Bureau of Indian Affairs
Office of Trust Services
Division of Water and Power

Fort Hall Indian Irrigation Project
Power County, Idaho

Bannock Pumping Plant Modernization Construction

Project Overview

The Bannock Pumping Plant (BPP) supports irrigation water delivery within the Fort Hall Indian Reservation in southeastern Idaho. The BPP is specifically located at the end of the south main canal within the Michaud Unit of the Fort Hall Irrigation Project (FHIP), approximately 11 miles southwest of Chubbuck, Idaho. Water supplied to the Michaud Unit is pumped from the Portneuf River and supplemented with groundwater, when necessary.

Constructed in 1965, the BPP facility consists of a reinforced concrete/concrete masonry unit building structure with approximate overall dimensions of 24-foot wide by 70-foot long with a ceiling height of 30 feet. The building structure includes a concrete forebay with trash racks, an operator platform, main pump gallery room and pit, utility room, electrical control room, and below grade valve vault room. The facility is equipped with an overhead hand-operated bridge crane to support vertical turbine pump maintenance. The BPP site includes incoming power from a 2,300-Volt substation, which is adjacent to the pumping plant building.

The BPP is currently configured with three 300 horsepower high-lift pumps and two 350 horsepower low-lift pumps that serve an enclosed piped lateral system and the Bannock Canal, respectively. The low-lift penstocks discharge to an open-air surge tower located 460 feet southwest of the BPP. The high-lift pumps each provide irrigation water at 12 cubic feet per second at an approximate total lift of 154 feet. The low-lift pumps each provide irrigation water at 29 cubic feet per second at an approximate total lift of 81 feet.

Both low and high-lift pumps each discharge into three 20-inch-diameter pipes. The three 20-inch discharge pipes from the low-lift pumps each transition into a 36-inch pipe within an existing thrust block, 40 feet downstream of the BPP. They then discharge into the low-lift surge tower where the irrigation water is conveyed under low pressure into a canal. The three 20-inch discharge pipes from the high-lift pumps combine into a single 42-inch high-lift pipe within an existing thrust block approximately 40 feet downstream of the BPP. The irrigation water is then conveyed downstream through piping to several booster pumps and irrigation spigots.

Scope of Work

The Bannock Pumping Plan Modernization Construction Project (Project) will rehabilitate the existing pumping plant and construct new auxiliary features that support continued annual operations and provide safe, reliable irrigation delivery to irrigation customers. The Project also includes

rehabilitating a nearby irrigation canal mechanical screening facility to reduce manual maintenance and improve operational safety. The Project includes the following principal tasks:

1. Mobilization and submittal approvals.

2. Procurement of long-lead equipment items including, but not limited to service switchboard, master control panels, vertical turbine pumps and pump motors, and variable frequency drives.

3. Construction of a new 16'x40' concrete masonry unit electrical building with an exterior 15'x20' generator enclosure and concrete pad, electrical transformer concrete vault and lid, exterior propane tank concrete pad, and HVAC equipment concrete pad.

4. Installation of new electrical components and controls in new electrical building and conduit connections to existing pumping plant.

5. Select demolition of existing electrical substation components, existing pumping plant components, and existing irrigation canal mechanical traveling screen.

6. Pumping plant building refurbishment including valve vault expansion, bridge crane rail improvements, HVAC and electrical improvements, vertical turbine pump mechanical lubrication improvements, new doors, windows and louvers, safety railing, floor grating and interior/exterior painting.

7. Installation of site civil improvements including drainage, erosion control, site lighting and cameras, fencing, signage, and safety features.

8. Furnishment and installation of three identical new 350 horsepower motors and vertical turbine pumps capable of 13 cubic feet per second at Total Dynamic head equal to 186 feet with less than a NPSHR equal to 30.9 feet and including a 24-inch diameter suction bell.

9. Furnishment and installation of three identical new 350 horsepower motors and vertical turbine pumps including valves and appurtenances capable of 26 cubic feet per second at Total Dynamic head equal to 94 feet with less than a NPSHR equal to 30.9 feet and including a 34-inch diameter suction bell.

10. Construction of a new mechanical irrigation canal traveling screen including foundation and structural improvements, vegetation collection area, pedestrian access improvements, and new electrical and lighting.

11. Provide electrical service connections to new owner furnished step-down transformer from Idaho Power Company transmission line power supply (12.47kV).

12. Startup, testing and commissioning of all new mechanical, hydraulic, and electrical systems. Includes training sessions of new equipment, furnishment and acceptance of Operation and Maintenance Manuals and equipment warranties.

13. Demobilization, clean up, and final closeout.