

MINUTES OF A MEETING OF THE
STATE WATER CONSERVATION COMMISSION

Held in the State Water Commission Office, Bismarck, October 9, 1944.

A special meeting of the North Dakota State Water Conservation Commission was held in the Water Commission Office, State Capitol, on October 9, 1944. The meeting was called to order by Vice Chairman Kenneth W. Simons at 11:00 A.M. with Commissioners Simons, Orlady and Dahl; J. J. Walsh, Acting Secretary; Lt. Col. H.H. Roberts and Mr. Lightfoot of the U. S. Army Engineers, Ft. Peck, Montana; John Revig, Roy Yeung and Sam E. Arthur, representing the City of Mandan; and Bruce Johnson, Engineer for the Bismarck Office of the Bureau of Reclamation were present. Governor Moses and Commissioner S. W. Thompson were absent.

The Army plan for the Heart River Development was discussed by Lt. Col. Roberts.

"We have considered two plans, one for flood control and the other for flood control and irrigation, both plans to include levees for the protection of Mandan. We have used old studies in regard to the flood control and irrigation. We set up storage capacity of 50,000 acre feet for irrigating 13,000 acres of land. We also set up two irrigation gravity systems, one at Big Bend and the other at Mandan. We designed a reservoir that will take care of flood control and irrigation. We found that that plan was feasible, the benefits were about equal to the costs, slightly more. As I recall, on the basis of our studies, if we plan on irrigation alone, the same acreage, it is not as feasible. If we are going to recommend a flood control project any way, it would be proper to figure in irrigation for storage for the additional cost. You can generally build the top portion of the reservoir cheaper than the lower portion. Our studies are based on that consideration and that gives us irrigation storage at a relatively small figure, \$3.00 per acre foot or probably less.

"In writing up our recommendations, since irrigation is not within our prerogative, we have recommended that the flood control project involving the construction of a reservoir and levees at Mandan be approved with the understanding that additional storage be provided if and as required. It will have to be a higher dam if we are to provide for irrigation. The estimated storage capacity for flood control is 87,000 acre feet and for flood control, irrigation and multiple uses, the reservoir will have an estimated storage capacity of 143,000 acre feet. The dam will be constructed of earth fill and could be very easily increased in size to care for the additional storage required for irrigation."

Comm. Simons: Do your measurements show the maximum flow at Mandan in 1943?
Mr. Lightfoot: On the Heart River it showed approximately 18,000 second feet.

Comm. Simons: Did you calculate what the reduction would have been if there had been a dam up there? Col. Roberts: You mean reduction in flood height?
Comm. Simons: Yes. Col. Roberts: We have in the plans figures that will show the height of the levee with storage reservoir. The design calls for taking care of 15,000 second feet.

Comm. Simons: I understand this report has been reviewed by the Bureau of Reclamation. Is there a report back from that review? Col. Roberts: Yes. Comm. Simons: Have they approved it? Col. Roberts: That is confidential.

Comm. Simons: About distribution of costs, do you have costs on this? Col. Roberts: First cost for Heart Butte Dam for flood control only is \$1,503,000. The first cost for combined flood control and irrigation storage is \$1,651,000. The estimated irrigable acreage is 13,000 acres and the Bureau of Reclamation estimate is 14,000 acres. We estimate 50,000 acre feet for irrigation purposes.

Col. Roberts: This flood control dam with a storage capacity of 87,000 acre feet can be added to and this can be put in the report to the Congress.

Comm. Simons: When your report goes in, will it recommend 143,000 acre feet or 87,000 acre feet? Col. Roberts: 87,000 acre feet with the provision that it can be added to.

Col. Roberts: Write the Chief of Engineers and War Department and say that you want this storage. Cooperate with the Bureau of Reclamation.

Comm. Simons: How high would the dikes have to be built for safety? Col. Roberts: We have profiles for one with the reservoir and one without. Mr. Lightfoot: We cannot put in one figure because it varies.

Col. Roberts: \$600,000 for raising railroads, construction of levees, etc. The Flood Control Act requires that local interest must provide certain things, primarily rights of way and in addition other things; the approaches to any bridges have to be provided by local interest. Some bridges will have to be raised. Whether the reservoir is built for flood control only, or for flood control and irrigation, the local contribution would be the same for the City of Mandan.

"Cost of local cooperation would be: Railroad cost \$6,400 (raising the approaches) in the east side of town, the fill would be used as a levee. There are parts of it that would have to be raised. State Highway No. 6 is the one I mentioned where the grade will have to be changed in order to get over the levee. The State Highway Engineer said they would cooperate. \$63,000 for roads. Most of the work would be on State Highways. The next item is sewage. There has to be a new pumping system, a type that will take pressure. \$13,000 for pumping plants and \$4,500 for right of way. The total estimate of local contribution would be \$87,400. For the reservoir the Federal Government pays everything, the rights of way, roads, changes, etc.

Top of dam elevation for multiple purpose would be 2092 feet. Valley elevation is 2000 ft. Dam will be 92 feet high. The elevation of the flood control dam would be 2089 feet. There is only a 3 foot elevation difference for irrigation purposes.

CONCLUSIONS OF THE ARMY REPORT: The Heart River Basin is largely undeveloped and is not subject to severe floods except near the mouth near Mandan. The city has been inundated by floods both from the Heart and Missouri. The floods at Mandan have been caused by ice jams of either or both. Also by snow melts which may have caused some backwater. The greater number have been caused by ice jams. The worst one was in 1943. It is concluded that the main flood problem is at or near Mandan. Some alterations to the railroad yards and classification lands will be necessary. It has also been determined that it is also practicable to construct the Heart Butte Dam for flood control only or for flood control and irrigation and that after the construction of a system of levees to give reasonably complete protection of Mandan and partial protection can be accomplished.

There is need for irrigation and the Heart Butte Dam has been recommended for flood control and irrigation. There are approximately 13,000 acres. 3,200 acres are in the vicinity of Mandan and could be, by diversion, irrigated.

A combined project for flood control and irrigation, reservoir, supplemental levees at Mandan and the State Training School and for irrigating 13,000 acres would cost approximately \$2,467,000 or \$115,243 annually and would have benefits of \$122,250 and would have additional benefits which have not been evaluated. A project for flood control only and supplemental levees would cost a total of \$1,749,000 or \$75,785 annually.

The recommendation should be for flood control and it should be constructed at the same time to provide for irrigation and other purposes. 50,000 acre feet of such storage capacity can be furnished at \$3 per acre feet and the annual storage charge will be 3¢ per acre for the 13,000 acre irrigation project.

RECOMMENDATIONS OF THE ARMY REPORT: It is recommended that a Federal flood control project be adopted for the City of Mandan and the State Training School and partial protection for rural area near or at Mandan at an approximate cost to the Government of \$1,749,000 for new work and \$2,650 for annual maintenance and an estimated cost of \$87,000 for new work and \$1,100 for annual maintenance. The construction of such a project to be prosecuted by the War Department and supervised by the Chief of Engineers.

(a) Heart Butte Dam Reservoir to be constructed primarily for flood control, particularly at Mandan and for silt control provided that if desirable at the time of construction, the capacity of the reservoir be increased for irrigation and other purposes.

(b) Existing levees at Mandan and the State Training School to be raised and relocated. Bridges to be raised and work incidental to strengthening of railroad grades, etc.

Comm. Dahl: What would be the length of the dam? Col. Roberts: About 1100 feet plus the spillway or about 1400 or 1500 feet. And it would be about 600 feet at the base.

Comm. Orlady moved that a Resolution be drawn to include the Conclusions and Recommendations of the Army and also express the approval of increasing the height at the time of construction; that said Resolution be sent to Governor Moses for his approval. Comm. Dahl seconded the motion. Roll call taken with Comms. Orlady, Dahl and Simons voting aye.

R E S O L U T I O N

WHEREAS, The North Dakota Water Conservation Commission has examined the plans for the development of the Heart River as proposed by the Corps of Engineers of the United States Army; and

WHEREAS, the Chief of Engineers of the Corps of Engineers of the U. S. Army has indicated his desire to ascertain the views of the State of North Dakota as represented by this Commission,

NOW THEREFORE, BE IT RESOLVED, that we, the members of the North Dakota Water Conservation Commission, in legal meeting duly assembled at Bismarck, North Dakota this ninth day of October, 1944, do hereby express ourselves to the Chief of Engineers of the Corps of Engineers, U. S. Army, as follows:

1. We hereby endorse the Conclusions and Recommendations contained in the "Review Report of the Heart River Project and Flood Control at Mandan, N. D.", dated May 15, 1944.

2. It is the judgment of this Commission that of the two plans presented therein, one for flood control alone and the other for a multiple-purpose development, comprising flood control and irrigation, the latter is much to be preferred. The multiple purpose development will be of greater value and will give the taxpayer greater value for the money expended.

AND BE IT FURTHER RESOLVED that we hereby call upon the Secretary of War and the Chief of Engineers of the U. S. Army Engineers, in cooperation with other interested government agencies, to provide for the construction of the proposed Heart Butte Dam with sufficient storage capacity to provide for both flood control and irrigation approximately as outlined in the report referred to above.

The State of North Dakota, acting through the instrumentality of the North Dakota Water Conservation Commission, hereby asserts its willingness and its desire to cooperate in the construction of said dam and appurtenant irrigation works, said cooperation to be within the limits of the laws of the State of North Dakota and subject to its limitations and provisions.

STATE WATER CONSERVATION COMMISSION

/s/ Kenneth W. Simons
Vice Chairman

Comm. Dahl moved that the meeting adjourn. Comm. Orlady seconded the motion. Motion carried.

Meeting adjourned at 1:00 P.M.

Respectfully submitted

J. H. ...
Acting Secretary

ATTEST: [Signature]
Chairman