



## RAYMOND RESERVOIR POWER PLANT

The Raymond Reservoir Hydro Plant is located on the south shore of Raymond Reservoir, approximately 6 km south of the town of Raymond. It is supplied by a diversion canal constructed upstream of Milk River Ridge Reservoir. The plant operates during the typical irrigation season from April to October. Water optimization is a paramount consideration in the operation of this facility. Meeting supply demands of the agriculture users and maximizing the energy output is achieved using a total system management philosophy incorporated into the control system utilized by Irrican.

The project consists of 1.5 km supply canal, an intake structure, 770 m of 4 m diameter steel penstock and a powerhouse. The supply canal terminates at a large concrete intake structure which provides a transition for the flow from the canal to the penstock

The station diverts and generates energy from water that would normally pass through Milk River Ridge Reservoir, and the North Ridge Outlet over the Raymond Chute into Raymond Reservoir, and the diversion canal is designed to handle a flow of 56.7 m<sup>3</sup>/s. The canal diverts the flow from the Waterton St. Mary Headworks Main Canal, approximately 600 m upstream of the Milk River Ridge Inlet Structures.

A trash rack and automatic cleaner mounted on the intake structure prevents large debris from entering the turbine. The rein-forced concrete powerhouse is equivalent in height to a a six story building and is founded on bedrock almost entirely below ground. Water flows from the penstock through the wicket gates to turn the turbine and discharges through the draft tube to the tailrace channel. A Vertical Kaplan turbine is a Vertical Kaplan is capable of efficient operation over a wide range of flows. The synchronous generator is directly coupled to the turbine and produces 18 MW. This power is stepped up to 69 kV by the transformer located at ground level, adjacent to the powerhouse. The major auxiliary equipment includes ventilation ducts, exhaust fans, hydraulic power unit and de-watering sump. Various electrical controls are located within the powerhouse include the switchgear, motor control centre, control panel, batteries, station service transformers and communications equipment.

