Engineered Monitoring Solutions

PROJECT PROFILE

Urban Stream Flow and Water Quality Monitoring System
Salem, Oregon

Client: *City of Salem, Oregon*

The City of Salem is undertaking an effort to establish a network of stream monitoring stations to provide real-time water flow and quality data in the urban streams that flow through the City.

The stream data provides information that is used to calibrate and verify hydrologic and hydraulic modeling of the stormwater conveyance system. The system is also used to provide advance warning of high water levels and flooding. The water quality information is being collected to monitor the overall health of the streams and to evaluate the affects of improvements to the riparian habitats associated with the streams.

The water quality parameters that are monitored include pH, conductivity, temperature, turbidity, and dissolved oxygen (DO). The City also provides both flow and water quality information to the general public through an internet web site. The information presented on the web site is updated near real time from the data collected by the monitoring system.

Currently eleven stream monitoring stations have been implemented. The City's intent is to ultimately include 27 monitoring stations. The monitoring stations are being located throughout the different drainages that are within the city limits.

Engineered Monitoring Solutions designed and is implementing the monitoring stations to accomplish these objectives. At the stream station, data is obtained using a pressure transducer for the water level stage and a multi-parameter probe for the water quality parameters.

Urban Stream Flow and Water Quality Monitoring System (continued)

Both sensors are deployed into the stream in a manner that allows for easy retrieval for maintenance and calibration. In addition, the stations support the deployment of portable samplers to obtain discrete water samples for laboratory water quality testing. Flow weighted and alarm based sampling is performed using the real-time stream flow and measured water quality conditions.

Data is obtained through an Automated Data Acquisition System (ADAS) utilizing Measurement and Control Units (MCUs) at each stream station.

A network monitoring MCU is located at the City's Operation Center and communicates with each of the remote MCUs via radio. Each of the remote MCUs is programmed to collect and compare the data with threshold levels and to alert the network monitoring station of an alarm condition if it exists.

The network monitoring station MCU is configured to automatically upload historical data to the City's Microsoft ® SQL Server data management tool.

The Microsoft ®SQL Server data management tool was implemented for the City by Engineered Monitoring Solutions. It provides a shared, common data interface for City personnel from various departments to facilitate the management, evaluation, and web publishing of data from a number of the City's monitoring projects and data sources including the City's SCADA system.