PROGRESS REPORT

FOR THE

CORN CREEK
IRRIGATION PROJECT

Submitted to the
Wyoming Water Development Commission

JANUARY 1983
January 4, 1983
D16611.AO

Wyoming Water Development
Commission
Barrett Building, 4th Floor
Cheyenne, Wyoming 82002

Gentlemen:

Subject: Corn Creek Irrigation Project

Enclosed for your review is the Corn Creek Irrigation Project Progress Report.

This report summarizes all activities to date, defines identified project constraints, and gives an overview of tasks yet to be performed.

I trust that this document meets your needs; however, if further information is required, please contact us.

Sincerely,

Alan R. Mauzy, P.E.
Project Manager

DE/rg/R3
Enclosures
Introduction
GENERAL

The Corn Creek Irrigation District is situated in Goshen County approximately 20 miles southwest of the City of Torrington (see Figure 1). The District extends south of the confluence of the Laramie and North Platte Rivers and includes a corridor through the physiographic area known as Harmony Heights, with the remainder in the Goshen Hole region. The general area drains to the southeast and ranges in elevation from 5400 feet at the upper end to 4200 feet at the southeast boundary.

The District boundaries encompass approximately 70,000 acres. The land use within the District is approximately 40-percent dry cropland and 60-percent rangeland. The District has defined over 16,000 acres of privately owned land within their boundaries that will constitute the current project.

There are three proposed water supplies for the project. The firm supply is 22,500 acre-feet from Grayrocks Reservoir. This supply is guaranteed by an agreement entered into in 1974 between the Corn Creek Irrigation District and Basin Electric Cooperative. The second supply is 10,100 acre-feet from the Bureau of Reclamation's (USBR) Glendo Reservoir. This supply is available in all years except during an extended drought lasting over 3 years. This supply will have to be contracted from the USBR and the necessary procedures are underway. The third supply is the possibility of a direct-flow water right on the Laramie River. A filing has been submitted to the State Engineer for this right.

The proposed project development consists of a pump station on District-owned land at the confluence of the Laramie and
North Platte Rivers capable of pumping 75 cubic-feet per second (cfs), a reservoir to store winter diversions and to provide pressure head, a main pipeline to deliver water to the project area, and distribution laterals to provide water to each land parcel.
SCOPE

CH2M HILL was retained by the Wyoming Water Department Commission (WWDC) in November 1982 to perform an investigation which would develop a conceptual plan and to evaluate the economic feasibility of such a development plan in regards to delivering water to approximately 16,000 acres in the Corn Creek Irrigation District. Within the scope of these services, an evaluation of the irrigation potential of the soils, a baseline environmental assessment for Glendo water, and an analysis of financial payback capabilities will be performed.

STATUS

Since the notice to proceed was issued, CH2M HILL has completed the soils analysis, completed 80 percent of the data collection and review phase, prepared a preliminary distribution system layout, and completed 70 percent of the evaluation of land availability and drainage considerations. The following paragraphs define the project constraints and the results of our studies to date.

Data Collection and Review

The original data supplied by the WWDC and the Corn Creek Irrigation District (CCID) set the baseline conditions for the project. Documents reviewed included the Preliminary Investigation Report and the Goshen County Soil Survey by
the Soil Conservation Service (SCS), several studies by HKM engineers, planning documents supplied by CCID, and information collected from the Bureau of Reclamation. This data defined a system whereby water would be taken year-round from a river alluvium pumping system at the confluence of the Laramie and North Platte Rivers. The water would be pumped over Harmony Heights to the project area and/or to the storage reservoir, depending on the demand and time of year.

The two reservoir sites defined for evaluation are the proposed Teeters Reservoir on Cherry Creek and the existing Glomill Reservoir on Box Elder Creek (see Figure 2). Water will be delivered to each land parcel at a pressure of 40 pounds per square inch (psi) at the parcel's highest elevation. For the preliminary analysis, the delivery system schematic was such that all water deliveries could be made to the center of the land parcels assuming that center pivot irrigators would be used on quarter sections. On several smaller parcels (80 acres), the water will be delivered to the property boundary for a side roll or similar irrigation system.

**Evaluation of Land Resources**

In December, CH2M HILL soils scientists went to the project area to perform a soils analysis and to collect any relevant soils data from the SCS. This resulted in a soils classification map which categorized the soils into four classes: 1, 2, 3, and 6, dependent upon their irrigation potential and an identification of drainage problems. The definition of each class is as follows:

Class 1 - Areas most suitable for irrigation that have few soil restrictions.
Class 2 - Areas suitable for irrigation but with some soil restrictions such as steeper slopes, shallow soil depth, or higher levels of salinity/alkalinity which may effect productivity.

Class 3 - Areas with several strongly contrasting soils, some of which may or may not be suitable dependent on soil depth.

Class 6 - Areas of unsuitable soils made up of badlands, rock outcrops, shallow soils over bedrock, large blowout areas, and wetlands.

This analysis resulted in the elimination of 2,080 acres of Class 6 lands. Thus, a final project area of 16,880 acres of Class 1, 2, and 3 lands was identified. A further analysis using center pivots on quarter sections and side rolls on 80-acre parcels determined that 13,940 acres of the 16,880 acres could be irrigated.

Based on soil types, an application rate was determined. This application will be used to determine flow rates for each land parcel and will ultimately be used to size all of the delivery system.

Selection of Project Configuration and On Farm Systems

Using the results of the soils analysis and the data collected from previous reports, a closed pipeline delivery system has been developed (see Figure 2). This system takes water from the proposed pump station and delivers it to the project lands and/or Teeters or Glomill Reservoir. A reservoir is needed to store 7,500 acre-feet of winter releases to be made from Grayrocks, as per the agreement between
CCID and Basin Electric. In addition, the reservoir can supply water during peak irrigation use times to reduce pumping requirements.

The first hydraulic evaluation completed considered using Glomill Reservoir. By using this reservoir, the pipe sizes will range from 6 inches to 48 inches, and two booster pump stations will be required. One station would be a 55-psi station serving three pivots and the second station would be a 40-psi station which would serve two pivots. The next step will be to develop costs for this system as well as the investigation of using Teeters Reservoir and the costs associated with that option.

During January, a geotechnical investigation will be performed on the reservoir sites and a geohydrologic analysis will be performed on the river alluvium. In addition, a preliminary design of and the costs associated with the pumping station, electrical system, and all other facilities will be defined.

Preliminary Economic Analysis

The data collection and review task associated with the economic analysis has commenced. The data collected will include previous reports, meetings with the CCID ranchers, local irrigators, County Agent, the University of Wyoming, and the USBR. This data, used in conjunction with CH2M HILL studies, will form the basis for the economic analysis.

Evaluation of Water Resources

The evaluation of the hydrological and legal aspects of all three water supplies is underway. This task requires meetings with the State Engineer's office, the Attorney General's office, the USBR offices in Denver and Casper, and
other agencies. The task is designed to define the availability of water for the project, to define all legal implications, and to provide inputs needed for the engineering and environmental evaluations.

Baseline Environment Assessment

The environmental assessment is basically a joint effort between CH2M HILL and the Wyoming Game and Fish (WG&F) Department. The studies required for this task are well underway. The WG&F has initiated the sampling program as defined in its contract with the WWDC, and CH2M HILL has made contact with the WG&F, the USBR, the U.S. Fish and Wildlife Service (USFWS), and the National Park Service (NPS).

In order for the CCID to obtain a contract with the USBR for Glendo water, an environmental assessment or an environmental impact statement must be prepared according to USBR specifications. If the USBR feels that the adverse impacts are minimal, an environment assessment will suffice; however, if other Federal agencies or other concerned parties object, an environmental impact statement may be required. Information and impressions received from the various agencies to date indicate that an environmental impact statement will probably be required, due to potential impacts on the endangered whooping crane and its habitat in Nebraska. Also, if a Corps of Engineers 404 Permit for the diversion in the Laramie River is required, this may also trigger the need for an EIS. The draft environmental assessment should be complete by July or August 1983. Should the USBR decide that an environmental impact statement is required, an additional 9 months to 1 year will be required before a contract for water can be executed.

A meeting with the NPS at Fort Laramie revealed that the NPS has expansion plans for the Fort. The plans call for a
nature trail along the North Platte and Laramie Rivers north of the proposed CCID pumping plant, and a new park entrance in the same vicinity. The NPS has requested that a low-profile pump station and possibly underground powerlines be considered.

Scheduling

Figure 3 is a schedule of the tasks to be performed and the anticipated timeframes associated with each task. This type of schedule arranges the sequence of events that affect project completion and defines a critical pathway.

DE/R3
FIGURE 3
CORN CREEK IRRIGATION PROJECT
CUTOFF: DEC 9, 1982