

Portland Engineering has provided a variety of control system design engineering services for Water Treatment Plant expansions, including full system design for a project that doubled the capacity of an existing water treatment plant through a multi-year phased construction plan while keeping the plant fully operational throughout the project. In addition to a complete rebuilding of the treatment plant the project also included a new intake structure, a new storage reservoir, a new pump station, and pipelines between locations. PEI provided control system designs for all locations which included telemetry systems, communication networks, a plant-wide fiber-optic network, security/video systems, access controls and other ancillary systems as well as the PLC and HMI controls.

The Control system was based on redundant Allen-Bradley ControlLogix PACs, I/O partitioning, and redundant HMIs with numerous client HMIs located throughout the plant, and historical data collection located in a DMZ providing a high-availability system. The hardwired I/O at the plant will be approximately 1,200 points with roughly an equal number of network I/O and vendor I/O with about 10,000 HMI tags. A redundant Allen-Bradley ControlLogix System was designed with redundant HMI communications, a historical data server, and numerous HMI computers located throughout the plant.

PEI provided fully detailed panel layouts and wiring diagrams, PLC and HMI development and programming, instruments and instrument calibration, O&M manuals for the complete scope of work including as-built electrical schematics, and all control strategies. Additionally Control Narratives were developed by the process engineers with support from PEI. As part of the plant's O&M manual, fully detailed control strategies were provided with all interlocks, alarms, modes of operations, operator controls, available trends and other data that serve as a basis for PLC and HMI programming, start-up and commissioning.