OPPORTUNITIES LOST THROUGH FAILURE TO DEVELOP IRRIGATION IN CENTRAL SOUTH DAKOTA

William C. Klostermeyer¹

ABSTRACT

In the mid-1980s, several irrigation projects were evaluated and proposed for development as part of the Pick-Sloan Missouri Basin Project. Included as part of the Central South Dakota project was the evaluation of waterfowl enhancement opportunities. During these studies, it was found that waterfowl production is generally limited, even though there may be wetlands available, by an inadequate number of wetlands that maintain water throughout the duck brood rearing season. With proper planning the development of these proposed irrigation projects would have provided the source of water for the increased production of waterfowl.

This paper discusses in some detail an evaluation made in association with the Bureau of Reclamation's proposed CENDAK Irrigation Project. Three of six Central South Dakota counties located in the CENDAK Project area were evaluated for the potential to increase wildlife productions. Forty thousand two hundred (40,200) acres of wetlands were identified in these counties as having enhancement potential on the basis of wetland permanency, size, and proximity to planned irrigation canals and the source of water that the project would provide.

In conjunction with the irrigation study, the U.S. Fish and Wildlife Service selected four wetland areas for further evaluations. Changes in duck population were evaluated by a mallard production simulation model. Three different types of management actions were evaluated. The first action, which just provided supplemental water from the irrigation system to existing wetlands, produced an increase in the recruitment rate at up to 660 percent greater than present conditions. Production of young increased up to 28 times over present conditions as

¹ Vice President, Bookman-Edmonston Engineering, Inc., 1130 Connecticut Ave, NW, Suite 350, Washington, D.C. 20036.

1996 USCID Wetlands Seminar

a result of supplying supplemental water. The other two Management Action plans required more extensive development but had similar results.

Development costs for the three management actions varied depending upon the amount of land in private ownership. The development cost ranged from \$86 per wetland acre for supplemental water management to \$680 per wetland acre for a more extensive action plan at a wetland that was entirely in private ownership. Federal cost sharing could be available if enhancement was included as part of the Federal Water Project. Similar waterfowl enhancement opportunities are likely to exist in other parts of the Great Plains through better integration of irrigation projects and fish and wildlife enhancement.

INTRODUCTION

The history of large irrigation projects in the Dakotas goes back to as early as 1939 when Congress directed the Bureau of Reclamation to develop an irrigation plan to provide relief for the drought-stricken states of the Dust Bowl. This plan eventually was integrated with a plan developed by the Corps of Engineers to control flooding in the Missouri Basin. Combined, the plan became known as the Pick-Sloan Missouri Basin Program. In addition to benefits from irrigation and flood control the Pick-Sloan Plan provided benefit from hydro-electric power, navigation, recreation and fish and wildlife. Several projects materialized out of the Pick-Sloan Plan in both North and South Dakota. We are now near the center of one of these projects, the Garrison Diversion Unit. The paper will discuss a project that was a spin-off of another project authorized under Pick-Sloan Plan in South Dakota, the Oahe Unit.

Construction on the Oahe Unit was initiated in 1974 and it was terminated in September of 1987 because of the lack of local support stemming in part from environmental concerns with the project, and objections from those outside the project area to having some of their lands condemned for wildlife mitigation.

CENDAK IRRIGATION PROJECT

In the fall of 1980, when it became apparent that the Oahe Unit would not be constructed, leaders in six South Dakota counties lying between the Missouri and James Rivers in the Central South Dakota region began to contact land owners to determine the interest in developing a multipurpose project. The farmers in each of the six counties formed an organization to pursue that effort and CENDAK Water Supply System, Incorporated, was formed. Using local funds collected from the county organizations and from land assessments on nearly 400,000 acres of land of which land owners expressed an interest to irrigate, studies were conducted by consulting engineers working for CENDAK. These studies, reviewed by Reclamation, showed that feasibility studies were warranted. In 1982, Congress authorized studies to determine the feasibility of alternative uses of the uncompleted facilities of the Oahe Unit. The Bureau of Reclamation/State/ CENDAK studies of the economic, engineering, environmental aspects resulted in a planning report/draft environmental statement, which was released in 1986.

The CENDAK study was unique in several respects: It was the result of a grassroots effort to seek water development in Central South Dakota: funds were obtained from interested land owners to pursue initial studies; and it was studied cooperatively by the Bureau of Reclamation, U.S. Fish and Wildlife Service, South Dakota Department Game and Fish, South Dakota Department of Water and Natural Resources and CENDAK Water Supply System, Inc. which was represented by the consultants Bookman-Edmonston Engineering, Inc. It had been proposed from the start that CENDAK Project would be a replacement for the terminated Oahe Unit. The uncompleted features of the Oahe project would be utilized by the CENDAK Project. The main purpose of CENDAK Project would be to provide project water for sprinkler irrigation to those landowners with desires to develop irrigation to stabilize feed supplies for the livestock industry of the state. The source of the water for the project would be Lake Oahe, behind the Oahe Dam near Pierre, South Dakota. The irrigated area of 474,000 acres would be disbursed throughout a gross area of 2.5 million acres located in the six county area lying from Pierre and the Missouri River eastward to the James River near Heron. South Dakota, a distance in excess of 100 miles.

The primary benefit of the firm water supply was to supplement precipitation for 474,000 acres which would provide greater stability to the economic and social conditions in Central South Dakota. Wildlife would enjoy benefits from assured water supplies, food, and cover. The plan also proposed that a wetland trust would be established to fund Wildlife habitat enhancement. Even though studies found the CENDAK Project to be economical and financially feasible, objections to the size of the project grew and opposition developed for reasons beyond the scope of this paper. In 1988, CENDAK Water Supply Systems Inc. requested a rescoping report be prepared on reducing the size of the project from 474,000 acres to 300,000 acres. At the same time, an alternative financing program was developed for a locally constructed project which provided a reduction in the total cost of 30 percent. Unfortunately even the rescoped project did not moved forward due to a building up of resistance in Congress and among the environmental community to large scale federal water projects.

WILDLIFE AND WATERFOWL ENHANCEMENT

With that as some background, let me discuss some of the opportunities that were lost to the wildlife and waterfowl enhancement potential. The local sponsors of the CENDAK Project recognize that the construction and operation would preserve and offer significant potential for the enhancement of wildlife habitat. As mentioned earlier the principal purpose of the project was to stabilize livestock operation. The current conditions were and still are resulting in the instability of livestock operations and was forcing land owners to convert to grain production and the consolidation of farming operations. This consolidation meant that existing wildlife habitat along fences and homesteads would disappear. The stability of the livestock operation would allow many of these fences and homesteads to remain. The benefit of bringing water into this area would provide major opportunities for wildlife and waterfowl enhancement in addition to the mitigation required to offset losses due to project construction. There would be numerous opportunities to enhance and create wetlands particularly in the drought years and even the unenhanced wetlands would benefit because land owners would not need to graze or cut them for the limited amount of cattlefeed in drought years.

ON-FARM MITIGATION

The local sponsors prepared a rather unique on-farm mitigation program for wildlife habitat. The sponsors believe that each water user should be responsible for mitigating his net wildlife habitat losses resulting from irrigation. The concept was that each water user would be responsible for providing mitigation measures on his farm or by participating in a pool for wetland or woodland habitat losses on his irrigated land. Mitigation for predominately unavoidable habitat losses on cropped tame grass and native grass converted to other irrigated crops would be shared by all water users in relation to the amount of irrigated acreage. The local district would establish a pooling program for water users unable to provide on-farm mitigation sites through which payments would be made by such water users for wetlands and woodland mitigation obligations. Water users land devoted to mitigation measures would remain in private ownerships for the mitigation plans and conditions duly recorded with the county recorder as a continued obligations. Mitigation obligations of the water users would be incorporated in a water service contract between the water users and the local district. Non performance would be a basis for remedial measures including termination of water service. Finally, the local districts obligations to implement, maintain, monitor and enforce on-farm mitigation would be incorporated in the water service contract with Reclamation.

WETLAND OPPORTUNITIES

A study conducted by the U.S. Fish Wildlife Service in the CENDAK Project area identified in detail, some of the possible opportunities existing in South Dakota to help reverse the trend of declining populations of waterfowl. Critical population levels of many duck species were evident in 1985, when the U.S. Fish and Wildlife continental duck breeding survey recorded the lowest number of ducks in a 31 year survey history.

Many factors beyond the scope of this paper are responsible for the declining number of waterfowl at this point of history. The federal government has long recognized that waterfowl production is a very important wetland value and has developed policies to discourage wetland draining and filling, but the loss of wetlands continued. It was recognized that some federal irrigation projects would have the potential to provide a source of water that could be used to stabilize and increase the size of wetlands where waterfowl habitat is severely limited. Some irrigation projects might cause additional loss of acres of wetlands through the development but properly planned wetland enhancement opportunities from these projects would be possible once the unavoidable wildlife impacts of the projects have been totally compensated. It appears that in some areas, waterfowl production is limited by inadequate brood rearing habitat, even though there might be abundant breeding pairs

and nesting habitat present. The development of more permanent wetland for brood rearing in these areas through such practices as the construction of suitable ponds, development of island complexes, and provisions of supplemental water, can provide for dramatic increases in waterfowl production. Providing supplemental water supply can be particularly effective in areas in where brood rearing wetlands are in short supply and temporarily flooded wetlands with management potential are abundant. This obviously would be specially so during drought years when brood rearing habitat is critical. Generally, the additional sources of water are not readily available for such purposes.

DETAILED STUDIES

The U.S. Fish and Wildlife Service addressed the potential for bringing water through the CENDAK Project in order to develop brood rearing areas in the Project's central and western counties where wetlands are generally limited and where temporary wetlands suitable for water management are plentiful. The U.S. Fish and Wildlife Service identified in their 1986 study opportunities for wetland and wildlife enhancement in three central and western counties within the CENDAK Project area. The wetlands were screened and those that it appeared would benefit from supplemental water were identified and mapped. Criteria for selection included wetland size and wetland proximity to irrigation canals. Generally, larger wetlands were chosen because they would provide the best brood rearing habitat and a lower development cost than small wetlands. Through this three county area, approximately 40,200 acres of wetlands, were selected. It was recognized that this selection of potential wetlands should be just considered as a pool from which could be developed a waterfowl enhancement program, recognizing that considerable work could be required before individual wetlands could be actually selected for the plan.

As part of the overall wetland enhancement opportunity study, the U.S. Fish and Wildlife Service looked at four specific wetland areas, selecting from the potential pool of available wetlands. Potential costs associated with the selected wetland waterfowl management could be applied to other wetlands in the pool as well. The wetland areas were representative of the limitation of the waterfowl habitat in the three county Central South Dakota area. The U.S. Fish and Wildlife Service used a mallard production simulation model which was developed at the Northern Prairie Wildlife Center to evaluate the effects of the supplemental water management, upland nesting cover management, and development of islands for nesting purposes on waterfowl production in the wetland areas.

The evaluations were based on three management actions building on each other, to increase the brood rearing habitat. The first management action was basically to provide additionally good quality water to the existing wetlands. Water permanence would be increased from the present wetlands classifications (temporary or seasonally flooded) to semi-permanently flooded areas. Wetland areas would remain the same size and all the other land use conditions would remain on the same base line. The second management action looked at the management of the upland areas to produce better nesting habitat. The third management action adds the development of nesting islands in the wetlands to the water and to the upland management actions.

The results of the model simulation predicted large increases in the mallard reproduction rates for all four areas under the management actions. The water management action alone, according to the U.S. Fish and Wildlife Studies, could be expected to produce an increase in recruitment rate for the four areas ranging from 530 to 660 percent greater than present recruitment. Equally outstanding and surprising increases in young produced over the present conditions were documented in the study. The water management action alone produced a 5 to 28 fold increase in young produced over present conditions. Although the other two management practices of upland nesting cover and island development also produces potential increases in production, those increases were not as great as provided by additional water.

BENEFITS AND COSTS

No water project would be complete without looking into some of the benefits and cost of the management actions. Obviously the on farm mitigation costs were to be achieved through the efforts of the farmers in order to receive the benefits of the additional water to the farms. This was not to be a project cost and the benefits from mitigation would offset any losses that would incur in project construction.

The estimated costs associated with implementing waterfowl management procedures evaluated by the mallard model at the four wetland areas provided an idea of what similar development at other wetland sites in the three county area could be. Costs per wetland acre for Management Action I ranged from \$86 to \$108. For Management Action III the total costs ranged from \$155 per wetland acre to \$680 per wetland acre. Acquisition costs were the most expensive element of each development plan. Where a large proportion of the wetland is already in public ownership this item would be minimized. Alternatives to fee title would reduce the cost of developing enhancement areas. Federal cost sharing could be available if the enhancement was included as part of a Federal Water Project.

The enhancement benefits due to implementing wildlife management procedures, unfortunately, are not described in dollar and cents terms. The study concluded that wildlife recruitment rates from the water management action only would be increased as much as 660 percent compared to present conditions and production of young could be increased up to 28 times the present condition. The upland nesting cover and island development actions would also produce substantial increase in production.

As a indicator of outside interest for this type of enhancement from water projects, Ducks Unlimited stated in a letter to U.S. Fish & Wildlife Service, dated March 26, 1985, that it would be inconceivable that the CENDAK Project would not contain many waterfowl enhancement projects and that Duck Unlimited would be interested in participating in such a program when the CENDAK Project is in operation.

CONCLUSIONS

In concluding, while recognizing that some water projects may have contributed to the reduction of wildlife habitat. It can be shown that properly designed projects which take into account wildlife and waterfowl enhancement opportunities could go along ways towards reducing the decline in wildlife and waterfowl in the Northern Great Plain area. It is almost inconceivable to think that bringing water into an area for irrigation and agriculture use could not also be used to enhance wildlife and waterfowl habitats. There has been many opportunities lost through the failure to develop irrigation in Central South Dakota and these opportunities are not only related to the agriculture communities, the municipal and industrial users but also to environment enhancement.

REFERENCES

Waterfowl Enhancement Opportunities Associated with Federal Water Project Development in South Dakota, U.S. Fish and Wildlife Services, Ecological Services, South Dakota Field Office, Pierre, South Dakota April 1986.

Rescoping Report on Central South Dakota Water Supply System-CENDAK PROJECT. Pick-Sloan Missouri Basin Program, prepared by Bookman-Edmonston Engineering, Inc. August 1988.