Customer: **City of East Moline, East Moline, IL**
Project: Water Plant Upgrade(s) and Maintenance
Plant Upgrade Contract Amount: $147,985
Maintenance Contract Amount: 250-300 hours/year ($25,000/yr)
Control System: OPTO-22
Communications: MDS 9810 Radios
Engineer: Various Engineering Firms
Water Plant Supervisor: Leath Drake (309-752-1520)

SCOPE OF WORK – PROCESS INSTRUMENTATION AND CONTROL

CAM has been providing maintenance and control operations for the City of East Moline for 18 years. Our first responsibility was calibration and maintenance of their water distribution system instrumentation which included pneumatic transmitters and phone communication to remote towers via Pulse Duration transmitters. The first upgrade was filter renovations and installation of the first FIX SCADA system. This system monitored turbidity and had no control functions. The first radio system was installed to monitor tower levels and water usage by an industrial manufacturing operation.

Clean water regulations and EPA mandates required upgrading data collection as well as monitoring. The upgrade removed all pneumatic instrumentation and replaced it with electronic controls. The control included the following:

1. Moore 353 controllers for individual filter control functions.
2. OPTO-22 SNAP I/O for basin and chemical feed control functions.
3. Monitoring of each remote site and installation of remote site pump control functions.
4. Installation and or upgrade of the radio system to allow remote control at each of the remote sites.

FILTER CONTROL FUNCTIONS

Moore 353 controllers provide filter flow control, head loss control, back wash sequence operation, and turbidity alarming for filter to waste operations. The controllers interface to the FIX SCADA system via MODBUS communication. Operators are able to adjust set points, start backwash operations, acknowledge alarms, and monitor controller operations. The filter control panels were fabricated and tested at our CAM office. The plant has 8 filters.

CHEMICAL FEED CONTROL

Chemical feed at the plant includes carbon, alum, caustic and fluoride. All chemical control is automatic based on flows received from the river station. The operator is able to calibrate the chemical feed pumps and input calibration parameters which control the feed pumps based on plant loading. The feed control is performed by OPTO-22 SNAP Ethernet controllers.

REMOTE PUMP CONTROL

The water distribution includes remote pumps at the river that provide water for the system as well as remote booster pumps at two locations. Operators are able to start, stop, and input VFD speeds for each pump at the remote sites. The remote site data is monitored by an OPTO-22 M4RTU located at the plant that communicates to each site to remote I/O.

REMOTE SITES

Communication to remote sites is via Microwave Data system MDS 9810 radios. The main plant communicates to the 10th street tower. The 10th street tower includes a repeater that communicates to each of the other remote sites. The remote sites include the following:

SITE	DATA BEING MONITORED OR CONTROLLED
10TH Street Tower	Tower Level, Pressure
7th Street Tower	Tower Level, Pressure
6th Street Tower	Tower Level, Pressure
Industrial Tower	Tower Level, Pressure, Temperature, Communication Status
Reservoir	Reservoir Level
21st Av Booster	Pump status, Pump control, VFD Control, Pressure, Temperature, Building intrusion.
River Station	Pump status, Pump control, VFD Control, Pressure, Temperature, Well Level, Carbon Feed Control, Emergency Generator Status
IBP Plant	Flow, Level, Temperature

PLC I/O

There are a total of 368 I/O points that communicate to the OPTO-22 M4RTU controller – these points are the remote site communication points.

There are a total of 591 I/O points that communicate to the Moore 353 controllers via MODBUS – these are the filter controllers.

There are a total of 153 I/O points that communicate to the OPTO-22 SNAP controllers via Ethernet – these are the chemical feed points.

SPECIFIED INTEGRATOR

The City of East Moline and the Water Distribution Plant had the Engineer specify CAM as the project integrator because of the quality of our work and our dedication to provide a complete and working system. The controls section of the specification included an ‘allotment’ for the controls and the project came in on time and within budget.