

MINUTES

**North Dakota State Water Commission
Minot, North Dakota**

December 8, 1993

The North Dakota State Water Commission held a meeting at the International Inn in Minot, North Dakota, on December 8, 1993. Commissioner-Chairman, Jack Olin, called the meeting to order at 8:30 AM, and requested State Engineer and Chief Engineer-Secretary, David Sprynczynatyk, to call the roll. The Chairman declared a quorum was present.

MEMBERS PRESENT:

Sarah Vogel, Commissioner, Department of Agriculture, Bismarck
Mike Ames, Member from Williston
Florenz Bjornson, Member from West Fargo
Judith DeWitz, Member from Tappen
Elmer Hillesland, Member from Grand Forks
Jack Olin, Member from Dickinson
Harley Swenson, Member from Bismarck
Robert Thompson, Member from Page
David Sprynczynatyk, State Engineer and Chief Engineer-Secretary, North Dakota State Water Commission, Bismarck

MEMBER ABSENT:

Governor Edward T. Schafer

OTHERS PRESENT:

State Water Commission Staff Members
Approximately 40 people in attendance interested in agenda items
(The attendance register is on file with the official minutes.)

The meeting was recorded to assist in compilation of the minutes.

CONSIDERATION OF AGENDA

There being no additional items for the agenda, the Chairman declared the agenda approved and requested Secretary Sprynczynatyk to present the agenda.

**CONSIDERATION OF MINUTES
OF OCTOBER 26, 1993 MEETING -
APPROVED**

The minutes of the October 26, 1993, State Water Commission meeting were approved by the following motion:

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It was moved by Commissioner DeWitz, seconded by Commissioner Swenson, and unanimously carried, that the minutes of the October 26, 1993, State Water Commission meeting be approved as circulated.

CONSIDERATION OF MINUTES
OF NOVEMBER 19, 1993 TELEPHONE
CONFERENCE CALL MEETING -
APPROVED

The minutes of the November 19, 1993, State Water Commission telephone conference call meeting were approved by the following motion:

It was moved by Commissioner Bjornson, seconded by Commissioner Thompson, and unanimously carried, that the minutes of the November 19, 1993, State Water Commission telephone conference call meeting be approved as circulated.

AGENCY FINANCIAL STATEMENT -
AGENCY OPERATIONS

Charles Rydell, Assistant State Engineer, presented and discussed the Program Budget Expenditures, dated November 18, 1993, reflecting 16.7 percent of the 1993-1995 biennium. **SEE APPENDIX "A"**.

AGENCY FINANCIAL STATEMENT -
CONTRACT FUND

Charles Rydell reviewed and discussed the Contract Fund expenditures for the 1993-1995 biennium. **SEE APPENDIX "B"**.

NORTHWEST AREA WATER
SUPPLY PROJECT -
PROJECT UPDATE; AND
CONSIDERATION OF OPTION
OF TREATMENT OF EAST
NAWS WATER SUPPLY
(SWC Project No. 237-4)

James Lennington, Northwest Area Water Supply Project Coordinator, provided a status report on the Northwest Area Water Supply Project. Work on the pre-final design is progressing on schedule. Within the next several weeks, the engineering consultant anticipates completion of a draft technical memorandum on the evaluation of alternative groundwater sources; a draft Environmental Assessment Report; and a report outlining engineering criteria to be used in the pre-final design.

Mr. Lennington briefed the Commission members on a meeting of the NAWS Advisory Committee held on November 18, 1993. The committee considered the location

of treatment for the East NAWS, an eligibility policy for the pre-final design, and the institutional arrangement for the management of NAWS after construction.

Mr. Lennington stated that the NAWS engineering team presented a memorandum, attached hereto as **APPENDIX "C"**, addressing five alternatives for the location of the treatment plant serving the eastern portion of the NAWS project area for the Advisory Committee's consideration. The alternatives were explained in detail and are as follows:

- 1) Option 1: Treatment of the total supply at Lake Audubon
- 2) Option 2: Option 1, with softening
- 3) Option 3: Treatment of the total supply at Minot, with a pipeline conveying treated water back to the south and west
- 4) Option 4: Option 3, with a satellite treatment plant at Parshall
- 5) Option 5: Phased development of treatment at Lake Audubon to supply half of Minot's needs and a total supply to the other communities in the eastern portion of NAWS project

After considering and discussing the alternatives, the NAWS Advisory Committee voted unanimously to recommend to the State Water Commission either Option 3 or Option 4. Mr. Lennington explained the reasons for this decision were the cost advantages and the utilization of Minot's existing groundwater resources.

Secretary Sprynczynatyk stated that if the State Water Commission approves of pursuing locating the treatment plant at Minot to serve the eastern portion of the NAWS project area, he will present the Commission's option decision to the US-Canada Joint Technical Committee and request a determination whether an interbasin transfer of raw water in the pipeline to the Minot treatment plant is acceptable to the Canadians.

It was the recommendation of the State Engineer that the Commission proceed with development of the option of treatment of the east NAWS water supply at Minot, with the possibility of either Option 3 or Option 4 as outlined in the memorandum.

Jim Mahady, Montgomery Watson, provided additional information relative to the alternatives.

Mr. Mahady responded to water quality concerns expressed by Commissioner Ames in the proposal to blend Lake Audubon water with ground water at the Minot treatment plant under Option 3. Commissioner Ames indicated there has been strong interest expressed by both Minot and Parshall to utilize their existing water treatment plants, although there are substantial debts against both treatment plants. Commissioner Ames said it is important that the Commission consider the needs and the best interests of the entire project area, as well as costs and the future of the project, when making project decisions.

The Commission members voiced concerns relative to significant costs and delays that could be incurred in Option 3 or Option 4 to address the interbasin transfer issue concerning the possible transfer and introduction of unwanted fish species, parasites, and/or other microbial organisms from the Missouri River Basin into the Hudson Bay watershed. Secretary Sprynczynatyk explained that he did not believe there would be a significant added cost nor a delay in the project, since he believes the US-Canada Joint Technical Committee can address the issue over the next six months allowing the final report of the NAWS pre-final design report to reflect the acceptance or rejection of the proposal by Canada.

It was moved by Commissioner Swenson and seconded by Commissioner Vogel that the State Water Commission approve proceeding with development of the option of treatment of the east NAWS water supply at Minot, with the possibility of either Option 3 or Option 4 as outlined in the memorandum attached hereto as APPENDIX "C". Periodic reports are to be provided to the Commission members on this decision.

Commissioners Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. Commissioner Ames voted nay. The recorded vote was 7 ayes; 1 nay. The Chairman declared the motion carried.

**NORTHWEST AREA WATER
SUPPLY PROJECT -
SWC APPROVAL INITIATING
PROCESS OF PROMULGATING
ADMINISTRATIVE RULES FOR
NAWS PROJECT
(SWC Project No. 237-4)**

On November 18, 1993, the Northwest Area Water Supply Advisory Committee considered a draft policy statement regarding the project purpose and eligibility, and voted to submit the policy statement to the State Water Commission for

consideration and as a guide in promulgating administrative rules concerning the NAWS project.

James Lennington presented and explained the draft policy statement for the Northwest Area Water Supply Project to the State Water Commission for its consideration, attached hereto as **APPENDIX "D"**.

Mr. Lennington explained that on the advice of the Commission's legal counsel, the Advisory Committee voted to recommend that the Commission promulgate administrative rules concerning eligibility for participation in the NAWS project.

Mr. Lennington made reference to a request to be included in the pre-final design for the project from Lyle Palmer, owner of Palmer's Mobile Home Park in Ruthville, between Minot and the Minot Air Force Base. The park contains about 70 mobile homes and uses an average of 300,000 gallons of water each month. According to Mr. Palmer, the park used to get its water from a well, but is now a customer of North Prairie Rural Water Association, which gets its water from the City of Minot. The Commission staff representatives stated on a number of occasions that it was not their intent to compete with rural water associations or cities and that they would not interfere in existing relationships between water suppliers and their customers. It was also stated that NAWS was intended to be a water wholesale delivery system and not a distribution system, and that distribution to individual parties would be through rural water associations and cities. Mr. Lennington said these intentions were understood by all members of the Advisory Committee, local sponsors of the project, and rural water associations in the area.

Mr. Palmer disagrees with this policy and submitted an agreement of intent to the Commission. The Commission returned his agreement of intent and informed him that he was ineligible to participate in the pre-final design. Mr. Palmer appealed the Commission's decision, and the Advisory Committee subsequently voted unanimously to reject his appeal.

Mr. Palmer appeared before the Commission to express concerns regarding the Commission's promulgating administrative rules. Mr. Palmer stated that he didn't think it was the business of the State Water Commission to support rural water associations, and threatened possible litigation.

Commissioner Vogel explained to Mr. Palmer that part of the rule-making process would be a public comment period during which time he would have an opportunity to express his views.

It was the recommendation of the State Engineer that the State Water Commission approve the draft policy statement for the Northwest Area Water Supply Project and that the Commission initiate the process of promulgating administrative rules for the NAWS project using the policy statement as a guide.

It was moved by Commissioner Ames and seconded by Commissioner Bjornson that the State Water Commission approve the draft policy statement for the Northwest Area Water Supply Project and the State Water Commission initiate the process of promulgating administrative rules for the project using the policy statement as a guide.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**SOUTHWEST PIPELINE PROJECT -
INTRODUCTION OF ASSISTANT
PROJECT MANAGER FOR PROJECT,
PINKIE EVANS-CURRY
(SWC Project No. 1736)**

Secretary Sprynczynatyk introduced Pinkie Evans-Curry, Assistant Manager of the Southwest Pipeline Project. Mrs. Evans-Curry's employment with the State Water Commission

was effective December 7, 1993. She will be working with the Project Manager for approximately 18 months in Bismarck to develop the agreement required to transition the operation and maintenance of the Southwest Pipeline Project from the State Water Commission to the Southwest Water Authority. Near the end of that period, it is expected she will transfer to Dickinson as the Project Manager for the Southwest Water Authority for the project.

**SOUTHWEST PIPELINE PROJECT -
PROJECT UPDATE AND
CONTRACT/CONSTRUCTION STATUS
(SWC Project No. 1736)**

Tim Fay, Manger of the Southwest Pipeline Project, provided a status report on the following project contracts:

Contracts 2-3E and 2-3F - Transmission Lines from Dickinson to Highway 21: These contracts have both had pre-final inspections and are awaiting the completion of punch list items before final acceptance.

Contract 2-6A - Transmission Piping from Highway 22 to Mott: The materials testing by the pipe supplier is still in progress and the problem with the pipe quality is still unresolved.

Contract 2-7B - Transmission Piping from Davis Buttes to Richardton: The pipe for this contract is installed and reclamation of the right-of-way is nearly complete. The work at present is directed towards completion of the pressure test. Upon completion of the pressure test, a pre-final inspection will be scheduled.

Contract 2-7C - Transmission Piping from Taylor North: On November 19, 1993, the State Water Commission and the Bureau of Reclamation approved award of this contract to BRB, Topeka, Kansas. The contract is currently being awarded to them. The first activities will consist of providing the proper insurance documents and other paperwork.

Contract 3-1B - Second Zap Reservoir: Construction on this contract is complete, with the exception of minor clean-up items. The major outstanding items at this time are paperwork, including operation and maintenance manuals, lien waivers and record drawings.

Contract 4-3 - Dickinson Pump Station: The clearwell is complete and backfilling has been done. Work now consists of erection of the steel building.

Contract 5-3 - New England Reservoir; and Contract 5-13 - Davis Buttes Reservoir: Construction of the tanks and site piping are complete. Painting was interrupted by cold weather and some touch-up painting remains to be done in the spring. The contractor has requested permission to delay hydrostatic testing until the Dickinson pump station is complete. This has two advantages: it allows the tank testing to be combined with the pump tests, and it delays the initiation of the one-year bonded warranty until just before the tank is placed in service. This request has been granted.

At the October 26, 1993 meeting, the State Water Commission approved the revised Phased Development Plan for future rural water service area development of the Southwest Pipeline Project. Mr. Fay provided a progress report, and indicated plans were submitted to the Bureau of Reclamation on November 26, 1993, for the first rural water contract, Contract 7-1B. Following a 30-day review period, the contract will be advertised, with bid opening in late January, 1994.

Sign-up for the second rural water contract, Contract 7-1C, will be completed in February, 1994. The design plans will be submitted to the Bureau of Reclamation for review in August.

**SOUTHWEST PIPELINE PROJECT -
CONSIDERATION AND APPROVAL
OF SOLE-SOURCE SERVICE
AMENDMENT TO WATER SERVICE
CONTRACT FOR CITY OF DODGE
(SWC Project No. 1736)**

Tim Fay presented a request for the Commission's consideration from the City of Dodge for a sole-source amendment to its water service contract. Mr. Fay explained this is the type of service in which the

city agrees to purchase all of its water from the pipeline in return for waiving the minimum purchase requirements in the contract.

It was the recommendation of the State Engineer that the State Water Commission approve the amendment providing sole-source service to the City of Dodge.

It was moved by Commissioner Vogel and seconded by Commissioner Ames that the State Water Commission approve the sole-source service amendment to the water service contract for the City of Dodge.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**GARRISON DIVERSION PROJECT -
PROJECT UPDATE
(SWC Project No. 237)**

Warren Jamison, Manager of the Garrison Diversion Conservancy District, provided a status report on the Garrison Diversion Project.

Mr. Jamison indicated that Bureau of Reclamation Commissioner, Daniel Beard, has agreed to work on new directions for the Garrison Project and has offered to take the lead role to bring the responsible parties to the table for this effort and to front-end it with the national environmental community. A meeting has been scheduled for December 17, 1993, in Bismarck.

**GARRISON DIVERSION PROJECT -
MR&I WATER SUPPLY PROGRAM UPDATE
(SWC Project No. 237-3)**

Jeffrey Mattern, MR&I Water Supply Program Coordinator, provided the following 1993 construction status report:

Garrison Rural Water Project: The project will provide water service to 270 users and Fort Stevenson State Park. Water service is being provided to most users with some work on pumps and controls still to be completed.

Missouri West Rural Water, Phase I: Phase I of the project has 384 rural water users and will provide bulk water service to New Salem, Crown Butte Subdivision, and Riverview Heights. The pre-final design inspection has been completed on the service area north of Mandan and most users are receiving water. Construction progress on the service area to New Salem has been substantially delayed due to the weather, but water service was available to some users this fall. The two storage reservoirs have been completed.

Ramsey County Rural Water Project, Phase II: Construction of one groundwater well and 18 miles of the 23 miles of water transmission pipeline have been completed on Phase II of the Ramsey County Rural Water Project. The contractor will continue to install pipe as weather permits. If the pipeline can be pressure tested and chlorinated, it will be used this year.

Stanley Water Supply Project: The transmission pipeline for the Stanley Water Supply Project has been installed. A portion of the pipeline has developed several leaks and the contractor is working on the repairs. The water storage reservoir is complete, but some components of the control system needs to be installed. Water service may be delayed and, as a result, the city may request a delay in making their loan payments to the State Water Commission.

Commissioner Thompson requested the Commission be provided with additional information relative to projects that have been approved for MR&I funding, particularly those projects that are being constructed in phases; water rate information for cities and rural water systems; and general information on the future of the MR&I program.

**GARRISON DIVERSION PROJECT -
MR&I WATER SUPPLY PROGRAM
FISCAL YEAR 1994 FUNDING
(SWC Project No. 237-3)**

The Garrison Diversion Unit federal appropriation for Fiscal Year 1994 is estimated to be \$32 million, which includes \$14,550,000 for the MR&I Water Supply Program. In addition, \$1,352,482 from Fiscal Year 1993 funding is available for the MR&I Program, bringing the total funds available for 1994 to \$15,902,482. At the October 26, 1993 meeting, the State Water Commission approved the following projects for funding in Fiscal Year 1994 pending receiving this level of funding:

Langdon Water Treatment	\$ 265,533
Grand Forks Water Treatment	944,611
Southwest Pipeline Project	7,275,000
Dickey Rural Water	3,380,000
Glenfield Water Supply	146,250
Hannaford Water Supply	150,800
Fargo Water Supply	3,502,070
Feasibility Studies	25,000
Administration	166,500
Unallocated Funding	<u>46,718</u>

\$15,902,482

**GARRISON DIVERSION PROJECT -
MR&I PRIORITY CRITERIA
REVIEW COMMITTEE REPORT
(SWC Project No. 237-3)**

The MR&I Priority Criteria Review Committee met on November 4, 1993, and presented the following recommendations for the Commission's consideration:

- 1) The current priority ranking system should be used for determining the projects to be funded in Fiscal Year 1994.
- 2) The priority ranking system should be updated as soon as possible, based on further review for Fiscal Year 1995 funding.
- 3) Administrative rules should be drafted for the MR&I Water Supply Program.
- 4) The MR&I applicants should be notified that a review of the MR&I priority criteria is being conducted and that it will likely result in changes in the priority system starting with Fiscal Year 1995 funding.

Mr. Mattern indicated that the MR&I Priority Criteria Review Committee will continue to review the priority ranking system and a recommendation will be presented for the Commission's consideration at a future meeting.

**GARRISON DIVERSION PROJECT -
MR&I WATER SUPPLY PROGRAM
DRAFT ADMINISTRATION RULES
(SWC Project No. 237-3)**

Jeffrey Mattern presented and discussed draft administrative rules for the MR&I Water Supply Program. He explained that the rules are based on the current MR&I program process. The rules address the process for allocating funds and only reference a priority ranking system, which would allow the Commission the opportunity to periodically review the priority criteria. The draft MR&I Water Supply Program administrative rules are attached hereto as **APPENDIX "E"**.

It was the recommendation of the State Engineer that the draft administrative rules for the MR&I Water Supply Program be considered and adopted by the Commission, and that the hearing process on the administrative rules begin as soon as possible.

It was moved by Commissioner Vogel and seconded by Commissioner DeWitz that the State Water Commission adopt the MR&I Water Supply Program draft administrative rules, and that the hearing process on the administrative rules begin as soon as possible.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**CONSIDERATION AND APPROVAL
OF REQUEST FROM TRAILL COUNTY
WATER RESOURCE DISTRICT FOR
COST SHARING ON TRAILL COUNTY,
NELSON DRAIN #28
(SWC Project No. 1245)**

A request was presented from the Traill County Water Resource District for the Commission's consideration to cost share in the reconstruction of the Nelson Drain #28 project.

Dwight Comfort, State Water Commission's Water Development Division, presented the request. The project is located in Sections 25, 28, 29, 30, 33, 34 and 35, Township 145 North, Range 49 West, Traill County. The drain permit was approved on September 7, 1993 by the District. Mr. Comfort explained because the project was not of interdistrict or statewide significance and no wetlands will be drained by the project, the board approval constituted a permit to construct the drain. The purpose of the drain is to remove floodwaters from cropland. The proposed project work consists of resloping a portion of the drain channel and re-dimensioning the 1920 era drain. The north branch and the outlet drain are the areas to be redone.

The estimated project costs are \$131,566, of which \$94,066 would normally be considered eligible for cost sharing. The State Water Commission's cost share would be 40 percent of the eligible costs, totalling \$37,627.

It was the recommendation of the State Engineer that the State Water Commission approve 40 percent of the eligible costs on Nelson Drain #28, not to exceed \$37,627 from the Contract Fund, contingent upon the availability of funds.

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It was moved by Commissioner Thompson and seconded by Commissioner Hillesland that the State Water Commission approve cost sharing of 40 percent of the eligible costs, not to exceed \$37,627 from the Contract Fund, for the Nelson Drain #28 reconstruction project, in Traill County. This motion is contingent upon the availability of funds.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**CONSIDERATION AND APPROVAL
OF REQUEST FROM RICHLAND
COUNTY WATER RESOURCE DISTRICT
FOR COST SHARING FOR LATERAL
C2 OF DRAIN NO. 72
(SWC Project No. 1545)**

A request was presented from the Richland County Water Resource District for the Commission's consideration to cost share for construction of a lateral to Lateral C2 to Drain No. 72.

Dwight Comfort presented the project, which is located in Sections 23 and 26, Township 134 North, Range 50 West. All of the land contributing to this lateral was assessed to Drain No. 72 in 1981, a hearing was held for the construction of the drain, and a drainage permit was approved for the entire drainage area. The proposed lateral will not drain any existing wetlands and it has been determined that the project is not of interdistrict or statewide significance. Drain permit No. 2676 was approved by the Richland County Water Resource District and constitutes a permit to drain. The project purpose is to remove water from cropland.

The estimated project cost is \$29,502, not including right-of-way. Of this amount, \$25,042 would normally be considered eligible for cost sharing. The State Water Commission's share would be 40 percent of the eligible costs, totalling \$10,017.

It was the recommendation of the State Engineer that the State Water Commission approve 40 percent of the eligible costs, not to exceed \$10,017 from the Contract Fund, for the construction of a lateral to Lateral C2 to Drain No. 72 in Richland County. Approval of the request is contingent upon the availability of funds.

It was moved by Commissioner Vogel and seconded by Commissioner Bjornson that the State Water Commission approve cost sharing of 40 percent of the eligible costs, not to exceed \$10,017 from the Contract Fund, for the Lateral C2 to Drain No. 72 in Richland County. This motion is contingent upon the availability of funds.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**SHEYENNE RIVER FLOOD CONTROL -
PROJECT UPDATE
(SWC Project No. 300)**

Dale Frink provided the Commission members with background information on the Sheyenne River Flood Control Project.

One of the authorized units of the project is the proposed Baldhill Dam flood control pool raise. A meeting was held with the Corps of Engineers on September 2, 1993 regarding this issue which addressed the real estate requirements, the effects of the 1993 summer flood, and the requirements of a non-federal sponsor.

At the October 26, 1993 meeting, the State Water Commission passed a motion of general support for further engineering studies for the proposed Baldhill Dam pool raise.

Mr. Frink indicated a meeting has been scheduled on December 14, 1993, in Valley City with the local officials to discuss the proposed Baldhill Dam flood control pool raise.

Mr. Frink reported that the Cooperative Project Agreement for the Baldhill Dam Safety Modifications has been approved by the Corps of Engineers at the Washington, DC level. It is anticipated that the agreement will be sent to the State Engineer soon and, after review, executed by the State Engineer.

**DEVILS LAKE STABILIZATION
PROJECT
(SWC Project No. 1712)**

Dale Frink reported that the agreement between the State Water Commission and the Corps of Engineers was executed on

October 6, 1993, for Phase I of the Devils Lake Feasibility Study. The \$273,000 study is scheduled for completion by November, 1994, with the main purpose to determine whether there is adequate federal interest for the Corps to do a feasibility study. Of this amount, approximately \$62,500 will be required from the allocation from the Contract Fund.

Mr. Frink said the US Geological Survey in Bismarck will complete the lake elevation frequency analysis for the study under contract with the State Water Commission. This will be part of the State Water Commission's contribution towards the overall study. The US Geological Survey began the study November 1, 1993, and the analysis will be completed by May, 1994. This input will be used to evaluate the frequency of damage that may result from high lake levels.

**MISSOURI RIVER UPDATE
(SWC Project No. 1392)**

Secretary Sprynczynatyk provided information on the snowpack conditions in the Missouri River Basin, indicating the current snowpack is about 75 percent of normal.

The Corps of Engineers is continuing its review of the Master Manual for the operations of the Missouri River Basin. Secretary Sprynczynatyk indicated that the Corps has again pushed back the deadline for completing the review of the Master Manual and making a decision until 1995 or 1996.

The Missouri River Basin Association has scheduled its next meeting for December 9, 1993 in Rapid City, South Dakota.

**GARRISON DIVERSION WETLANDS
TRUST - CONSIDERATION AND
APPROVAL OF ADDITIONAL \$3,300
FOR WETLANDS TRUST FOR 1993
(SWC Project No. 1826)**

Secretary Sprynczynatyk provided background information on the Wetlands Trust. In 1986, the Garrison Diversion Project was reformulated by the US Congress. Two new features of the project were the MR&I Water Supply Program and the Wetlands Trust. Both features are widespread programs benefitting much of the state.

The Wetlands Trust is a program that provides for the preservation, enhancement, restoration and management of wetlands and associated wildlife habitat in the state. Secretary Sprynczynatyk stated that the Wetlands Trust will operate off the interest from a trust fund that will eventually reach \$13.2 million. Of the \$13.2 million, \$12 million is to come from the federal government and \$1.2 million is to come from the state. He said, thus far, the federal government has contributed \$8.8 million and the state has contributed \$150,000 to the Trust, for a total of approximately \$9 million. The funds that have been contributed by the state through 1992 were provided by the State Game and Fish Department.

Secretary Sprynczynatyk indicated that in discussing the future state funding of the Wetlands Trust with the Commissioner of the Game and Fish Department and the Manager of the Garrison Diversion Conservancy District, it was agreed that the intent of the Trust was clearly for the state water development interests to commit to a long-term wildlife enhancement feature of the project. He said that although the State Game and Fish Department contributed the initial state funding for the Trust, it is not in a position to shoulder the state's financial commitment on its own, both for fiscal reasons as well as the fact that there is a view among some environmental organizations that the water interests should share some of the burden.

It was agreed that an equal sharing of future state contributions by the State Game and Fish Department, the Garrison Diversion Conservancy District and the State Water Commission to the Wetlands Trust would be appropriate. Considering the direct funding the State Water Commission has received for the Southwest Pipeline Project, Secretary Sprynczynatyk said this is especially true, because without the Garrison Diversion MR&I Program, water would still not be delivered to Dickinson.

The state has negotiated a payment schedule for the next 20 years. Secretary Sprynczynatyk said the payment schedule is based on a payment of 0.15 percent of the federal Garrison appropriation each year, with a minimum of \$30,000 this year, and indexed to increase 5 percent for each year thereafter. The maximum payment would be \$75,000 if the state were tremendously successful in getting annual appropriations for the project exceeding \$50 million.

A recommendation was made by the State Engineer to the State Water Commission at its April 6, 1993, meeting to approve the concept of cost sharing equally with the Garrison Diversion Conservancy District and the State Game and Fish Department for the annual state contribution for the Wetlands Trust. He said that recognizing the fact that the Commission cannot obligate itself beyond the current biennium, consideration will have to be given each biennium by the Commission to obligate itself for the biennium.

At the April 6, 1993 meeting, the State Water Commission approved the concept of cost sharing equally with the Garrison Diversion Conservancy District and the State Game and Fish Department for the annual state contribution for the Wetlands Trust; and that State Water Commission obligate \$10,000 for one-third of the state's Fiscal Year 1993 Wetlands Trust contribution, contingent upon an equal contribution by the Garrison Diversion Conservancy District and the State Game and Fish Department, and contingent upon the availability of funds.

Secretary Sprynczynatyk stated that his recommendation to the Commission at its April 6, 1993 meeting, was based on the assumption that the state's share for 1993 for the Wetlands Trust was \$30,000. In the formula agreed to by the three entities, the amount should have been \$42,000 for the state's share to the fund for 1993 based on a higher level of appropriation than expected. This would increase the amount for each entity to \$13,330, instead of \$10,000 which was approved by the Commission on April 6, 1993.

It was the recommendation of the State Engineer that the State Water Commission obligate an additional \$3,330 for its Fiscal Year 1993 Wetlands Trust contribution, for a total contribution of \$13,330. The Garrison Diversion Conservancy District and the State Game and Fish Department have approved this increase.

It was moved by Commissioner Hillesland and seconded by Commissioner Vogel that the State Water Commission obligate an additional \$3,330 from the Contract Fund for Fiscal Year 1993 Wetlands Trust contribution, contingent upon the availability of funds. The total Fiscal Year 1993 State Water Commission contribution will be increased to \$13,330.

Commissioners Ames, Bjornson, DeWitz, Hillesland, Olin, Swenson, Thompson, and Vogel voted aye. There were no nay votes. The Chairman declared the motion unanimously carried.

**U.S. V. SARGENT COUNTY LAWSUIT
(SWC Project No. 1222)**

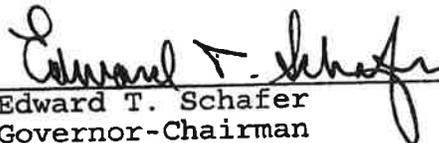
At the August 26, 1993 meeting, Secretary Sprynczynatyk provided the Commission members background information and a status report on the U.S. v. Sargent County lawsuit. The state has been involved in settlement negotiations regarding the case since April, 1992. The attorney for Sargent County, the State, and the US Justice Department agreed to pursue non-binding mediation. All parties agreed upon a mediator and a meeting was scheduled for December 2, 1993 in Minneapolis.

Secretary Sprynczynatyk informed the Commission members that the Sargent County Water Resource District made the decision, based on input from the people of the area, that there was no reason to go into the discussions on the basis of non-binding mediation and they were dissatisfied with what had been discussed up to this point. They felt that no compromise could be reached. Thus, the meeting with the mediator was canceled. The parties are preparing for trial, which has not been scheduled.

**STATE WATER COMMISSION
BIENNIAL REPORT FOR PERIOD
JULY 1, 1991 TO JUNE 30, 1993**

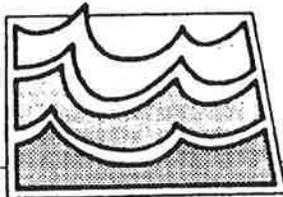
The State Water Commission biennial report for the period July 1, 1991 to June 30, 1993 was distributed to the Commission members. The report is required by law.

There being no further business to come before the State Water Commission, it was moved by Commissioner Thompson, seconded by Commissioner Ames, and unanimously carried, that the State Water Commission meeting adjourn at 11:30 AM.


Edward T. Schafer
Governor-Chairman

SEAL


David A. Sprinczyna
State Engineer and
Chief Engineer-Secretary



North Dakota State Water Commission

900 EAST BOULEVARD • BISMARCK, ND 58505-0850 • 701-224-2750 • FAX 701-224-3696

Meeting To Be Held At
International Inn - Executive Room
Minot, North Dakota

December 8, 1993
8:30 AM, Central Standard Time

AGENDA

- A. Roll Call
- B. Consideration of Agenda
- C. *Consideration of Minutes of Following Meetings:*
 - 1) *State Water Commission Meeting of October 26, 1993* **
 - 2) *State Water Commission Telephone Conference Call Meeting of November 19, 1993* **
- D. Financial Statement:
 - 1) Agency Operations **
 - 2) Contract Fund **
- E. *Northwest Area Water Supply Project* **
- F. Southwest Pipeline Project:
 - 1) Project Status Report **
 - 2) *Water Service Contracts* **
- G. Garrison Diversion Project:
 - 1) Project Update
 - 2) MR&I Water Supply Program Update **
 - 3) *MR&I Program Draft Rules* **
- H. *Consideration of Following Requests for Cost Sharing:*
 - 1) *Nelson Drain No. 28 - Traill County* **
 - 2) *Lateral CD to Drain No. 72 - Richland County* **
- I. Sheyenne River Flood Control Project
- J. Devils Lake Stabilization Update
- K. Missouri River Update
- L. Other Business
- M. Adjournment

(Over)

GOVERNOR EDWARD T. SCHAFFER
CHAIRMAN

DAVID A. SPRYNCZYNYATYK, P.E.
SECRETARY & STATE ENGINEER

AGENDA - PAGE 2

- ** MATERIAL PROVIDED IN BRIEFING BINDER
- ** *ITALICIZED, BOLD-FACED ITEMS REQUIRE SWC ACTION*

If auxiliary aids or services such as readers, signers, or Braille material is required, please contact the North Dakota State Water Commission, 900 East Boulevard, Bismarck, North Dakota 58505; or call (701) 224-4940 at least five (5) working days prior to the meeting. TDD telephone number is (701) 224-3696.

NORTH DAKOTA STATE WATER COMMISSION

REGISTER

ATTENDANCE AT State Water Commission Meeting

DATE December 8, 1993 PLACE Minot, ND

PROJECT NO. _____

Your Name	Your Address	Who do you Represent? (Or Occupation)
CHUCK RYDELL	900 E. Blvd BISMARCK	STATE WATER COMMISSION
Gene Sloan	Box 68 Farshall, N.D.	NAWS
Michael [unclear]	1100 INDUSTRIAL DRIVE BISMARCK	AMERICAN ENGINEERING.
Leyle Palmer	Rte #1 Box 57A Minot	SMALL BUSINESS
Dwight Comfort	9005 BLVD BISMARCK	SWC STAFF
Lyle [unclear]	2600 1st Ave N Minot	Mat'l's Testing Svc.
Michael Miller	P.O. Box 5054 Fargo,	Houston Engineering
HANK TRANGSRUP	P.O. Box 5054 FARGO	HOUSTON ENGINEERING
VERN FAHY	GDCD	Bismarck
Joe Harbeck	1957th 138 Ave SE Page, N.D.	Maple RWRB
Jim Lindert	BIS.	SE/SWC
Alan M. Walter	Minot	City of Minot
KEN SHOBE	Mo Hall	NAWS.
JOE BICHLER	BISMARCK	BARTLETT & WEST ENG.
Mary Thompson	Page	

NORTH DAKOTA STATE WATER COMMISSION
REGISTER

ATTENDANCE AT _____

DATE _____ PLACE _____

PROJECT NO. _____

Your Name	Your Address	Who do you Represent? (Or Occupation)
C. Decker	Davenport	N B W B
Jorgen Haugen	15207 66 R ST SE ME	Lead ND Redland C. W. R. D.
Michael Hille	1124 4th St SW	" "
Andy Kielb	172-12-74 ST SE	" "
Al Berg	10190 Co Rd 81 Junction N.D.	Redland Co Water Resource Board
Don Lee	Ransom County	Devils Lake ND
Stanley Vachal	Henry, N.D.	N.A.W.S Advisory Comm.
Robert Boche	Glyndon, MN	Trill & Redland CC R.C.D.B.
Jean Swales	Hillsboro	Steele Co Water Resource
Willie Mastel	Dickinson	S. W. Authority
Raymond Hansen	Blunder	Trill Water Resource
MEALE L. HUNTER	DEVILS LAKE MILNOR, N.D.	DEVILS LAKE COUNCIL DIST BOARD
Ron Tobin	Ransom Co	Ransom Co.
Jo Frey Napstern	Bismarck	SWC
Richard Pagan	Devils Lake	R. C. W. R. D.

NORTH DAKOTA STATE WATER COMMISSION

REGISTER

ATTENDANCE AT _____

DATE _____ PLACE _____

PROJECT NO. _____

Your Name	Your Address	Who do you Represent? (Or Occupation)
<i>Handwritten signature</i>	<i>Handwritten address</i>	<i>Handwritten organization</i>
DAVE KOLANZ	Bismarck	ND Rural Water Systems Assoc.
CHARLES VEIN	LAKAND FORKS	ADVANCED ENGINEERING
Larry Backstrand	Bismarck	SUC/SE
Neil McChesney	"	Burlington W.R.D.
Zed Helberg	Harwood	SE Cass W.R.D.
Ray Bieber	MOTT	H.C. WB
RONALD FRENCH	DEVILS LAKE	MIDWEST ENGINEERING

APPENDIX "A"

December 8, 1993 - 186

STATE WATER COMMISSION
PROGRAM BUDGET EXPENDITURES OCTOBER 31, 1993
BIENNIUM TIME 16.7%

FINANCIAL STATEMENT
SWC File #C5-1.4
11-18-1993

AGENCY PROGRAM	SALARIES & WAGES	INFORMATION SERVICES	OPERATING EXPENSE	EQUIPMENT	CONTRACTS	PROGRAM TOTAL
Administration						
Budget	\$633,590	\$75,792	\$293,465	\$3,000	\$0	\$1,005,847
Expended	\$97,838	\$12,285	\$43,273	\$62	\$0	\$153,458
Percent	15	16	15	2	0	15
Water Education						
Budget	\$624,858	\$0	\$142,264	\$12,750	\$25,000	\$804,872
Expended	\$94,674	\$0	\$6,526	\$89	\$0	\$101,289
Percent	15	0	5	0	0	13
Water Appropriation						
Budget	\$2,178,891	\$3,955	\$408,500	\$33,000	\$660,000	\$3,284,346
Expended	\$378,972	\$211	\$66,750	\$0	\$22,801	\$468,734
Percent	17	5	16	0	3	14
Water Development						
Budget	\$2,486,884	\$2,500	\$316,700	\$57,100	\$8,612,509	\$11,475,693
Expended	\$427,956	\$0	\$45,797	\$0	\$891,804	\$1,365,557
Percent	17	0	14	0	10	12
Atmospheric Resources						
Budget	\$384,452	\$11,500	\$1,700,701	\$10,500	\$3,050,000	\$5,157,153
Expended	\$74,458	\$535	\$278,612	\$0	\$448,566	\$802,171
Percent	19	5	16	0	15	16
Southwest Pipeline						
Budget	\$736,047	\$0	\$4,617,020	\$110,000	\$26,600,000	\$32,063,067
Expended	\$99,552	\$0	\$535,952	\$750	\$1,668,448	\$2,304,703
Percent	14	0	12	1	6	7
Contract Carryover						
Budget	\$0	\$0	\$0	\$0	\$500,000	\$500,000
Expended	\$0	\$0	\$0	\$0	\$240,571	\$240,571
Percent	0	0	0	0	48	48
Agency Totals						
Budget	\$7,044,722	\$93,747	\$7,478,650	\$226,350	\$39,447,509	\$54,290,978
Expended	\$1,173,450	\$13,031	\$976,911	\$901	\$3,272,190	\$5,436,483
Percent	17	14	13	0	8	10
FUNDING SOURCE:						
APPROPRIATION		EXPENDITURES	BALANCE	FEDERAL FUND REVENUE:		\$1,355,116
General Fund	\$5,532,084	\$569,117	\$4,962,967	SPECIAL FUND REVENUE:		\$2,253,594
Federal Fund	\$32,775,404	\$2,750,368	\$30,025,036	GENERAL FUND REVENUE:		\$705
Special Fund	\$15,983,490	\$2,116,998	\$13,866,492	TOTAL:		\$3,609,415
TOTAL	\$54,290,978	\$5,436,483	\$48,854,495			

FUNDING SOURCES

	RTF	General Funds	Federal Funds	Other Funds	Carryover	Totals
Inter Basin Transfer	\$0	\$25,000				\$25,000
Hydrologic Investigation	\$600,000			\$60,000		\$660,000
MR&I Program	\$3,106,110				\$500,000	\$3,606,110
EPA Wetlands Grant	\$0		\$272,194			\$272,194
NAWS	\$50,000					\$50,000
Devils Lake	\$500,000					\$500,000
Maple River Dam	\$326,610					\$326,610
Southwest Pipeline	\$1,525,678					\$1,525,678
General Projects	\$2,709,917			\$122,000		\$2,831,917
SWC Grants Totals	\$8,818,315	\$25,000	\$272,194	\$182,000	\$500,000	\$9,797,509

PROGRAM COMMITMENTS

APPROVD BY	SWC No.	NAME	Date Approved	Amount Approved	Payments	Balance
SWC	1828	Inter Basin Transfer		\$25,000	\$0	\$25,000
SWC	1395	Hydrologic Investigations USGS Data Collections: FY '94 & FY '95		\$660,000	\$93,127	\$566,873
		MR&I Program				
SWC	237-5	Ramsey Co Rural Water	9-15-92	\$936,759	\$234,064	\$702,695
SWC	237-27	Missouri West	9-15-92	\$1,473,949	\$576,393	\$897,556
SWC	237-36	Stanley	10-21-91	\$671,172	\$221,727	\$449,445
SWC	237-42	Garrison Rural Water	9-15-92	\$524,230	\$304,300	\$219,930
		MR&I SUBTOTAL		\$3,606,110	\$1,336,484	\$2,269,626
		EPA WETLANDS GRANT				
SWC	1489-5	Wetlands Education	9-15-92	\$53,824	\$41,348	\$12,476
		Technical Services		\$8,873	\$3,825	\$5,048
		Water Quality Analysis		\$14,325	\$0	\$14,325
		Grand Harbor		\$69,723	\$0	\$69,723
		Private Lands		\$26,955	\$15,635	\$11,320
		Devils Lake Basin		\$73,494	\$18,572	\$54,922
		Adopt-A-Pothole		\$25,000	\$25,000	\$0
		EPA SUBTOTAL		\$272,194	\$104,380	\$167,814
SWC	237-4	NAWS	2-04-92	\$50,000	\$0	\$50,000
SWC	416	Devils Lake Flood Control	2-04-92	\$438,000	\$10,400	\$427,600
SWC	1712	Frequency Analysis Devils Lake	10-26-93	\$62,000	\$0	\$62,000
		DEVILS LAKE SUBTOTAL		\$500,000	\$10,400	\$489,600

APPROVD BY	SWC No.	NAME	Date Approved	Amount Approved	Payments	Balance
SWC	1344	Maple River Flood Control	2-04-92	\$326,610	\$0	\$326,610
SWC	1736	Southwest Pipeline Project	2-04-92	\$1,525,678	\$0	\$1,525,678
GENERAL PROJECTS						
		Shortfall		\$228,326	\$0	\$228,326
SWC	237	Garrison Consultant (91-93)	8-22-91	\$7,842	\$7,842	\$0
SWC	1803	Belfield Flood Control (Stark)	12-20-91	\$38,800	\$0	\$38,800
SWC	1346	Mount Carmel (Cavalier)	4-02-92	\$4,395	\$0	\$4,395
SWC	662	Park River Snagging & Clearing (Walsh)	4-02-92	\$10,117	\$0	\$10,117
SWC	662	Park River #2 Snagging & Clearing (Walsh)	5-23-92	\$4,625	\$0	\$4,625
SWC	1496	Lake Elsie (Richland)	8-05-92	\$11,500	\$0	\$11,500
SWC	1292	Willow Road Floodway (Morton)	8-26-93	\$27,106	\$0	\$27,106
SWC	300	Baldhill Dam (Barnes)	9-15-92	\$184,000	\$0	\$184,000
SE	1311	Bingham CAT (Traill)	9-15-92	\$4,900	\$0	\$4,900
SE	1311	Elm CAT (Traill)	9-15-92	\$5,590	\$0	\$5,590
SWC	237	Garrison Coalition	12-09-92	\$10,000	\$0	\$10,000
SWC	1815-4	Shenandoah River Snagging & Clearing (Ransom)	12-09-92	\$4,836	\$0	\$4,836
SWC	1842-4	Wild Rice Snagging & Clearing (Richland)	12-09-92	\$725	\$0	\$725
SE	1751-H	Lower Forest River FP (Walsh)	1-26-93	\$5,200	\$0	\$5,200
SE	1751-C	Williston Floodplain (Williston)	2-24-93	\$1,000	\$1,000	\$0
SWC	1804	Grand Harbor #1 (Ramsey)	4-06-93	\$20,640	\$0	\$20,640
SWC	237	Garrison Consultant (93-95)	7-02-93	\$40,000	\$6,078	\$33,922
SWC	1832	Hammer - Sullivan (Ramsey)	7-02-93	\$21,231	\$0	\$21,231
SWC	1840	North Loma (Cavalier)	7-09-93	\$7,960	\$0	\$7,960
SE	543	North Lemmon Lake Dam (Adams)	7-08-93	\$9,933	\$0	\$9,933
SE	263	Patterson Lake Management (Stark)	8-24-93	\$500	\$500	\$0
SE	266	Tolna Dam (Nelson)	9-28-93	\$2,000	\$0	\$2,000
SWC	1588-1	International Coalition	10-26-93	\$10,000	\$5,000	\$5,000
SE	1392	Missouri River Master Manual Review	10-20-93	\$1,413	\$1,413	\$0
SWC	1865	Belfield Dam (Stark)	11-19-93	\$62,000	\$0	\$62,000
APPROVED GENERAL PROJECTS SUBTOTAL				\$496,313	\$21,833	\$474,480
Unallocated Balance (Total-Approved-Shortfall)				\$2,107,278		
SWC GRANTS TOTALS				\$9,797,509	\$1,566,224	\$8,169,285

MEMORANDUM



MONTGOMERY WATSON

APPENDIX "C"

December 8, 1993 - 188

To:	North Dakota State Water Commission	Date:	November 12, 1993
From:	Patrick White, Jim Mahady	Reference:	2478.0033
Subject:	Location of NAWS Water Treatment Plant		

INTRODUCTION

The Northwest Area Water Supply (NAWS) Study completed in November 1988 presented three preferred regional systems to deliver water from Lake Sakakawea to the nine counties north of Garrison. These alternatives left open the question of where the water treatment facilities to serve the East System should be located - on Lake Audubon or at Minot. This question remains and the decision must be made before the NAWS pre-final design report currently underway can go forth.

On the surface, it makes sense to take advantage of the existing water treatment facilities at Minot providing some method to serve customers between Lake Audubon and Minot can be found. Granted, modifications to the Minot WTP would be required to increase capacity for serving the new consumers and to improve processes for meeting all the new federal and state drinking water regulations; however, surely these costs would be less than all new facilities at Audubon. However, this decision is clouded by the biota transfer issue which would argue for complete treatment of the water before delivery into the Hudson Bay watershed - an issue which may be difficult and costly to solve, and one which could potentially delay or stop the NAWS Project.

A draft memorandum, dated October 19, 1993, was prepared at the request of SWC staff and distributed to SWC staff, the City of Minot, and the NAWS pre-final design consultant team for discussion. The issues raised by the memorandum were discussed during several telephone conferences with SWC and Minot staff. As a result of these discussions and written comments received from SWC and City staff, SWC staff requested Montgomery Watson to expand the scope of the options reviewed in the original memorandum to include the following five options shown in Table 1. The revised memorandum was discussed with staff from the SWC, Minot, and the Garrison Diversion Conservancy District at a meeting held in Bismarck on November 10, 1993. This memorandum incorporates comments and suggestions made at the meeting.

TABLE 1
WATER TREATMENT OPTIONS

-
- Option 1: Treatment of the total water supply for the East System at Lake Audubon using conventional treatment.
- Option 2: Treatment of the total water supply for the East System at Lake Audubon using softening.
- Option 3: Treatment of the total water supply for the East System at Minot using 100 percent raw Missouri River water or a blend of Missouri River and local ground and surface waters at Minot⁽¹⁾.
- Options 4: Treatment at Minot (as described in Option 3 above) with the use of an upgraded satellite treatment plant at Parshall.
- Option 5: Phased development of the Audubon treatment facility to deliver a maximum of 10 million gallons per day (mgd) to Minot and a total supply to the remaining customers of the East System⁽²⁾.
-

NOTES:

1. Design considerations include:
 - a) Cost of biota transfer protection for all facilities in the Hudson Bay Drainage Basin.
 - b) Pipeline from Audubon to Minot designed to supply the total need of the East system (30 mgd).
 - c) Costs for delivery of treated water south from the Minot treatment facility.

2. Design considerations include:
 - a) Initial capacity of the Audubon treatment plant would be 20 mgd based on 1993 demands.
 - b) All supply lines would be designed for full supply and future demands.

Herein, we have strived to present the issues which should be considered in this decision and where possible have attached costs to make the choice as much a financial one as it can be. The accuracy of the costs presented in the cost estimates was performed at a master planning level of engineering detail of -15 to +30 percent and should be reviewed in this light. Unfortunately, many of the factors will remain political in nature (e.g. biota transfer issues and their associated costs) and difficult to assess from an engineering viewpoint.

ANALYSIS

This section of the technical memorandum will describe the issues surrounding the five options in greater detail and review the assumptions upon which the estimated costs are based.

Water Treatment Plant (WTP) Location and Process Options

Option 1 - Lake Audubon Conventional WTP. Option 1 consists of a conventional WTP located at Lake Audubon which would include the processes of: coagulation, flocculation, sedimentation, filtration, and disinfection. The WTP would be sized to supply the projected 30 mgd peak flow of the East system (includes 1 mgd for the future demands of Lake Metigoshe). Due to raw water quality concerns (total organic carbon (TOC) and tastes and odors) and increasingly stringent federal requirements for the treatment of surface water, primary disinfection with ozone followed by the use of a chloramine distribution system residual is assumed. Engineered sludge lagoons and a dedicated, lined landfill sized for a 20-year volume of WTP sludge which would allow for the decanting, drying, removal, and disposal of WTP sludge are included in the cost. In the cost estimates presented in the following section, it also has been assumed that Minot would soften their portion of the water from the Lake Audubon WTP.

Option 2 - Lake Audubon Softening WTP. Option 2 consists of a softening WTP situated at Lake Audubon sized to supply softened water to the entire East system. Lime and other water treatment chemicals would be used to remove hardness and other dissolved solids from the raw water. Similar to Option 1, ozone and chloramines would be used as primary and residual disinfectants, respectively. Sludge lagoons sized for a 20-year volume of sludge from the clarifier units are included in the costs.

Option 3 - Upgrade and Expansion of the Minot WTP. Option 3 involves the transfer of raw water from Lake Audubon via pipeline for treatment at the Minot WTP. Minot's present treatment capacity would be expanded from the current process capacity of 18 mgd to 30 mgd. Process and facility improvements beyond those described in the 1988 NAWS Study Final Report (i.e. new solids contact unit and recarbonation basin, plant and yard piping, high service pumps, and modifications to the sludge handling and chemical feed facilities) would include the use of ozone as a primary disinfectant and chloramines as a distribution system residual.

It is assumed the costs of treating 100 percent Missouri River water or a blend of 65 percent river water and 35 percent groundwater (as suggested by Minot staff) will be essentially the same. This assumption pivots around the use of ozone as the primary disinfectant for the various surface waters which may be used (i.e. the Missouri River, Souris River, and/or Des Lacs River). The issues surrounding the use of ozone are discussed in greater detail later in this memorandum.

Significant costs also would likely be incurred in Option 3 to address the biota transfer issue concerning the possible transfer and introduction of unwanted fish species, parasites, and/or other microbial organisms from the Missouri River Basin into the Hudson Bay watershed. While it is unknown at this time which features would have to be incorporated into the design to satisfy this issue, we believe these would include the following:

- special precautions along the 22 miles of the raw water pipeline between the watershed divide and its terminus at the Minot WTP
- a new transmission line and pump station to transfer treated water from Minot back to Highway 23 to supply Makoti, Plaza, and (perhaps) Parshall, and New Town

- structures in and around the Minot WTP to prevent and/or contain any overflows
- construction of a dedicated, lined landfill for disposal of the WTP sludge to prevent contact with surface and ground waters of the Hudson Bay watershed.

Option 4 - Upgrade and Expansion of the Minot and Parshall WTPs. This alternative is identical to Option 3 except that it eliminates the new transmission line and pump station which would transfer treated water from Minot back to Highway 23 to supply Makoti, Plaza, and (perhaps) Parshall, and New Town. Parshall's present package WTP would be expanded by 0.9 mgd from 0.6 to 1.5 mgd to supply the peak day demands of New Town, Parshall, Plaza, and Makoti; and portions of the Mountrail Rural Water System. Besides the WTP expansion, the project also would entail enlargement, relocation, and/or extension of the present raw water intake to lake floor elevation 1800 (mean sea level); additional raw water pumps; and another 11 miles of a parallel transmission line.

Option 5 - Phased Development of the Lake Audubon WTP. Option 5 consists of the construction of a 20 mgd softening plant at Lake Audubon which would be used to supply up to 10 mgd of Minot's estimated 18 mgd peak day demand with the remaining 10 mgd being used to supply the current demands of other East System customers. A softening WTP at Lake Audubon is assumed because it would: reduce the need for additional treatment (softening) at Minot, reduce sludge production at the Minot WTP, and be compatible for blending with Minot's softened water. The Lake Audubon WTP would be designed to be easily upgraded to 30 mgd when the Minot WTP reached the end of its useful service life. The only modifications to the Minot WTP assumed under Option 5 would involve the installation of an ammonia system to form a chloramine distribution system residual.

Primary Disinfection and Disinfection By-Products (DBP) Formation

The scope of the pre-final design study includes identifying water quality issues affecting unit process selection and the determination of feasible process alternatives to meet them. Water quality issues of concern at both the Lake Audubon and Minot WTP locations include not only those of historical importance, but also the regulatory requirements imposed by the federal Safe Drinking Water Act (SDWA), both current and proposed. Minot staff has noted it believes the use of free chlorine as the primary disinfectant at either location is feasible. One of the major water quality issues noted by SWC and Minot staff involves the selection of ozone as the primary disinfectant at both the Lake Audubon and Minot WTPs in light of potential disinfection by-product formation. This issue is discussed below.

Regulatory Requirements for Disinfection. The federal Guidance Manual for Compliance with Filtration and Disinfection Requirements (AWWA, 1991) for Public Water Systems Using Surface Water Sources states that "...conventional treatment without disinfection is capable of achieving up to a 3-log removal of *Giardia* cysts and up to 3-log removal of viruses...Factors which can adversely affect removal efficiencies include: raw water turbidities less than 1 NTU, cold water conditions, non-optimal or no coagulation, improper filter operation including no filter to waste, intermittent operation, sudden rate changes...." Several of the factors which would adversely affect removal efficiencies according to the EPA Guidance Manual would apply to treatment plants at Lake Audubon and/or Minot.

In addition, the EPA Guidance Manual states "...well-operated conventional treatment plants which have been optimized for turbidity removal can be expected to achieve at least a 2.5 log removal of *Giardia* cysts....EPA recommends that: Conventional filtration systems provide sufficient disinfection to achieve a minimum of 0.5 log *Giardia* cyst and 2-log virus inactivation."

Accordingly, if the two treatment plants could be "...expected to achieve at least 2.5 log removal of *Giardia* cysts..." (and 2 log removal of viruses), then an additional 0.5 log (for the total of 3 log) reduction of *Giardia* and 2 log reduction of viruses (of the total 4 log reduction required) would have to be achieved through disinfection.

To determine the amount of "credit" a utility can get through disinfection, EPA has introduced the concept of "CT." "C" is the residual concentration of the disinfectant (in mg/L) and "T" is the time (in minutes) the disinfectant is in contact with the water. EPA has prepared CT tables that relate specific CT values to log removals of *Giardia* and viruses under different temperatures and pHs using four of the recommended disinfectants: ozone, chlorine, chloramines and chlorine dioxide.

Of these four disinfectants, ozone and chlorine were considered for primary disinfection at either the Lake Audubon and Minot plants. Chlorine dioxide was eliminated as the primary disinfectant because of its high operations cost, and concern about the formation of chlorite which will be regulated at the 1.0 mg/l level under the new Disinfectants/Disinfection By-products (D/DBP) Rule. While chloramines do not form trihalomethanes (if properly mixed) and tend to form a more stable residual, they were not considered further as the primary disinfectant because they are weaker disinfectants and require longer contact times and higher concentrations to meet the CT requirements of the SWTR.

Disinfection By-products. Based on a review of limited water quality data at both locations, the following DBPs proposed for regulation by EPA are of concern at the Lake Audubon and Minot locations:

- Trihalomethanes (THMs) are a group of volatile, low molecular weight organic compounds derived from methane in which three hydrogen atoms have been replaced with three halogen atoms. THMs are formed primarily by a reaction of naturally occurring organic compounds with chlorine, although ozonation can result in formation of bromoform. THM formation kinetics increase with pH.
- Haloacetic acids (HAAs) derive from acetic acid in which one or more of the hydrogen atoms has been replaced by a halogen, leaving the carboxyl group intact. National survey data show HAAs as the most prevalent DBP group after THMs. Although HAAs form primarily as a result of chlorination, the use of ozone in the presence of bromide can increase the proportion of brominated species. Formation of HAAs is favored at low pH although the formation of dichloroacetic acid (DCAA) is relatively independent of pH.
- Bromate is formed by the use of ozone with naturally occurring bromide levels in a raw water supply. The formation of bromate is increased at higher pH, especially at high pH ozonation.

The values for the various DBPs which will be regulated under the new D/DBP Rule are shown in Table 2.

TABLE 2
DISINFECTION BY-PRODUCTS
MAXIMUM CONTAMINANT LEVELS (MCL)

Disinfection By-Product	MCL (mg/l)
Trihalomethanes (THMs)	0.080
Haloacetic Acids (HAAs)	0.06
Bromate	0.010
Chlorite	1.0

Water quality analyses conducted at the bench scale in June 1993 following chlorination of raw Lake Audubon water and settled water from the Minot WTP are shown in Table 3. According to Minot staff, no surface water from the Souris River or its tributaries were included in the Minot water tested.

Table 3 shows that an estimated 55 percent of the total THMs formed from chlorination of the Minot WTP groundwater were chloroform with 32 percent of the total in the form of bromodichloromethane. For Lake Audubon, 68 percent of the total THMs formed were chloroform with the next largest percentage being bromodichloromethane. While the Minot WTP data are somewhat flawed because of an insufficient chlorine dose at the longer holding times, they do show that: the formation of THMs and HAAs is not particularly rapid in this water; the DBPs formed are well below the MCLs shown in Table 2; and that chlorine followed by the use of chloramines as a distribution system residual appears to be a feasible disinfectant strategy for this particular water sample. At present, Minot does not use chloramines in their distribution system. Fewer conclusions can be drawn from the Lake Audubon sample.

TABLE 3

DBP FORMATION KINETIC DATA
(June 1993)

Site	TOC (mg/l)	Disinfection By-Product (µg/l)	1/2 hour 4 hours 24 hours 168 hours			
			1/2 hour	4 hours	24 hours	168 hours
Minot	1.9	Bromoform	ND	ND	0.9*	1.1*
		Chloroform	2.4	3.3	17*	19*
		Dibromochloromethane	ND	0.6	2.6*	3.7*
		Bromodichloromethane	<u>0.9</u>	<u>1.5</u>	<u>7.6*</u>	<u>11*</u>
		Total THMs	3.3	5.4	28.1*	34.8*
		Dibromoacetic Acid	--	ND	--	2.3*
		Dichloroacetic Acid	--	ND	--	13*
		Monobromoacetic Acid	--	ND	--	ND*
		Trichloroacetic Acid	--	<u>4.1</u>	--	<u>5.6*</u>
		Total HAAs	--	4.1	--	20.9*
		Lake Audubon	5.3	Bromoform	--	--
Chloroform	--			--	--	126
Dibromochloromethane	--			--	--	16
Bromodichloromethane	--			--	--	<u>43</u>
Total THMs	--			--	--	185.9
Bromochloroacetic Acid	--			--	--	25
Dibromoacetic Acid	--			--	--	3.0
Dichloroacetic Acid	--			--	--	120**
Monochloroacetic Acid	--			--	--	8.2
Trichloroacetic Acid	--			--	--	<u>69**</u>
Total HAAs	--			--	--	225.2**

*Sample did not have residual ≥ 0.2 mg/l at designated time.

**Sample values outside of calibrated range were estimated.

Unfortunately, the issues of disinfection and resulting DBPs at Minot are more complex than are shown in Table 3. In order to meet its water supply needs, Minot relies upon a series of wells in the Minot and Sundre aquifers. These wells have different water qualities which can affect actual THM concentrations in the Minot distribution system. Water quality results from a total trihalomethane (TTHM) test (assumed to be of a 168 hour duration) from various wells from a sampling event in January 24, 1985 are shown in Table 4. Actual distribution system values from 1988 to 1993 are shown in Table 5. It is our understanding that the values shown in Table 5 are for a period when surface waters were not regularly being used because of a drought condition.

TABLE 4
TTHM VALUES
(168 hour duration assumed)

	Source	TTHM ($\mu\text{g/l}$)
Sundre Aquifer	Well A	170.5
	Well B	229.5
	Well C	141.5
	Well D	239.8
	Well E	202.0
Souris	River	270.3
Minot Aquifer	Well 5	300.1
	Well 6	382.0
	Well 8	719.5
	Well 11	371.5
	Well 12	232.6
	Well 13	226.2
	Well 14	---
	Well 15	108.8
	Well 16	268.7

For information purposes, the EPA adopted the current standard for trihalomethanes (THMs) of 100 $\mu\text{g/l}$ in 1979. Compliance with the THM standard is based on a running annual average of quarterly samples. The concentrations of each of the trihalomethane compounds (chloroform, dibromochloromethane, bromodichloromethane and bromoform) are added together to determine the level of TTHMs. If the average of all samples taken during any twelve-month period exceeds the MCL for total trihalomethanes, the system must confirm the violation, and take corrective action as required by the Primacy Agency, in this case, the North Dakota Department of Health.

Monitoring and compliance with the MCLs for THMs and HAAs under the new D/DBP Rule will be the same for surface water systems that serve over 10,000 people as is currently required for THM compliance. That is, utilities will be required to collect four samples per quarter for each treatment plant, with one sample representing maximum residence time in the distribution system and the remaining samples collected in the distribution system representing the entire system, taking into account the number of persons served, different sources of water, and different treatment methods employed. Compliance will be based on a running annual average of quarterly samples.

Several conclusions can be drawn from Tables 4 and 5. First, as shown in Table 4, raw water quality varies significantly among the various water sources Minot relies upon. Further, it can vary significantly within each individual aquifer. Second, Table 5 shows that the current

disinfection strategy at the Minot WTP exceeded the new 80 µg/l THM standards during 6 of the 19 quarters monitored. The annual average for 1990 was just below the new standard. Third, almost half of the wells in the Minot aquifer exhibit a higher TTHM formation potential than the Souris River. Finally, the more stringent running annual average of 80 µg/l of THMs which will be implemented under the D/DBP Rule was exceeded three times during this period. Annual running averages ranging from 73-79 µg/l occurred eight times. Thus, the THM concentrations in the Minot distribution system approached or exceeded the new THM standard eleven of the 16 running annual average periods in this data set.

TABLE 5
QUARTERLY AND ANNUAL THM AVERAGES
MINOT DISTRIBUTION SYSTEM
(µg/l)

Year	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Avg.
1993	68.8	**	**	**	68.8*
1992	68.0	45.3	89.1	50.6	63.2
1991	144.0	38.4	57.8	50.0	72.6
1990	81.9	115.1	56.5	59.2	78.2
1989	60.2	113.5	59.7	58.5	73.0
1988	**	**	50.0	108.0	79.0*

*Data set lacked required four samples.

**Data not available or not supplied.

In summary, the data presented in Tables 3, 4, and 5 show that Minot relies on ground and surface water sources that have the potential for formation of THMs and DBPs. The present treatment plant facilities and operational practices were sufficient to meet the current THM standard of 100 µg/l. A review of Table 5 shows that certain operational and/or facility modifications will be necessary to meet consistently the more stringent THM standards of the D/DBP Rule. These changes could include: testing of wells, prudent use of higher quality wells, pretreatment practices to increase TOC and DBP precursor removal, chlorination at a lower pH, and the use of a chloramine distribution system residual. These modifications are feasible and would not preclude the continued use of chlorine as primary disinfectant for Minot's ground water supplies. Thus, the question remains: Why consider ozone at Lake Audubon or Minot?

Ozonation for Disinfection DBP Control. Ozone has two applications in meeting the sometimes conflicting disinfection and DBP control requirements of the SWTR and the D/DBP Rule. First, ozone is a strong oxidant which can be used to oxidize DBP precursors to create compounds which will not react with chlorine to form DBPs. Second, if used as a primary disinfectant (for CT compliance) and followed by a chloramine residual for the distribution system, it can eliminate any significant contact between DBP precursors and free chlorine.

In general, the use of ozone for direct oxidation of DBP precursors prior to chlorination has limited application. While some studies show reductions in THM levels of 10 to 20 percent as a result of ozonation, other studies have shown increases in THM formation following the use of ozone. Presumably, this results from the ability of ozone to shift the molecular weight characterization of the organic compounds by cleaving non-DBP precursor organics into smaller fragments which then can react with chlorine to form DBPs.

The most common uses of ozone in the United States are to: enhance particulate removal as a preoxidant, reduce tastes and odors, or avoid the use of chlorine for primary disinfection. The increasing use of ozone for these purposes, especially the latter, has prompted considerable investigation into DBPs resulting from ozonation. Several parameters affect the formation of ozonation DBPs including the following:

- **TOC Concentration:** Since organic matter reacts with ozone to form oxidized organic compounds (aldehydes), and reacts with hypobromous acid (HOBr) and hypobromite ion (OBr^-) to form brominated organic DBPs, the TOC concentration in the water will affect the final concentration of ozonation by-products formed.
- **Water pH and Temperature:** The relative concentrations of HOBr and OBr^- will depend on the pH and temperature of the water. Since only OBr^- , and not HOBr, is believed to react with ozone to form bromate, the level of bromate formed will then depend on the pH and temperature of the water.
- **Ammonia-Nitrogen Concentration:** It is speculated that ammonia may rapidly react with HOBr and OBr^- to form bromamines, thus slowing the reaction of HOBr and OBr^- with organic matter, and the reaction of ozone with OBr^- to form bromate.

This discussion shows that a number of site specific factors at both the Lake Audubon and Minot locations will affect any proposal to use ozone. The high levels of TOC; the variation in pH between raw water, softened water, and recarbonated water; and the presence of bromide in the water supply with the resulting high percentage of brominated DBPs (especially in the ground water supply) all call for a thorough investigation of ozone application point, dose, and function before its use can be seriously considered in final design. The site specific factors which would cause ozone to be used at either location are discussed below.

Ozonation at Lake Audubon. The preceding discussion has highlighted the use of ozone as a primary disinfectant followed by a chloramine distribution residual as an effective disinfection strategy for use in waters with high TOC concentrations. Available TOC data for Lake Sakakawea and Lake Audubon are shown in Table 6.

While limited (i.e. only three data points are known to exist), the data show a relatively high TOC concentration in the raw water at each location sampled. TOC has been proposed frequently as a surrogate parameter for DBP precursors. TOC meets the analytical requirements for a good surrogate parameter; it is less expensive and easier to perform than DBP analysis and can be adapted as an on-line process parameter. Some success has been reported in using a TOC as a surrogate parameter for THM precursors, especially in the lower ranges. It has been suggested that a TOC level of 0.5 mg/l generally corresponds to a total TTHM potential level of

about 20 µg/l. TTHM data for Lake Audubon shown in Table 3 appears to follow this rule of thumb. Establishing a relationship between THM formation and TOC levels in the finished water is useful at this point because the treatment efficiency of several of the coagulation and softening processes considered herein are given in the literature in terms of TOC removal.

TABLE 6
TOC CONCENTRATIONS
LAKE SAKAKAWEA AND LAKE AUDUBON

	Lake Sakakawea @ Garrison Dam	Lake Sakakawea @ Williston, N.D.	Lake Audubon
TOC mg/l	9.0	11.5	5.3

Coagulation and softening processes have the ability to remove TOC, and thus DBP precursors, from the raw water supply prior to disinfection. Indeed, the rule of thumb in water treatment process design is that conventional treatment employing coagulation and/or softening preferentially removes the larger molecular weight organic compounds. Montgomery Watson project experience with conventional treatment processes indicates it is possible to remove 60-70 percent of the raw water TOC if enhanced coagulation techniques are used; in contrast, softening typically removes about 50 percent. It may be possible to use enhanced coagulation with chlorine followed by a chloramine distribution system at Lake Audubon to meet the regulations. However, given the benefits ozone can offer in control of tastes and odors and for the inactivation of *Giardia* and *Cryptosporidium*, the inclusion of ozone as the primary disinfectant is a prudent choice.

Ozonation at the Minot WTP. The use of chlorine as the primary disinfectant followed by a chloramine distribution system residual as an effective disinfection strategy for the Minot ground waters already has been discussed. The remaining issue is whether the use of ozone as the primary disinfectant in the upgrade and expansion of the Minot WTP is feasible in light of the more stringent MCL for bromate (i.e. 10 µg/l) under the new D/DBP Rule.

Minot participated in a study in 1989 of 35 utilities across the United States conducted by Montgomery Watson for the EPA. Water samples were taken in the summer and winter and analyzed for TOC, total THM formation potential, and bromide (Br⁻). The results are presented in Table 7 and show that Minot did have high chloride and bromide levels in their source waters, and that these translated into higher levels of brominated DBPs than chlorinated DBPs, due to the presence of high bromide levels. The data in Table 7 are exclusively ground water; it is unknown what percentage of either the Minot or Sundre aquifer was in use at the time of sampling.

TABLE 7

COMPARISON OF SEASONAL THMS AND INFLUENT WATER QUALITY
MINOT WTP

Effluent TTHMs ($\mu\text{g/l}$)	Summer Quarter Influent Values			Effluent TTHMs ($\mu\text{g/l}$)	Winter Quarter Influent Values		
	Temp. ($^{\circ}\text{C}$)	TOC (mg/l)	Br ⁻ (mg/l)		Temp. ($^{\circ}\text{C}$)	TOC (mg/l)	Br ⁻ (mg/l)
3.8	10	3.3	0.44	24	8.1	4.5	0.58

Ozonation of the raw water and settled water (produced during bench scale coagulation experiments) also was conducted as part of the study. The water tested was ground water from Sundre Aquifer Wells A, B, C, and D. Results are presented in Table 8 and show that bromate was formed at levels near and exceeding the new 10 $\mu\text{g/l}$ MCL following ozonation to achieve an ozone residual. Finally, while the data shown in Table 8 indicate high bromide concentrations exist in the Sundre wells, it is still unclear whether similar concentrations exist in the Minot aquifer and/or the surface water supplies.

While the possible formation of bromate is certainly a concern, the use of ozone should continue to be considered for use at the Minot WTP for several reasons. First, similar to Lake Audubon and Lake Sakakawea, it is suspected that the Souris River and its tributary, the Des Lacs River, contain high levels of TOC and, by inference, the potential for high concentrations of DBP precursors. This is shown by the 270 $\mu\text{g/l}$ total THM concentration for the Souris River supply shown in Table 4. While no TOC data are available, conversations with WTP staff indicate that the Souris is not used when water quality is poor due to the suspected presence of organic compounds which cause taste and odor problems. As discussed, ozone followed by chloramines is an effective disinfection strategy for this type of water. Second, Minot staff has indicated their interest in using a blend of 65 percent Missouri River water and 35 percent local water supplies. Ozonation of the blended raw water supply at a lower pH should not result in an exceedance of the proposed bromate MCL. Third, ozone is effective for taste and odor control purposes which occasionally are a concern at the Minot WTP.

TABLE 8
OZONATION EXPERIMENT RESULTS

Influent pH	O ₃ /TOC	O ₃ Residual (mg/l)	NPTOC** (mg/l)	Effluent pH	Inf. Bromide (mg/l)	BrO ₃ (µg/l)
<u>Minot Raw</u>						
7.3	0.60	<0.05	3.3	7.9	0.4	10
7.4	1.01	0.29	3.3	7.8	0.4	10
7.8	2.10	1.22	3.3	7.9	0.4	23
8.2	0.60	<0.05	3.3	8.3	0.4	7
8.2	1.18	0.23	3.3	8.1	0.4	7
8.2	2.10	1.08	3.3	8.0	0.4	17
<u>Minot (Bench Scale) Settled (Coagulated/Settled from Experiments)</u>						
5.8	0.65	<0.05	2.3	6.7	NA	12
6.1	1.13	0.17	2.3	6.7	NA	10
7.0	2.06	1.04	2.3	7.2	NA	7
8.1	0.62	<0.05	2.3	8.0	NA	9
8.1	0.99	0.13	2.3	8.0	NA	10
8.0	2.13	0.90	2.3	8.1	NA	8

* Ozone residual concentration was measured immediately after the effluent sample was collected. All other parameters were measured after an incubation period of 2 hours.

** Non-purgeable TOC.

Conclusion. In summary, the process issues surrounding disinfection are interdependent and the best overall solution will be the most cost-effective strategy for insuring compliance with all the water quality regulations at either treatment location. The ultimate choice of whether to use ozone as a primary disinfectant will depend on additional treatability studies of raw water quality. At this point in the decision-making process, ozone offers several advantages and should be retained as a disinfection option.

Assumptions

The assumptions used in the preparation of the cost estimates contained in this memorandum are briefly discussed below.

Flows. Based on the analysis recently performed to update the community needs assessment for this project, the average daily demand for the East System is estimated at slightly over 11 mgd (11,033,000 gallons per day will be used for the cost estimates). Of this total, Minot and its present customers (the Minot Air Force Base, and North Prairie 1 and 2 Rural Water Systems)

account for 6.5 mgd or roughly 59 percent of the total. Of the estimated peak day demand of 30 mgd, Minot and its customers account for 18 mgd or about 60 percent of the total. The peak day percentage is greater because of a somewhat higher peaking factor used to estimate Minot's peak day use. The peak daily demand to be supplied by the expanded Parshall WTP is estimated at 1.5 mgd.

Cost Basis. The construction costs estimated in the 1988 NAWS Study Final Report involved a balancing of regional construction cost indices (Engineering News Record and R. S. Means) for the Denver, Minneapolis, and Sioux Falls areas. At the time, the ENR index for Denver and the R.S. Means index for Sioux Falls were considered representative of the construction costs which might be expected for the NAWS project. Recent experience with bidding the City of Moorhead, Minnesota WTP indicates that an ENR closer to that for Minneapolis is appropriate for the Fargo-Moorhead area. While it is not known at this time whether the Minneapolis or Sioux Falls indices are more appropriate for the NAWS Project, herein we have been conservative, checked the original cost estimates, and indexed them to reflect the higher cost basis (ENR = 5362, October 11, 1993).

Power Costs. At present, the power costs for water treatment and pumping purposes will vary slightly between the Lake Audubon and Minot locations. Discussions with State Water Commission (SWC) staff about their experience with electrical costs with the Southwest Pipeline Project pumping stations, and with an electrical utility (NSP) indicate it is likely power can be obtained at a reduced rate at both locations. While a number of factors will intervene to arrive at a final cost, a charge of \$0.025 per kWh was assumed for both locations.

Debts on Existing Facilities. The cost of using the existing WTPs at Minot and/or Parshall will include funding the outstanding debt at either facility with the financing of the NAWS system. Based on correspondence or telephone conversations with City staff, the approximate debt owed at each location are: 1) Minot - \$3,820,000; and 2) Parshall - \$900,000. The decision was made not to include these figures in the cost estimates because they would be common to all options.

Option 3 Biota Transfer Protection Measures

Raw Water Pipeline. Special measures were assumed in the design of the 22 miles of raw water pipeline from the watershed divide between the Missouri and Hudson Bay watersheds and the Minot WTP to help prevent biota transfer. No turnouts would be constructed in this portion of the raw water line. Air vacuum/release valves would be needed to ensure proper pipeline operation; however, it was assumed the possibility for interbasin transfer of water from these structures would be small due to their inherent design and because any discharge which might occur would be contained in a vault. Four blowoff structures for use in draining pipeline segments in the 22 mile stretch for pipeline access, maintenance, and repair purposes were assumed. Lined containment structures to eliminate discharge to surface water or infiltration into ground water sources would be constructed adjacent to these blowoffs. Electric valve operators, and other monitoring and control equipment were also assumed at these four locations to insure a prompt response to a pipeline rupture or other emergency.

Finished Water Pipeline. The costs for the pump station and the 18 mile portion of the finished water pipeline from the Minot WTP back to the turnout to supply water to Makoti and other locations were assumed using cost estimates from the 1988 NAWS Study Final Report. This is the only additional finished water pipeline which was assumed to be needed. A preliminary

analysis of pipeline construction costs indicates it would be less expensive to distribute treated water to the towns of Sawyer, Ruso, Anamoose, and others from a location at or near Minot versus a line constructed from the Lake Audubon location to Ruso and beyond. This issue will be reviewed in greater detail later in the pre-final design process.

Sludge Disposal at Minot. To allay concerns about contamination of groundwater from microbial organisms contained and concentrated in WTP sludges at the Minot WTP, it was assumed a lined landfill would be used for the ultimate disposal of sludges. The landfill volume required was sized for a twenty year period assuming: use of a minimum of 65 percent of Missouri River water, a hardness treatment goal of 80 mg/l, and a sludge of 40 percent solids from the vacuum filter press dewatering system presently used at Minot. A 20-year supply of lime sludge from the WTP is estimated to require a volume of about 383,000 cubic yards.

The possibility of using the City's new municipal landfill was discussed with City staff. Following these discussions, the City's Director of Public Works estimated the cost to construct and operate a new landfill for sludge disposal purposes at \$1,000,000. This figure was included as a line item (Sludge Handling/Disposal) capital cost in Table 9. The additional \$600,000 shown there is for the additional lagoons or mechanical dewatering devices which will be needed to dewater the increased volume of sludge.

City staff also mentioned that an additional landfill will be available for use next spring for "inert" materials. This landfill will be unlined with no leachate collection system. It was assumed this system would be unacceptable for use as sludge containment system to address biota transfer concerns.

Sludge Handling and Disposal at Lake Audubon. Costs for sludge handling and disposal facilities at the Lake Audubon site were revised to reflect a 20-year design period to ensure consistency among the design options. Option 1 facilities consist of 4 engineered lagoons used to decant and dry sludge before deposition into an adjacent dedicated monofill. Option 2 facilities involve 10 unlined lagoons with decant facilities which will also be used for permanent disposal purposes.

Parshall WTP Upgrade and Expansion. Option 4 considers the cost advantages of eliminating the finished water line back from Minot to Highway 23 by upgrading and expanding the existing Parshall WTP by 0.9 mgd to 1.5 mgd to supply the estimated peak day needs of Parshall, Plaza, Makoti, and New Town; and portions of the Mountrail Rural Water System. Besides the expansion of the existing plant to 1.5 mgd, the project also will require: the enlargement, relocation, and extension of the existing intake to elevation 1800; additional raw water pumps; and another 11 miles of parallel transmission line.

COST ESTIMATES

The estimated capital, and operations and maintenance (O & M) costs for the five options are shown in Table 9. Options 1 and 2 do not include any costs for modifications at the Minot WTP. While similar, the O & M costs in Table 9 differ slightly from those presented in the 1988 NAWS Study Final Report because of the assumption described earlier about electrical power costs.

User Costs

The capital and O & M costs estimated in Table 9 were broken down further to arrive at an estimated treatment cost per 1,000 gallons for various users in the system. The treatment cost per 1,000 gallons consists of two parts: the estimated amortization cost for the loan repayment, and the estimated operation and maintenance cost for the system. A grant of 65 percent of the project costs was assumed, or, in other words repayment of 35 percent of the capital costs would be required. An interest rate of six percent over 40 years was used in the amortization calculations. The 40 year amortization period is the same as that used in the 1988 NAWS Study Final Report.

The apportionment of costs to system users varies in Option 1 because of the addition or deletion of O & M costs at Minot. These costs were apportioned based on the estimated percentage (59 percent) of average daily demand between Minot and its present customers, and the rest of the East system.

The estimated user costs per 1,000 gallons are presented in Table 10.

CONCLUSIONS

As can be seen in Table 9, the two lowest capital costs can be expected for Options 3 and 4 which involve upgrading and expanding the existing Minot WTP and/or the Parshall WTP. Table 2 shows that Option 1 (a conventional WTP at Lake Audubon) would provide the lowest user costs to non-Minot customers and the highest user costs to Minot customers of the five options considered. Option 3 has the lowest user costs. Options 2 and 4 have nearly identical user costs. Option 5 (a 20 mgd lime softening WTP at Lake Audubon and continued treatment of local water supplies at Minot) involves the second highest user costs primarily due to the O&M costs of operating two WTPs.

During discussion of the issues and costs contained in this memorandum, it is suggested again that the following points be considered. First, while provisions have been made for addressing the biota transfer issue along the raw water pipeline and at the Minot WTP, actual needed protections would have to be negotiated with interested parties. These are best guesses only and may not be sufficient to allow for project approval. Second, the accuracy of the costs presented herein was performed at a master planning level of engineering detail of -15 to +30 percent and should be reviewed in this light. Finally, the issue of water quality at Lake Audubon and Minot is a complex one which will require, at a minimum, additional study at the bench scale and/or pilot scale level before it can be resolved.

TABLE 9
COST ESTIMATES

	Option 1: Lake Audubon Conventional WTP (Soften @ Minot)¹⁾	Option 2: Lake Audubon Softening WTP¹⁾	Option 3: Upgrade and Expansion of the Minot WTP	Option 4: Upgrade and Expansion of the Minot and Parshall WTPs	Option 5: Phased Lake Audubon Softening WTP^{1), 6)}
WTP CAPITAL COSTS					
• Sitework/Yard Piping	\$2,100,000	\$2,100,000	\$2,300,000 ²⁾	\$2,300,000 ²⁾	1,600,000
• Flocc/Sed Facilities	2,200,000	----	----	----	----
• Softeners	----	3,700,000	1,500,000	1,500,000	2,800,000
• Filters	2,800,000	2,800,000	----	----	1,900,000
• Recarbonation Facilities	----	800,000	500,000	500,000	500,000
• Chemical Facilities	1,400,000	2,200,000	300,000	300,000	2,000,000 ⁷⁾
• Operations Building	1,500,000	1,500,000	----	----	1,500,000
• Clearwell ³⁾	1,500,000	1,500,000	----	----	1,100,000
• Sludge Handling/Disposal	1,800,000	1,500,000	600,000	600,000	1,000,000
• Ozonation Facilities	3,500,000	3,500,000	4,300,000 ⁴⁾	4,300,000 ⁴⁾	2,500,000
• Electrical/Instrumentation	2,100,000	2,500,000	600,000	600,000	2,000,000
• Parshall WTP Expansion	----	----	----	1,000,000	----
• Parshall Intake	----	----	----	350,000 ⁵⁾	----
• Parshall Transmission Line/Pumps	----	----	----	410,000	----
	\$18,900,000	\$22,100,000	\$10,100,000	\$11,860,000	\$16,900,000
BIOTA TRANSFER CAPITAL COSTS					
• Raw Water Pipeline					
- Blowoff Containment Structures			\$750,000	\$750,000	
- Valve Operators/SCADA Controls			100,000	100,000	
• Finished Water Transmission					
- Pipeline/Pump Station			2,240,000		
• Dedicated Sludge Landfill			1,000,000	1,000,000	
TOTAL CAPITAL COSTS⁸⁾	\$18,900,000	\$22,100,000	\$14,190,000	\$13,710,000	\$16,900,000
ANNUAL OPERATIONS & MAINTENANCE COSTS					
• Lake Audubon WTP	\$610,000	\$1,005,000	----	----	750,000
• Minot WTP	720,000	----	1,030,000	975,000	630,000
• Parshall WTP	----	----	----	175,000	----
TOTAL ANNUAL O & M COSTS	\$1,330,000	\$1,005,000	\$1,030,000	\$1,150,000	\$1,380,000

Notes:

- 1) Does not include raw water intake, raw water Pump Station, finished water Pump Station or reservoir.
- 2) Includes High Service Pump Station modifications.
- 3) Minimum detention clearwell (3 hours at design flow) assumed.
- 4) Includes Ozonation Pump Station.
- 5) Cost estimated from January 1993 COE Report.
- 6) Assumes a 20 mgd softening WTP at Lake Audubon.
- 7) Includes \$100,000 for installation of ammonia system at Minot.
- 8) Cost estimates were performed at a master planning level of detail of -15% to +30%.

TABLE 10
USER COSTS

OPTION	DESIGN POPULATION	O & M COST (Per 1000 Gallons) (\$)	AMORTIZATION COST (Per 1000 Gallons) ¹⁾ (\$)	TOTAL USER COST (Per 1000 Gallons) (\$)
1 Lake Audubon Conventional WTP (Softening @ Minot)	Non-Minot Customers	0.15 ²⁾	0.11	0.26
	Minot Customers	0.46 ³⁾	0.11	0.57
2 Lake Audubon Softening WTP	All NAWS Customers	0.25	0.13	0.38
3 Upgrade and Expansion of the Minot WTP	All NAWS Customers	0.26	0.08	0.34
4 Upgrade and Expansion of the Minot and Parshall WTPs	All NAWS Customers	0.29	0.08	0.37
5 Phased Lake Audubon Softening WTP	All NAWS Customers	0.34 ⁴⁾	0.10	0.44

Notes:

- 1) Interest rate of 6% over 40 years assuming a 65% grant.
- 2) Annual O & M cost for each NAWS customer of the East system.
- 3) Includes \$0.15/1000 gallons O & M cost for NAWS system.
- 4) Assumes Minot WTP O&M costs are borne by NAWS system.

POLICY STATEMENT

**Northwest Area Water Supply Project
Advisory Committee**

I. Definitions. As used herein, unless the context or subject matter otherwise requires.

- Distribution System** - A Public Water Supply System as defined in §61-28.1-02 of the North Dakota Century Code. To wit: A system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves at least twentyfive individuals.
- NAWS Agreement of Intent** - An agreement between the entity operating a distribution system and the State Water Commission whereby the entity agrees to consider entering into a water service agreement and the State Water Commission agrees to include the water requirements of the distribution system in the prefinal design of the project.
- Prefinal Design** - An engineering analysis of the project layout incorporating distribution systems that entered into NAWS Agreements of Intent.
- Project** - The Northwest Area Water Supply Project, as authorized by the 1991 North Dakota Legislature.
- User(s)** - Households, businesses, and farmsteads that use water.
- Water Service Agreement** - An agreement, or contract, to purchase water from the project based upon the results of the prefinal design and projected development of the project.

II. Policy

A. Statement of Project Purpose and Intent.

The purpose of the Northwest Area Water Supply project is to supply water of good quality and abundant supply to existing and planned distribution systems in Northwestern North Dakota which have entered into a NAWS Agreement of Intent with the State Water Commission during the prefinal design.

The support of existing rural water associations and cities who are supplying water to other distribution systems in the project area is very important to the success of the project. Therefore, it is the intent of the Advisory Committee to preserve existing relationships between distribution systems in the project area.

B. Eligibility.

Eligibility to enter into an Agreement of Intent with the State Water Commission shall be limited to distribution systems that are unable to get project water through an existing relationship with another distribution system.

A distribution system which currently purchases water from another distribution system which has entered into a NAWS Agreement of Intent shall be eligible to enter into a separate NAWS Agreement of Intent for the purpose of expansion into areas not presently served.

ARTICLE 89-__

MUNICIPAL, RURAL, AND INDUSTRIAL WATER SUPPLY PROGRAM

Chapter

89-__ - __ Municipal, Rural, and Industrial Water Supply
Program

CHAPTER 89-__ - __

MUNICIPAL, RURAL, AND INDUSTRIAL
WATER SUPPLY PROGRAM

Section

89-__ - __ - __ Definitions
89-__ - __ - __ Eligibility for Program Funds
89-__ - __ - __ Application
89-__ - __ - __ Application to Determine Eligibility - Initial
Review by the State Engineer
89-__ - __ - __ Preliminary Engineering Reports - Initial Review
by State Engineer - Bureau Requirements
89-__ - __ - __ Feasibility Study - Review - Report
89-__ - __ - __ Design and Construction Requirements
89-__ - __ - __ Funding - Priority
89-__ - __ - __ Reports to Commission and C-District
89-__ - __ - __ Contract Awards

89-__ - __ - __. Definitions. As used in this chapter, unless
the context or subject matter otherwise requires:

1. "Applicant" means the party submitting a proposal.

2. "Bureau" means the Bureau of Reclamation or its duly authorized agent.
3. "C-district" means the Garrison Diversion Conservancy District or its duly authorized agent.
4. "City" means any city organized under the laws of this state.
5. "Commission" means the North Dakota state water commission or its designee.
6. "Design and construction" means preparation of the final design plans and the ultimate construction of a project.
7. "Feasibility study" means a report of sufficient detail to provide a sound estimate of capital costs, water costs to users, and operation, maintenance, and replacement costs.
8. "MR&I" means municipal, rural, and industrial water supply.
9. "Preliminary engineering report" means a reconnaissance level report containing sufficient information to determine whether additional detailed studies are merited.
10. "Program funds" means money available for MR&I projects including money available through the Garrison Diversion Reformulation Act of 1986.
11. "Proposal" means an application submitted to the commission for financial assistance from program funds for MR&I water supply and water treatment projects and associated costs.

12. "Public water system" means a system for the provision to the public of piped water for human consumption, if the system has at least fifteen service connections or regularly serves at least twenty-five individuals.
13. "Regional water system" is a system that provides water to at least four public water systems and may also include rural water users.
14. "Rural water users" means all users except cities, including farms, unincorporated cities, villages, trailer courts, and livestock.
15. "State engineer" means the individual appointed by the commission pursuant to North Dakota Century Code section 61-03-01 or the state engineer's designee.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Eligibility for program funds. The following projects and associated costs are eligible for financial assistance from program funds:

1. Water supply projects.
 - a. Design and construction of projects for supplying water including:
 - (1) New ground water wells including mechanical and electrical components.

- (2) Pipelines from water sources to public water systems and principal supply works for rural water systems.
 - (3) Booster pumping plants for supply lines.
 - (4) Intake works and pumping plants for new surface water source.
 - (5) New or enlarged storage facilities.
 - (6) New rural water systems or enlargements or extensions of rural water systems.
 - (7) New regional water systems or enlargements or extensions of regional water systems.
- b. Design and construction of water treatment projects including:
- (1) New water treatment plants.
 - (2) Modifications to and upgrades of existing water treatment plants.
2. Program funds may be used for engineering, legal, and right-of-way costs, excluding the purchase of easements, and costs incurred in conducting environmental reviews or cultural resources investigations associated with the planning and design and construction of projects listed in subdivisions a and b of subsection 1.
3. Program funds are not available for costs associated with operation, maintenance, and replacement of water supply or treatment systems or with the preparation of the preliminary engineering report.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1,
61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Application.

1. An applicant must submit an application for program funds to the state engineer at the following address: North Dakota State Water Commission, 300 East Boulevard Avenue, Bismarck, North Dakota 58505-0850.

The application must include the following:

- a. Information explaining the need for the proposal, including its objectives and benefits.
- b. The area to be served by the proposal.
- c. Maps, diagrams, or other illustrated documentation if these will make the proposal more understandable.
- d. The approximate cost of carrying out the proposal, if available.
- e. The amount of funding sought from program funds and the amount the applicant intends to contribute to carry out the proposal.
- f. Efforts made, and the results, to secure funds from sources other than program funds.
- g. Other information the applicant believes pertinent

or requested by the state engineer.

2. A copy of the application must also be sent to the c-district at the following address: Garrison Diversion Conservancy District, PO Box 140, Carrington, North Dakota 58421.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Application to determine eligibility - Initial review by the state engineer. After the initial review of an application, the state engineer may decide:

1. The proposal is eligible for funding from program funds. If the proposal is eligible for funding, the state engineer shall notify the applicant in writing.
2. The information provided is inadequate to review the proposal and may order the applicant to provide more information, or may obtain more information.
3. The proposal is not eligible for funding from program funds. The state engineer shall notify the applicant of and include the reasons for ineligibility in writing.
4. The state engineer shall submit a copy of all notifications to the c-district.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1,

61-02-24.1, 61-24-08, 54-40-01

89-__-__--__. Preliminary engineering reports - Initial review by state engineer - Bureau requirements.

1. An applicant notified that its project is eligible for funding must submit a preliminary engineering report to the state engineer. The applicant shall contact the bureau at the initiation of the preliminary engineering report to discuss applicable federal requirements. The preliminary engineering report must contain:

- a. Name of the project sponsor and contact persons.
- b. A brief summary of the proposed project including:
 - (1) Identification of the use of water and estimated water for each use.
 - (2) Description of existing water quantity and quality.
 - (3) Explanation of inadequacy of existing supplies.
 - (4) Estimate of potential users.
 - (5) User interest and how it was determined.
- c. A map of the project area showing:
 - (1) Water sources (aquifers, lake, stream, other systems).
 - (2) Proposed facilities.

- (3) Distribution systems.
- (4) Alternatives.
- d. Preliminary cost estimate for feasibility study, capital costs, and costs for all alternatives.
- e. Repayment concepts.
- f. Funding source for the applicant's share.
- g. Proposed project schedule.
- h. Identification of entity responsible for applicable reports or studies.
- i. Availability and cost of construction material.
- j. Social and local economic climate.
- k. Special or unusual considerations such as public and construction safety, repayment contracts, biota transfer, and environmental.
- l. Special site conditions such as groundwater table, soil conditions, right-of-way, and zoning constraints, and manmade features.
- m. Project's energy requirements and date of service.
- n. Documentation of the engineering selection process.
- o. Project's potential effect on economic development within project area.

- p. Documentation of cultural resources in the affected project area.
 - q. An outline of the water conservation plan.
 - r. Action necessary and action taken to comply with all applicable state and federal laws including the National Environmental Policy Act, Fish and Wildlife Coordination Act, Endangered Species Act, Clean Water Act, and state and federal laws pertaining to identification and preservation of cultural resources with letters from the appropriate agencies.
 - s. Other information requested by the state engineer.
2. The applicant must consider whether an alternative project could satisfy the objectives of the applicant. The preliminary engineering report must set forth a general discussion of all other alternatives considered before and during report preparation, a description of the preferred alternative, and a no action alternative.
 3. The applicant shall submit one copy of the feasibility study to the c-district and three copies to the bureau.
 4. After initial review of the preliminary engineering report, the state engineer may decide:
 - a. The proposal or parts of the proposal are eligible for program funds. The state engineer shall notify the applicant in writing that the proposal or parts of it are eligible for funding.
 - b. The information provided is inadequate and may order the applicant to provide more information,

or may obtain more information.

- c. The proposal or parts of the proposal are not eligible for program funds. The state engineer shall notify the applicant and include the reasons for ineligibility in writing.
- d. The state engineer shall submit a copy of all notifications to the c-district.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Feasibility study - Review - Report.

- 1. An applicant whose project is eligible to receive program funds must submit a copy of a feasibility study to the state engineer. The feasibility study must include the following information:
 - a. All the information required by subdivisions a, b, c, e, f, g, h, i, j, k, l, m, n, o, and r of subsection 1 of section 89-__-__-__. This information, however, must be updated and submitted in more detail and clarity.
 - b. Project plans and alternative plans with a description of the preferred alternative.
 - c. A description of proposed water treatment and storage facilities.

- d. Design criteria including population projections and water demands.
 - e. Ability and willingness of beneficiaries to pay capital and other costs.
 - f. Cost estimates for capital and other costs.
 - g. Economic and engineering project cost analyses.
 - h. Design and operation alternatives.
 - i. Methods of construction.
 - j. Operation, maintenance, and replacement plan.
 - k. Entity responsible for operation, maintenance, and replacement.
 - l. Entity responsible for administration of contracts.
 - m. A county soil map with prime farm land indicated.
 - n. Water conservation plan.
 - o. Any other information requested by the state engineer.
2. For projects that deliver Missouri River water to the Hudson Bay drainage area, a determination must be made that treatment will be provided to meet requirements of the Boundary Waters Treaty Act of 1909.
3. The applicant shall submit one copy of the feasibility study to the c-district and three copies to the bureau.

4. After review of the feasibility study, the state engineer shall prepare a report setting forth its recommendations regarding the project. The report shall address whether the project is consistent with statewide plans and programs.
5. The state engineer shall provide a copy of the report to the commission and c-district.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-62, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01

89-_____. Design and construction requirements.

1. In order to receive program funds for design and construction, an applicant must submit to the state engineer:
 - a. Documentation of the engineering selection process for design and construction engineering services and a copy of the contract for engineering services for design and construction.
 - b. Engineering plans, designs, and specifications not less than 40 days prior to the start of the invitation to bid date.
2. No construction contract may be awarded or construction initiated until the plans, designs, and specifications have been approved by the state engineer, c-district, and bureau. Any changes in plans must be approved by the state engineer, c-district, and bureau.

3. Construction contracts over \$2,000 must incorporate the Davis-Bacon wage rate unless otherwise specified.
4. The entity responsible for operation, maintenance, and replacement shall contract with water users for payment of:
 - a. Water delivery.
 - b. Hookup.
 - c. Standby service charges.
 - d. Other fees necessary.
5. Documentation of the following must be made available to the state engineer and c-district prior to the applicant receiving construction funds:
 - a. Procurement process for services and goods.
 - b. Necessary state water right permits.
 - c. Necessary state permits controlling diversion and distribution.
 - d. Rights-of-way for construction (easements).
 - e. All contracts relating to the project.
 - f. Applicable federal permits.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1,
61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Funding - Priority.

1. Program funds shall be provided to eligible projects to the extent funding is available as determined by the commission and c-district. Program funds may be provided in the form of grants or loans, or both, and may be provided for a feasibility study or for design or construction of a project, or a combination of the three. The commission and c-district shall jointly decide whether to provide program funds to an applicant for a feasibility study or for design or construction of a project, or a combination of the three, and shall jointly decide the amount of funding.
2. The commission and c-district shall evaluate each eligible project based on the following criteria:
 - a. Need for improving water supply quantity and quality problems or both.
 - b. Local contribution to project funding.
 - c. Location of project to the Garrison Diversion Conservancy District.
 - d. Eligible project costs.
 - e. Cost of project per capita.
 - f. Median household income of service area.
 - g. Monthly water user rates.
 - h. Economic development.

- i. Water conservation plan.
- j. Other criteria determined to be relevant by the commission or c-district.

Based upon these evaluations, the commission and c-district shall rank the eligible projects in priority order which, based on their judgment, are in most need of funding. A report ranking the eligible projects must be in writing and include data substantiating the determinations. This data must be available to the public upon written request.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01

89-__-__-__. Reports to commission and c-district. After a project has been determined to be eligible for program funds, a report must be submitted to the commission and c-district by the end of each quarter regardless of whether funds have been requested. The quarterly report must include:

1. A schedule and cost of work for the upcoming quarter.
2. A written report describing progress during the preceding quarter and the cost of work performed during the preceding quarter.
3. Other information requested by the commission.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1,
61-02-24.1, 61-24-08, 54-40-01

89-__-__-__ . Contract awards.

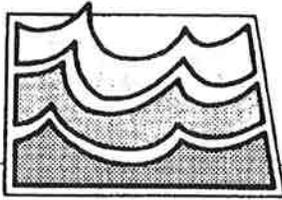
1. Prior to the award of any contract, the applicant shall provide the state engineer and c-district the following:
 - a. A bid abstract.
 - b. A statement of the low bidder's qualifications even if the contract is not awarded to the low bidder.
 - c. A statement of intent to award the contract at least fifteen days prior to proposed contract award.
 - d. A written justification describing the reasons for non-selection of the low bidder, and reasons for the proposed selection if the applicant plans to award the contract to other than the low bidder.
2. Contracts must be pursuant to United States OMB Circular A-102 and state law.
3. The following items must be submitted to the state engineer and c-district after the award of the contract:
 - a. The contractor's performance and payment bond.
 - b. The contractor's certificate of insurance.
 - c. The contractor's license.

- d. The contract.
4. A construction management plan must be submitted to the state engineer and bureau within thirty days after the award of the contract. The construction management plan must include the following:
- a. Construction schedules.
 - b. Contract requirements.
 - c. Contractor qualifications, duties, and responsibilities.
 - d. Agreement for engineering services, including description of coordination activities with the commission.
 - e. Field office location, addresses, and phone numbers of project personnel.
 - f. Resumes of professional staff.
 - g. Safety program.
 - h. Other information requested by the state engineer.

History: Effective _____, 1994

General Authority: NDCC 61-02-14, 28-32-02

Law Implemented: NDCC 61-02-14, 61-02-64, 57-51.1-07.1, 61-02-24.1, 61-24-08, 54-40-01



North Dakota State Water Commission

900 EAST BOULEVARD • BISMARCK, ND 58505-0850 • 701-224-2750 • FAX 701-224-3696

Telephone Conference Call Meeting
Governor's Conference Room - Ground Floor
State Capitol
Bismarck, North Dakota

December 29, 1993
9:15 AM, Central Standard Time

AGENDA

- A. Roll Call
- B. Consideration of Agenda
- C. *Southwest Pipeline Project Pipe Materials Deficiencies* **
- D. Other Business
- E. Adjournment

* * * * *

** *ITALICIZED, BOLD-FACED ITEMS REQUIRE SWC ACTION*

If auxiliary aids or services such as readers, signers, or Braille material is required, please contact the North Dakota State Water Commission, 900 East Boulevard, Bismarck, North Dakota 58505; or call (701) 224-4940 at least five (5) working days prior to the meeting. TDD telephone number is (701) 224-3696.

GOVERNOR EDWARD T. SCHAFER
CHAIRMAN

DAVID A. SPRYNCZYNYATYK, P.E.
SECRETARY & STATE ENGINEER

NORTH DAKOTA STATE WATER COMMISSION

REGISTER

ATTENDANCE AT State Water Commission Meeting
 DATE December 29, 1993 PLACE Bismarck, ND Telephone Conf. Call
 PROJECT NO. _____

Your Name	Your Address	Who do you Represent? (Or Occupation)
Dale Frink	Bis	SWC Staff
Tim Fay	Bismarck	SWC Staff
Mike Dwyer	Bismarck	Southwest State Park
JEFF WEISSPENNING	BIS	SMITH VOGEL
Michele Johnson	Bismarck	Attorney General's Off. & SWC
Julie Krenz	Bismarck	" " "
Curt Peterson	Bismarck	AGC/ND
Dave Sprengel	Bismarck	SWC
Gov. Schaefer	Bismarck	Governor - Chairman
Sharon Lockau	Bismarck	SWC Staff