance, here right after page 2, the first area, you will see a map of the flood plains that were defined not by the Corps of

Engineers, but by the Red River Resource Center in Grafton, N. Dak. You will see the flood plain area starting from the top that involves the Pembina River, the Tong. Then moving southward we find the Park River and below that the Forest River and below that the Turtle River.

I asked the question specifically at a meeting of the Corps of Engineers with regard to public input, with regard to main stem study, whether these areas would be incorporated into the study, and they were quite clear in telling me that these areas would not be included in the study.

It is true that the Corps of Engineers has done studies in the tributaries. It is also true that the Park River, for example, is suffering from lack of flood control to some degree because the Homy Dam that was built by the Corps of Engineers, which was supposed to have a 50-year protection against sedimentation, in less than 25 is now to the point that the Corps of Engineers has written it off completely for its flood protection phase. It is now looked upon mainly for recreation.

Where is the Pembina Dam? Where is the Hewitt Dam on the Red Lake? Where is the Kindred Dam?

Obviously we need some act of Congress that will deal with this problem that is involving a river that is a boundary between two States that drops its waters into a foreign country. We need some control and it must happen, I believe, at the highest level of government.

I commend you today for having brought this committee to the area to discuss this problem and hopefully the testimony that is presented from all sides will render some solutions. But there are also abuses being carried out right now that are abuses of government agencies that are compounding not only the problem, but certainly hindering the solution.

Thank you.

Mr. STANGELAND. Thank you, Mr. Rolczynski. I appreciate the submission of the testimony. If you have your summary there that you read from, we would appreciate it if we could have a copy of that.

Mr. ROLCZYNSKI. It is already submitted.

Mr. STANGELAND. Fine.

Also whatever other pertinent facts you would like to submit.

There is one thing I have found, and I think we are all aware of it, which is that Government just does not move that fast. Sometimes we would like to have it move faster.

I was visiting with some of the press right before lunch and, you know, we are attacking a problem now that we should have been attacking 30 years ago. But there was not the economic need then because the land was not that valuable, the cost of operation was not that excessive. So, you would lose a crop and the next year you would come back and you would plant and you were not too bad off. Today you cannot afford to do that.

We are a little bit late with it.

We would like to go through your testimony to check out some of the conflicts between the Corps and the Soil Conservation. I am glad that you brought them to our attention.

Mr. ROLCZYNSKI. Thank you.

Mr. STANGELAND. Thank you very much.

Does anyone else have anything that they would like to say before we adjourn?

Let me say that Mr. Larson submitted some evidence and we will make that a part of the record as well.

[The material referred to follows:]

HYDROPOWER AND FLOOD CONTROL POTENTIAL OF THE RED LAKE RIVER, A RED RIVER TRIBUTARY

(Submitted by Arnold Larson, Oslo, Minn.)

Hydro Electric Power and Flood control can be used with a series of three flood control dams on the Red Lake River. A series of three dams were proposed by the Corps of Engineers as an alternate to the one large single structure known as the Huot Dam proposal.

Attached, read the article by David Lilienthal, former Chairman of Tennessee Valley Authority as written in the September, 1977 issue of the Smithsonian in regards to neglected sources of energy. The article points to power projects that could be rejuvenated.

A power structure with the new type turbines needing only 25' of water could be very beneficial to the area and to Red Lake County, where the structure would be located. A draw down for spring water containment and flood prevention plant could be operated on fossil fuels.

[From Smithsonian, September 1977]

LOST MEGAWATTS FLOW OVER NATION'S MYRIAD SPILLWAYS—AN EXPERT ON LARGE-SCALE POWER ARGUES THAT USE OF EXISTING MINIDAMS COULD REPLACE MILLIONS OF BARRELS OF PRECIOUS OIL

(By David E. Lilienthal)

Energy, we are told, is to be the nation's number one domestic priority for the rest of the century, and we are advised by high authority that the only course immediately open to us is to use less of it.

No one would advocate waste and inefficiency. All the same, using less energy is patently a solution only for the short term if this still youthful country is to go on growing, which is what we may expect from its natural habit and previous behavior. In that case, we will need to consume more energy, not less. Even as a short-term solution, conservation will not work unless the citizen is persuaded that the sacrifices he is called upon to make are necessary.

I doubt whether he will be so persuaded if he finds out that a satisfactory additional source of energy readily available to us is neglected—the moving waters of our rivers and streams. This is a resource very substantial in volume, for more than half of it is still to be developed; it renews itself, unlike oil and coal and uranium; and its cost will not rise as the years roll on. It provides a form of energy which does not pollute the air, and need not make a violet impact on the environment; it is widely, though not uniformly, distributed throughout America, and is often available right where it is required.

I said need not make a violent impact on the environment. Especially where dams have already been built, there should be no impact whatsoever. Why, then, are we not doing more about them? Partly, no doubt, because our society has become preoccupied with bigness, and most of our hydroelectric potential is small in scale. We seem to think automatically in terms of huge regional transmission systems and million-kilowatt, multibillion-dollar projects, and can no longer conceive of 5,000 kw, 10,000 kw, or even 20,000 kw as practical. However, a new study by the Army Corps of Engineers estimates that installation of additional generating capacity at existing dam sites could add 54,000 megawatts to the nation's power pool. A Federal Power Commission study asserted that the United States has 113,000 megawatts of underdeveloped hydro potential, almost twice the 66,000 megawatts of existing capacity. In addition, the FPC found that if only ten percent of our 50,000 small dams were even partially developed, we could save the energy equivalent of 180 million barrels of oil every year. Congress, in fact, has included a section on small-scale hydropower in the new energy act President Carter has requested.

I do not embrace the notion that what is small is necessarily beautiful. As one who has, for a good part of his lifetime, been responsible for the building of very large structures and systems, here and abroad, I am nevertheless skeptical of the equally extreme doctrine that bigger is better, and that biggest is best. I suggest that "bigness" and "smallness" are not exclusives but rather complementary, as they have been in the Tennessee Valley Authority. There was only one TVA, a giant, but there were more than 150 distinct and separate utility enterprises, each owned and operated by the local citizenry.

Something of that sort is surely applicable to the redevelopment of our smaller waterways. The small and medium hydropower installations we contemplate are not going to replace the great generating and transmission systems we already have, but they can certainly satisfy some of the increasing demand for energy which the regional systems strain their resources to meet. Furthermore, centralized systems are the only possible suppliers of back-up seasonal power to the small plants when their streams run low, and the only market for their surplus power when the water is higher. This is a sensible, profitably alliance such as TVA worked out years ago with the Aluminum Company of America and large neighboring private power systems.

Perhaps the greatest waste of hydroelectric potential is being perpetrated in New England, that part of the country with the highest average fuel bills. Throughout the 19th century and into the early years of this one, it was an enviably prosperous region, consisting predominantly of small towns and villages, sturdy, independent, self-reliant. Out of New England came original culture, a profusion of literary and artistic talent, outstanding statesmanship, admired institutions of learning and a special resourcefulness and inventiveness known as "Yankee ingenuity," which summed up for the world at large the quantities that made America the most productive and prosperous nation in history.

For something like 150 years New England drew its energy largely from falling water. The story of its towns and villages is not the stuff of romance, it is the plain, matter-of-fact story of a people getting down to work. For example: Matthew Lyon, a fighting genius of an Irishman, who moved to Fair Haven, Vermont, in 1783 and built the first waterpowered sawmill and gristmill, hired the first teacher, erected the first meetinghouse, set up the first printing press, published the first newspaper and, among other things, sponsored an iron works and a paper mill.

The pioneer mills were followed by woodworking, shoe, textile, furniture and machine tool factories. The wooden dams were replaced by more substantial structures in stone, some of them exceedingly well built, for the workmen took pride in their calling. A stone dam at Lawrence, Massachusetts, completed in 1848, appears even now to be as sound and solid as the day it was finished (above). Later, hydraulic turbines were installed in many old dams, providing convenient electric energy to replace the brute power of the old waterwheels. The early industrial pre-eminence of New England, while attributable to many things, rested to a large extent on the ingenuity with which its people captured the power of its rivers. The decline of this region today, the flight of so many industries, the chronic unemployment, the decaying communities, though attributable to various causes, have been coincident with diminishing reliance on the resource that brought its earlier prosperity.

What is especially true of New England is also true of other regions in America. There is hardly a state without potential waterpower or where waterpower is being used as fully as it ought to be. There is hardly a state whose citizens do not tell us, with some asperity, of dozens of old hydropower sites abandoned.

Why has it happened? The answer is not a complex one. We were persuaded to accept the fashionable idea that great new generating stations and huge, regionalized transmission systems would deliver electric energy more efficiently and at lower cost to the public than small, local, decentralized ones. Nobody foresaw what would happen to the cost of oil and gas and coal, or to the cost of transporting these fuels, or to the cost of constructing huge generating plants and mighty transmission lines. No one foresaw the rapid diminution of the world's reserves of oil. We placed major reliance upon nuclear energy, without being fully aware of its costs or its hazards.

However, this is much more than a matter of economics. The disappearance of so many of our small and medium-sized hydro installation has wrought some social and community disadvantages as well. A power plant on their own stream is something that people can see and understand and take pride in, something that represents treasured associations with their past while conferring sub-

stantial benefits in the present, something peculiarly their own. It would be foolish to discount such emotions, which lie at the roots of local initiative, identity and well-being.

A new enthusiasm for restoring historic installations has begun to manifest itself. The Hagley Museum, site of the Du Pont Company's first black powder mills on Brandywine Creek in Wilmington, Delaware, for example, has recently refurbished a turn-of-the-century hydroplant that supplies almost all of the 500-kw demand for a 180-acre complex. The citizens of Paterson, New Jersey, are enthusiastic about their Great Falls project on the Passaic River (p. 87) because it is connected with the memory of Alexander Hamilton and his Society for Establishing Useful Manufactures. The city means to renovate this early power plant, which has been allowed to stand idle because of equipment deterioration and flood damage.

The people of Newmarket, New Hampshire, have a dam and used to have a hydro plant, too; it served them well until 1955, when their utility company, in the name of progress, stripped the installations, stuffed the penstocks, and supplied power instead from a central generating station miles away, which they had never set their eyes upon. The Federal Power Commission reports that as of January 1977, no fewer than 228 small hydro plants have been abandoned in New England alone in the last 30 years.

Good hydro sites are everywhere. In Goodhue and Dakota Counties, Minnesota, a little 1,890-kw plant was shut down by the Northern States Power Company in 1966 and the lake turned over to the community for aquatic recreation. The Lake Bylesby dam, I am told, costs local taxpayers \$18,000 a year to maintain, but it could have served its recreational purposes perfectly well and still earned them \$25,000 a year in power revenues, if only the turbines and generators had been left intact. Twenty-six small hydro plants have been abandoned by the same utility company in Minnesota, Wisconsin and North and South Dakota since 1930. These states are not the best endowed in waterpower resources, but they have been made to appear worse off than they really are.

I do not accuse the utility companies of malignity or even carelessness in pursuing this course. I can readily believe that at least some of these plants were not profitable to operate in the conditions of the time, and the utility companies were no more prescient than the rest of us before the oil embargo of 1973-74. I do take them to task—with some honorable exceptions—for their reluctance to recognize, even in our present extremity, the value and the extent of our wasted waterpower resources.

In the Federal Power Commission estimates I mentioned earlier, only about 1,400 of the 50,000 small dams have been developed for power generation, the rest for the improvement of river navigation, flood control and irrigation. There are 343 flood-control dams in the northeastern United States (229 in New England alone); many of them can be made to accommodate power installations without compromising their original function. Take Mount Morris Dam on the Genesee River in west central New York. When the Army Corps of Engineers built it, they prudently built in penstocks as well as one day Buffalo and Rochester may be grateful for them, because the 40,000 kw this dam will accommodate is not a trivial increment in a state which needs power as badly as any other, and pays dearly for what it already gets.

As for differences in water levels in the irrigation canals of the Far West, FPC-published reports omit all projects with estimated capacities of less than 5,000 kw. How many of these there are, and what they might someday contribute, is conjectural.

The same might be said about the total potential capacity of the navigation dams on the Ohio, Arkansas and Mississippi Rivers, to mention the three most obvious cases. It may amount to millions of kilowatts. I do know that the enterprising city of Vanceburg, Kentucky, is already taking steps to install 210,000 kw, a very sizeable asset, in three navigation dams, already built, to which it has access. The Corps of Engineers has counted more than 49,000 dams in this country of at least 25 feet in height, which means an ample head of water for the production of power by the new low-head turbines, yet only a thousand or so are actually equipped to produce power.

The size of an installation does not matter. The 500-kw plant at the Hagley Museum is as worthy a testament for conservation and against waste as the 50,000-kw plant. We know, on the plentiful evidence afforded by plants belonging to villages, municipalities, industries and some utility companies, that the small hydroelectric facility, generating a few hundred kilowatts, a thousand or five

thousand, is important, since even 5,000 kw can serve the needs of several thousand families.

These small- and medium-sized projects can be developed at lower capital costs per unit, and will produce energy at lower production costs per unit, than we are likely to get from huge new generating stations using less permanent, less reliable, more hazardous resources. Moreover, they can be built quickly, compared to the 10 or 12 years required nowadays to design, license and build a large coal-burning or nuclear plant. What inflation and interest charges add to cost over such long periods is something the consumer would rather be spared.

What will these little projects mean? Lighting for schools, streets, parks and other communal purposes, at prices lower than the norm. They mean power at a price that will permit small industries to stay in business and keep on employing people. But they will mean something much more important than these advantages, in my view: while Congress debates energy policy, while the courts and learned experts discuss environmental trade-offs, while economists pontificate, people, in their own communities, can do something to help themselves. In fact, as we have seen, they have already begun. In a few years there may be thousands following in their wake, for the challenge of overcoming obstacles and conventional attitudes come naturally to us. Private citizens can show officialdom what conservation really means.

Ms. GERTRUDE LIZAKOWSKI. I have a copy of the Red River Regional Planning Council. This is July 1977 and there is also one made in October, which was more or less for future development in the little towns.

Mr. STANGELAND. Would you bring that forward?

Ms. LIZAKOWSKI. It has a lot of information that may be helpful.

Mr. STANGELAND. If you will bring that forward we will get the name and perhaps we can send for it.

Ms. LIZAKOWSKI. This is not my copy, but it is available because they are supposed to be distributed to the public.

You were asking about the wetlands.

Mr. STANGELAND. We thank you.

I wish to thank everyone who came to testify.

We also acknowledge a letter from Mr. Alfred M. Hagen. We thank Mr. Hagen for his submission.

[Submissions referred to follow:]

SUBMISSION BY GERTRUDE LIZAKOWSKI, GRAND FORKS, N. DAK.

#### SATIRE IS THE MEAT OF LIFE

Re Forest River Watershed "overall plan"—Walsh County, North Dakota.

Why not add a little levity to an otherwise dull, boring rehash of the same old bureaucratic mish mash?

The flood-ravaged farmers of Walsh County are the victims of uncontrolled drainage. They have gone to countless meetings seeking relief, only to return with the promise of "more studies." The "boys" fly in with their briefcases and maps, looking very important, and after the meetings return to their desks with the satisfaction of drying the tears of the downstream minority.

Our Water Management people are not engineers—they admit it, but since the 1940's the "technical assistance" of the Corps of Engineers and the Soil Conservation Service has done wonders. Why, then, was an "overall plan" for flood control along the Forest River, created in 1961, interrupted by additional channelizing upstream? Why has unauthorized upstream drainage been ignored? Why have unauthorized dykes been ignored? Why have obstructions in the Forest River main stem been ignored? Why was a gauging station not placed in the blackwater area at Forest River Village? Why has time and money been wasted on "recreation" aspects of the dams, while downstream flood control has been made to wait? This is "technical assistance?"

Cost-benefit ratio, that's another thing. It must mean that the upstream farmers have increased the value of their land by drainage, so while the down-

stream farmers are waiting for their land to dry, they can go fishing in the upstream recreational dams!

Our drainage laws were written in order to protect the rights of all. The only thing they failed to mention, was when.

P.S.—Logic for the title of this presentation was prompted by my personal loss of: (1) \$55,000 due to flooding on my farm, (2) \$13,000 in reduced rental due to flood-damaged land, (3) value of my farm buildings which have sustained annual floods for 26 years, (4) face, because I am a woman (out of place at "men's meetings") trying my best to protect my property for myself and my children, and (5) money, time, and energy spent to research the problem and contact the responsible agencies for correction . . . to no avail.

I am being victimized, and I am bitter. There is a saying—"You can't fight city hall," but at least I can say I tried.

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PROPOSED RESOLUTION SUBMITTED BY GERTRUDE LIZAKOWSKI BUT NOT ACTED UPON  
Re Flooding Problems of the Red River of the North—September 30, 1978.

Gertrude Lizakowski offers the following resolution and moves that it be adopted by the Subcommittee on Investigations and Review Committee on Public Works and Transportation—U.S. House of Representatives:

Whereas, The area involved in the most damage to farmland centers in the joining of the Forest River into the Red River of the North; and

Whereas, The affected farmers of the region from Oslo, Minnesota toward Drayton, North Dakota have taken it upon themselves to protect their land by building dykes along the Red River of the North; and

Whereas, Repeated requests from people along the Red River of the North have resulted in the meeting of September 30, 1978, at East Grand Forks, Minnesota; the purpose of which was to build a record for the Congress concerning the problems, the corrective measures under consideration, and whatever proposals may emerge; and

Whereas, A corrective plan was created in 1961, authorized by Congress, under the flood control law called P.L. 566 for the Forest River watershed district; and

Whereas, The Public Law 566 plan of the Middle-South Branch of the Forest River called for 1 multi-purpose dam called Matejek Dam, 2 additional large retention dams, and a floodway, to alleviate the influx of water into the Red River; and

Whereas, The plan called for the completion of the project within 5 years; and

Whereas, The plan was interrupted by a channelization of 25 plus miles upstream before the downstream reaches of the river were protected from flood damage; and

Whereas, The plan was changed by allowing the retention dams upstream to be converted to multi-purpose dams; and

Whereas, Only localized groups have been given the opportunity for input into the changes in the plan—the cost-benefit factors being manipulated; and

Whereas, The channelization upstream has resulted in farmers upstream having an opportunity to drain sub-standard land to the point of indiscriminately draining into the system; and

Whereas, In the interim, one dam, named Dam #4 has had to be relocated, delaying the project still further; and

Whereas, Completion of the flood control plan has been needlessly delayed because of inflation—the original plan calling for local funds to come from the whole county, now the flood-affected farmers have been threatened with local assessment in order to complete the integral "Floodway", and they are reluctant to do so; and

Whereas, The original plan has lost its effectiveness due to the fact that conditions were such that riparian owners downstream were each doing "their own thing" to protect themselves from run-off flood waters; and

Whereas, The multi-purpose dams upstream are negated by uncontrolled drainage behind them; and

Whereas, The existant state laws concerning illegal drains, illegal dykes along the tributaries, and obstructions in the main stem of the Forest River have not been enforced; therefore

*Be it resolved,* That the Investigations and Review Subcommittee on Public Works, in the interests of Federal, State, as well as local governments investigate the watershed plans of the SCS to determine whether their promised benefits are in actuality being achieved for riparian landowners.

*Be it resolved,* That the "natural" retention areas of the upper reaches of the Red River Valley be utilized to their full extent by converting larger multi-purpose dams to retarding dams in order to avoid the influx of run-off waters into the Red River which it is unable to accept.

*Be it resolved,* That the State of North Dakota by its State Water Commission, be required to enforce the statutes relating to indiscriminate drainage and indiscriminate dyking, not only along the main stem of the Red River of the North, but also its tributaries, in order to more effectively control the spring run-off which may result in international complications. At present, the local water districts are not conforming to the statutes which were meant for the protection of all.

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SUBMISSIONS BY ALFRED M. HAGEN, GRAND FORKS, N. DAK.

Gentlemen: I have been interested in flooding problems along the Red River for many years. And I have seen how the changes in the upper reaches of the valley have affected an increase in spring runoff water.

Our problem has stemmed from the widening and deepening of ditches and the contouring of fields to make runoff take place in a short time. Since 1945, there has been a concentrated effort at ditching. But there has been no control, such as sluice gates anywhere along the system to speak of.

In order to control the flooding in this valley it will be necessary to control field runoff at the source. Also existing river valleys should not be considered as storage areas because they have never functioned that way only to act as a canal for existing water from high ground.

It is necessary to hold water in the fields for an adequate period to guarantee the recharging of aquifers; this would also increase the subsurface moisture for an extended period time. Since our land is so flat the winds carry away much surface moisture in the spring and summer if there is not adequate rainfall.

By holding field water back and allowing only a percentage of runoff over a period of 3 weeks could possibly prevent drastic flooding. However, since flooding here is so drastic farmers in the immediate area should be assisted in dyking around their homes, outbuildings, and an adequate pasture area for animals. This could be effected by allowing the cost of such a dyke to be written off on taxes.

And in the event a farmer needed a loan for such work it should be done by some agency thru an interest free loan.

Respectively,

ALFRED M. HAGEN.

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Gentlemen: I am submitting the following correspondence to show how the building of a dam was pushed thru without an Environmental Statement even after it had been called for to answer specific questions.

The letters are as follows:

One. June 6, 1974, Bonnie Austin, requesting a statement from Neil Fuller.

Two. June 7, 1974, Neil M. Fuller, E.I.S. to be prepared before construction.

Three. July 15, 1974, John A. Green, Reg. Admin. U.S.&P.A., the impact statement must consider alternatives to development.

Four. Sept. 23, 1974, John A. Green, a reiteration that the S.C.S. would prepare a statement E.I.S.

5. Sept. 25, 1974, Harold O. Bullis, U.S. attorney, eminent domain law is a state (No. Dak.) law rather than Federal.

6. Oct. 8, 1974, land acquisition must be done according to Public Law 91-646 (this is Federal law) offer from Gov. Anthony Link.

7. Oct. 10, 1974, Mark Andrews, U.S. House of Rep's. He has to input.

8. Photo copy of conversation with Mrs. Severson sent to John Dwyer—Mark Andrews office points out the dam was for recreational purposes before law permitted this.

9. Sept. 16, 1975, William Murtagh, National Register request for information. I sent a second letter but received no reply.

10. Sept. 22, 1975, Steve Tanish, U.S.E.P.A., S.C.S. does not plan to modify original statement. (the original statement could not be found. It was located in the Federal Register) but it was a blanket statement. Phone conversation the

statement was not classed as an E.D.S. report. A new statement was needed. Later letter from S.C.S. refused to make statement.

11. When the condemnation proceedings were begun on Kenneth Ballentine property, I called the secretary of Judge Bakken and said that an environmental impact statement had not been filed before the proceedings and it was required by law. The case proceeded anyway. By the way, when I stepped into the clerks office and asked about the case someone asked if Depuy was handling the case I said yes, they said "well he has never lost a case." I thought that was strange anyone should make such a comment in that office.

Now, there has been a dam in that area before but because it was natural fill (native material) it washed out. The sand has an unusual shape and is portable in water.

When I took some 1/2 gallon jugs and filled them directly from springs feeding this river I found a 1/2 inch of sediment in the bottom jugs. Some material was heavy and led me to believe that there is a constant activity in the stream bed. And could pose a threat of possible collapse of the dam or cutting of a new channel by simple saturation action.

My own opinion on this matter is that there is no desire to sustain the principles of justice on which this country was founded and dedicated the actions of the individuals I contacted left me with the impression that their own personal self interests were more important than ethics or justice.

Respectfully,

ALFRED HAGEN.

NORTH DAKOTA STATE PLANNING DIVISION,  
Bismarck, N. Dak., June 6, 1974.

Mr. ALFRED MARSHALL HAGEN,  
Grand Forks, N. Dak.

DEAR MR. HAGEN: Regarding your request for the Environmental Impact Statement concerning the proposed dam in Elkmount Township, Grand Forks County of the South Branch of the Forest River, we have not received an EIS on the project.

Because the project will probably be done by the Soil Conservation Service, I am forwarding your request to Mr. Neil Fuller, Contract Specialist, Soil Conservation Service, U.S. Department of Agriculture, P.O. Box 1458, Bismarck, North Dakota, 58501. By copy of this letter and pursuant to a telephone request, I am asking him to respond to your request.

If we can assist further or if you have any questions, please contact this office.

Sincerely yours,

BONNIE E. AUSTIN,  
Associate Planner.

U.S. DEPARTMENT OF AGRICULTURE,  
SOIL CONSERVATION SERVICE,  
Bismarck, N. Dak., June 7, 1974.

ALFRED MARSHALL HAGEN,  
Grand Forks, N. Dak.

DEAR MR. HAGEN: The Soil Conservation Service has not prepared an Environmental Impact Statement for the dam you referred to in your letter; however, one will be prepared prior to construction and a copy will be furnished to you at that time.

Sincerely,

NEIL M. FULLER,  
Contract Specialist.

U.S. ENVIRONMENTAL PROTECTION AGENCY,  
REGION VIII,  
Denver, Colo., July 15, 1974.

Re SFE.

Mr. ALFRED MARSHALL HAGEN,  
Grand Forks, N. Dak.

DEAR MR. HAGEN: This is in response to your letter of June 8, 1974 concerning the proposed construction of a dam in Grand Forks County.

We contacted the State office of the Soil Conservation Service (SCS) in Bismarck concerning this project. It is our understanding that the Walsh County

Watershed Project is intended to provide flood control and recreational benefits to residents in the area. The SCS indicated that an environmental impact statement should be available by late fall of this year. I suggest you contact that office for additional information:

Mr. Neal A. McClure  
Assistant State Conservationist  
U.S. Department of Agriculture  
Soil Conservation Service  
P.O. Box 1458  
Bismarck, North Dakota 58501

The impact statement for this project must consider various alternatives to development. Thus, questions you have raised concerning land acquisition impacts should be addressed in the statement. When the impact statement is released by the SCS, EPA will review it. We would be pleased to discuss this project with you at any time. Thank you for expressing your interests and concerns to us.

Sincerely yours,

JOHN A. GREEN,  
*Regional Administrator.*

U.S. ENVIRONMENTAL PROTECTION AGENCY,  
REGION VIII,  
*Denver, Colo., Sept. 23, 1974.*

Mr. ALFRED MARSHALL HAGEN,  
*Grand Forks, N. Dak.*

DEAR MR. HAGEN: Thank you for your recent letters concerning land acquisition activities connected with the proposed Walsh County Watershed Project.

As I mentioned in my letter of July 15, the Soil Conservation Service (SCS) intends to prepare an environmental impact statement for this project. Activities of the Walsh County Water Board in anticipation of SCS approval of this project are not under the control of EPA. Since SCS has informed us of their intention to release an impact statement for this project, I'm afraid there is little we can do for you until the statement is available for our review. I suggest you contact the SCS office in Bismarck to find out exactly when the impact statement will be available, and to what extent SCS can control pre-construction land acquisition activities.

For your information, I am enclosing a copy of the SCS regulations for preparing environmental impact statements. These were published in the Federal Register on June 3, 1974.

Sincerely yours,

JOHN A. GREEN,  
*Regional Administrator.*

Enclosure.

U.S. DEPARTMENT OF JUSTICE,  
U.S. ATTORNEY,  
DISTRICT OF NORTH DAKOTA,  
*Fargo, N. Dak., September 25, 1974.*

Mr. ALFRED MARSHALL HAGEN,  
*Grand Forks, N. Dak.*

DEAR MR. HAGEN: This is in response to your letter of September 14, 1974 concerning a proposed dam on the South Branch of the Forest River. I have been out of my office since your letter arrived and consequently was unable to answer it until today.

You indicated that this project is Federally funded and thus requires an Environmental Impact Statement before action. I am not familiar with this particular project and am not in a position to know whether or not that statement is correct. However, I would assume that if the Regional Director of the Environmental Protection Agency has given you such information, that it is correct.

The question you posed is how could a group use Eminent Domain when Federal requirements for an impact statement have not been met. The acquisition of property by Eminent Domain is apparently being done under North Dakota law rather than Federal law. I say this because if it were a Federally sponsored

project, our office would be involved in any condemnation proceedings that were being undertaken. This we are not. If prescribed State procedures are not being followed, I don't believe the condemnation actions will be successful—particularly if any objection is raised.

When Congress enacted legislation requiring Environmental Impact Statements on major Federal projects, it was not contemplated that this office would police Federal projects to see that all requirements were followed. This would be an impossible task for an office such as mine. The purpose, as I understand it, was to give the citizenry an opportunity to look at these projects and to institute action if proper procedures were not followed. From the number of court actions that have been instituted throughout the country since the enactment of this legislation, it would appear that that purpose is being effectuated.

As I stated, my office is not acquainted with what is being done in regard to this particular project. I will be happy to do my best to answer them.

Very truly yours,

HAROLD O. BULLIS,  
*U.S. Attorney.*

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STATE OF NORTH DAKOTA,  
EXECUTIVE OFFICE,  
*Bismarck, N. Dak., October 8, 1974.*

Mr. ALFRED HAGEN,  
*Grand Forks, N. Dak.*

DEAR Mr. HAGEN: The Forest River Watershed Project was authorized and endorsed prior to my tenure as Governor. However, in order to respond to your letter of inquiry regarding this project, I requested the State Water Commission staff to conduct some research on the history of the project.

As stated in your letter, watershed projects require the endorsement of the Governor of the state. This was provided by former Governor Guy on July 15, 1970. The project was also endorsed by the State Water Commission.

The specific project for which you express concern is known as damsite No. 4 or Kratochvil Dam.

The Environmental Impact Statement on this project has been filed by the Soil Conservation Service with the Environmental Protection Agency in accordance with the law.

Land acquisition for watershed projects is the local sponsor's obligation who in this case is the Walsh County Water Management District. Land acquisition for such projects must be done in accordance with Public Law 91-646, and I have been advised that all land negotiations were done in accordance with the public law. Apparently, eminent domain proceedings were exercised with one landowner and this case has now been settled by the Court. All other land negotiations were amiable.

I hope the foregoing has answered your questions satisfactorily.

Sincerely yours,

ARTHUR A. LINK,  
*Governor of North Dakota.*

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CONGRESS OF THE UNITED STATES,  
HOUSE OF REPRESENTATIVES,  
*Washington, D.C., October 10, 1974.*

Mr. ALFRED HAGEN,  
*Grand Forks, N. Dak.*

DEAR Mr. HAGEN: Thank you very much for your recent letter concerning the proposed dam by the Walsh County Water Management Board.

I have read your latest letter with a great deal of interest and certainly appreciate your concern. This is an unfortunate problem but as I told you before this is a private matter in which I am not able to have any input.

Again thank you for your letter.

Best personal regards.

Sincerely,

MARK ANDREWS,  
*Congressman for North Dakota.*

U.S. DEPARTMENT OF THE INTERIOR,  
NATIONAL PARK SERVICE,  
Washington, D.C., September 16, 1975.

Mr. ALFRED MARSHALL HAGEN,  
Grand Forks, N. Dak.

DEAR MR. HAGEN: Thank you for your recent letter concerning the possible destruction of archeological sites by a proposed dam project.

Under Executive Order 11593 and section 800.4(a) (2) of the procedures of the Advisory Council on Historic Preservation, Federal agencies are directed to identify all cultural resources in the area of a proposed undertaking at the earliest stage of planning or consideration, and to request that the Secretary of the Interior determine their eligibility for inclusion in the National Register.

If this project is a federally funded or licensed project, we would appreciate your sending our office some information concerning the project. Please include the name of the project, the Federal agency involved, and the extent and location of the project. With this information our office will be able to determine if the Federal agency involved is in compliance with Federal preservation legislation.

We appreciate your interest in historic preservation.

Sincerely yours,

WILLIAM J. MURTAGH,  
Keeper of the National Register.

U.S. ENVIRONMENTAL PROTECTION AGENCY,  
ROCKY MOUNTAIN-PRAIRIE REGION,  
Denver, Colo., September 22, 1975.

MR. HAGEN: Enclosed is a copy of SCS's response to our letter of August 22. As the letter indicates, SCS does not intend to modify their original impact statement.

Please call if you need additional information.

STEVE LANICH.

U.S. DEPARTMENT OF AGRICULTURE,  
SOIL CONSERVATION SERVICE,  
Bismarck, N. Dak., September 12, 1975.

Mr. JOHN A. GREEN,  
Regional Administrator,  
U.S. Environmental Protection Agency,  
Denver, Colo.

DEAR MR. GREEN: This is in reply to your letter of August 22, 1975, concerning the status of the Middle-South Branch Forest River Watershed.

The watershed work plan was initially completed April 1961. Authorization for construction was provided August 15, 1961. Four modifications of the work plan involving construction elements to be installed have been considered in providing a work plan that contains three multiple purpose dams, 25.8 miles of channel work, and 3.6 mile long floodway, and 41,174 acres of land needing conservation treatment.

The fourth modification passed by the Committee on Public Works of the Senate on April 19, 1971, contains the environmental statement. Work plan objectives have not changed since this document was passed.

Land rights have been acquired for all construction elements except the 3.6 mile floodway. The first contract was Dam No. 6 completed 9/24/64. Dam No. 1 was installed 8/19/66. Currently construction is proceeding on the 25.8 miles of channel and is 54 percent complete. A contract award was made to begin installation of Dam No. 4 on 8/21/75.

The sponsors and the SCS planning effort has always worked closely with the State Game and Fish Department and U.S. Fish and Wildlife Service as well as other concerned people. No change or revision in the work plan or environmental statement is contemplated.

The local sponsors acquire all land rights and administer the construction contract. Plans are to complete the project in 1978.

If you have any further questions concerning this project please contact me.

Sincerely,

ALLEN L. FISK,  
*State Ccnservationist.*

Mr. STANGELAND. We thank you for coming and observing. We hope that this is the continuation of an effort to provide a solution to a real problem on the Red River of the North here both for the farmers in the down areas and for the cities and the towns.

We thank you very much.

[Whereupon, at 3:35 p.m., the Subcommittee adjourned.]

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