

BUREAU OF RECLAMATION WATER PROJECTS

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It is a real treat for me to take part in your conference and to have the opportunity to get acquainted with all of you. You have certainly made me feel welcome here in the "Land of Enchantment." Coming from the plains of Kansas, I already felt at home here on the High Plains of the Southwest or the Llano Estacado. There are many similarities with my home in Kansas.

It seems that in both areas, many times we are plagued by a sudden overabundance of water or we are handicapped by a prolonged lack of water. In fact most residents of both areas would probably agree with my hydrologists who say the last time we had an accurate weather forecast was when God told Noah there was a 100 percent chance for rain.

It has long been a fact of life in this region that water must be stored during those moisture fat years to be used during the lean years. With increasing demands on available water supplies as a result of a growing population, a need for more irrigation water, and heavier industrial requirements, it is not surprising that the predictions on the life of the Ogallala aquifer are of deep concern.

Since 1902, the Bureau of Reclamation has been involved in water development in the west, and today I want to describe some of our current activities here in New Mexico.

Obviously the theme of your conference, "Hope for the High Plains," reflects your concern for the future of this area. A future which depends on a dependable supply of water. I am sure citizens in the other five states involved in the Economic Development Administration's High Plains Study share your feelings.

Shortly after Congress initiated the High Plains Study (1976), we launched the Llano Estacado Playa Lake Water Resources Study in New Mexico, Texas, Oklahoma, Colorado, and Kansas (1977). Since our findings

assess a specific water resource in the area and methods employed to utilize it, we feel the information is pertinent to the High Plains Study.

The purpose of our study was to investigate the availability of playa lake water supplies in the southern High Plains regions of eastern New Mexico and the Texas Panhandle in addition to the High Plains areas of Colorado, Kansas, and Oklahoma lying south of the Arkansas River.

Playa lakes are natural depressions, sometimes reputed to be buffalo wallows, which collect rainfall and snowmelt seasonally. Most of the water collected is lost to evaporation. Some farmers use the water as a supplemental supply. There are some efforts to lengthen the storage period by structural modification. The thrust of the investigation was to determine:

1. the dependability of the supply;
2. where, when and how much of this water is available; and
3. how and to what extent these playa lake water supplies are being utilized.

We found that since evaporation rates are seldom exceeded by precipitation amounts, the uncertainty of the supply and the costly modifications required to produce carryover storage, the playa lakes are unlikely candidates for any large scale projects.

The results paint a positive picture of local conservation practices in the vast area covered by the study. In fact the myriad of conservation methods being employed is quite impressive.

Innovative farmers and ranchers are changing water application practices, timing, and spacing. Many of the crops are drought-resistant strains developed through extensive research and which also consume less water. These progressive minded conservationists are also employing soil moisture sensing and better, more efficient water-saving cultivation practices. Our studies pointed out that tailwater systems are being used extensively to re-use surface runoff.

Some irrigation districts maintain quite active conservation pursuits under the bureau's Rehabilitation and Betterment Program. In May 1968, the Carlsbad Irrigation District signed a Rehabilitation and Betterment contract with the United States.

This contract is being accomplished with district forces and machinery purchased with program funds. The project is 87 percent complete with 89 miles of canals and laterals now lined. All work under the contract is scheduled for completion in 1984 for an approximate cost of \$6 million. Anytime you are in this area we would encourage you to see for yourself how these repayable dollars were used to modernize an irrigation system.

A rehabilitation and betterment study is underway for the Arch Hurley Conservancy District on the Tucumcari Project. A rough draft of the R&B report has been completed and is being reviewed in our regional office.

Some rehabilitation work is underway on the Middle Rio Grande Project's low-flow conveyance channel. The channel begins at the San Acacia Diversion Dam and continues downstream for approximately 70 miles. The overall intent of the low-flow conveyance channel was to effectively salvage and transport water through the lower portion of the middle valley and into the normal pool of Elephant Butte Reservoir. Water salvage continues to be of increased importance due to the state of New Mexico's obligation under terms of the Rio Grande Compact.

As a result of several years of sediment accumulation and deterioration of channel slopes over the period of 1975 to 1981, the channel is presently inoperable.

Partial funding was made available by the Commissioner of Reclamation late in calendar year 1981 and a contract was awarded January 27, 1982, for rehabilitation of the first seven miles of the channel. Depending on the availability of funds, a contract will be awarded this summer for rehabilitating an additional 13 miles. Floodway rectification and channelization to Elephant Butte will be accomplished in 1983 and 1984, once again depending on available funding.

While the bureau has been active in New Mexico for many years, we will continue to seek ways of providing water and power where it is needed in New Mexico so the acute need does not become a chronic anemia.

We are to conduct special studies to determine the feasibility of developing hydropower energy by constructing hydroelectric power plants

at the existing Caballo and El Vado dams. Both studies will be completed during FY 83.

Subject to concurrence of the Office of Management and Budget and Congress, the bureau is gearing up to start a \$68 million, eight-year program to prove whether or not winter cloud seeding can increase the water available in the Colorado River Basin. A substantial amount of runoff could occur in the Rio Grande Basin. Financing for the program is being sought through funds provided by the sale of hydroelectric energy from the bureau's Colorado River facilities. This weather modification effort could well enhance the prospects for a project we are studying now.

Feasibility investigations for the Gallup Project were initiated in November, 1973. Initially, this investigation was aimed at developing a water supply for the city of Gallup, New Mexico. In early 1975, the Navajo Indian Tribe indicated an interest in joining with Gallup in the planning of a water delivery system from the San Juan River. We renamed the study, Gallup Navajo Indian Water Supply Project, and began to paint with a broader brush, extending the study to include the eastern part of the Navajo Reservation. The investigation evaluates three plans for development of additional water supplies from the San Juan River to meet immediate and long-term demands. We are scheduled to complete the draft feasibility report and the Draft Environmental Statement May 31, 1982.

The preferred plan calls for water to be released from Navajo Reservoir into the San Juan River and diverted from the river just upstream from the Animas River junction, then delivered to 32 communities in New Mexico, Arizona, and Utah. The plan also includes a regional water treatment plant so that treated water would be delivered to project users.

A private dam and reservoir are under study by the bureau in north central New Mexico. The Santa Cruz Dam and reservoir provide irrigation service to approximately 4,200 acres in the Santa Cruz Irrigation District. The dam was privately constructed in 1929 with an initial reservoir capacity of 4,500 acre-feet, of which about 25 percent has been lost to sediment deposits. In addition, there has been structural

deterioration of the dam face, and the spillway capacity is inadequate by present standards.

The study will determine the present dam deficiencies and cost for repair and modifying the spillway as well as the need for additional water and the economic feasibility of providing additional reservoir capacity. The investigation is scheduled to be completed in 1983.

In southeastern New Mexico there soon will be more tangible evidence of reclamation at work in the state. The Brantley Project is located on the Pecos River in Eddy County about midway between the cities of Carlsbad and Artesia. A safety evaluation of McMillan and Avalon dams showed that potential flood would exceed the existing spillway capacity at McMillan and cause the structure to be overtopped, which could result in failure of the dam. The study also showed that the existing spillway capacity of Avalon Dam downstream, would protect that structure only from a flood originating below McMillan Dam. A failure of one or both of these structures would result in serious downstream flooding, particularly to the city of Carlsbad.

As planned, Brantley Dam will replace McMillan Dam which is deemed unsafe and will provide flood control storage not presently available in the two existing structures. Final designs for Brantley Dam are currently under preparation. Present plans call for a contract award in the summer of 1984, and it is expected that a four-year construction period will be required.

We welcome opportunities to work closely with the states in our region. We are presently completing designs for spillway modifications to the Ute Dam for the state. Ute Dam, located on the Canadian River near the New Mexico-Texas border, was constructed by the New Mexico Interstate Stream Commission in 1963 to accommodate the storage allocated to New Mexico under the Canadian River Compact. As originally constructed, the spillway was not equipped with gates. However, provision was made in the design for future installation of gates to raise the conservation pool elevation by 27 feet, which would provide all the storage permitted under the compact.

In 1979, a contract was executed between the state and the bureau that provided for bureau design and supervision of construction for the spillway modification, subject to reimbursement of all expenses by the state.

Designers at our Engineering and Research Center in Denver determined that \$30 million would be required for gate installation which was more than the state could spend. At the request of state officials we conducted studies of alternative means of providing the storage. As a result, a labyrinth weir to replace the existing uncontrolled ogee spillway was selected. The crest of the labyrinth will be 27 feet higher than the ogee and will require raising the earth dam and dike 10 feet to provide the necessary surcharge storage.

Final designs were started after the state legislature appropriated the necessary funds in the spring of 1981. The designs and specifications should be completed late this spring. The state will issue the specifications, take bids, and award the contract this fall. Construction is anticipated to take about 18 months.

We in reclamation want to re-emphasize our eagerness to work with state and local governments, other non-federal entities, and private interests. The allocation of water resources must be in accordance with state law, and management of water resources should reflect maximum state and local government involvement.

Since my recent selection as Southwest Regional Director for Reclamation, I have been impressed with the efforts expended to assure that we are developing, managing, and using our water resources in the most beneficial way. There is a growing sensitivity to the complexities of coping with present and future demands for water.

From the very beginning, reclamation was designed to pay its way through repayment of project costs by water and power users. In all, 85 percent of total costs will be repaid, half of that amount with interest. Some recreation, flood control, and other features of benefit to the nation or a region generally are not repaid by water users.

This pay back aspect of reclamation's operations sets the bureau apart as a unique federal agency, a fact many times overlooked when cries

of "porkbarrel projects" are bandied about. These accusations usually originate in the east because here in the west, people are more familiar with the role reclamation has played in the progress of this country.

The truth of the matter is that reclamation projects have already returned more money to the federal treasury than they have taken out, so the bureau's projects are not a drain on the treasury. From 1902 to the start of 1980, some \$8.8 billion has been appropriated for western reclamation projects. In only 38 years of that time span -- 1940 through 1978 -- those projects generated \$25.6 billion in federal tax revenues.

These most interesting figures offer an opportunity to understand that priorities are different, and in fact change as you travel from one area of our country to another.

Most of us would probably agree that we live in a world of change. There have been changes in the west and its needs and uses of water; in our nation and its needs and priorities; in the attitudes concerning the relationship between the federal, state, and local governments and natural resources management. Even so we can and will be realistic.

We must shift with the winds of progress and shape the reclamation program to be responsive to the future and meet the needs of our country. We will work with you in every way possible to meet and solve the water and power demands of the present and the future. Thank you.