CHAPTER 12 PUMP STATION SCADA SYSTEMS

12.1 SCADA DEFINITIONS

A. TYPE I
   1. Minimum requirement when a local pump station flows from gravity and discharges into a gravity system.
   2. Type I SCADA consists of event alarm cellular monitoring only; provide Mission M110 system. In addition to the standard Mission M110 cellular telemetry unit, provide and install a Mission Wetwell Module as part of the telemetry system. Wire pump run status signals and wetwell high level float through the Wetwell Module.
   3. SCADA shall monitor the following:
      a) Report/Record
         i) Pump 1 Runtime
         ii) Pump 2 Runtime
      b) Event Alarms
         i) High Water Alarm
         ii) Low Water Alarm
         iii) Phase Failure
         iv) Pump 1 Failure
         v) Pump 2 Failure

B. TYPE II
   1. Minimum requirement when a master pump station that receives flow from other pump station and discharges into a force main.
   2. Type II consists of near Real-time cellular monitoring; provide Mission M800 system. In addition to the standard Mission M800 cellular telemetry unit, provide and install a Mission Wetwell Module and a two-point Mission Pulse Adapter Board as part of the telemetry system. Wire pump run status signals and wetwell high level float through the Wetwell Module. Wire totalized pulse signal from flow meter into the Pulse Adapter Board.
   3. SCADA shall monitor the following:
      a) Report/Record
         i) Pump 1 Runtime
         ii) Pump 2 Runtime
      b) Event Alarms
         i) Wet Well Level
         ii) Phase Failure
         iii) Pump 1 Failure
         iv) Pump 2 Failure
         v) Backup System Status
      c) Near Real-Time
         i) Wet Well Level
ii) Pump Station Flow Rate

d) Optional Remote Control of:
   i) High Level Float Trip

C. TYPE III
   1. Minimum requirement when a regional pump station discharges directly to a wastewater treatment plant through, or is on a common force main.
   2. Type III SCADA is site specific will be designed by an engineer and approved by BJWSA.
   3. Type III consists of Real-time Radio SCADA with antenna for full monitoring and control by MR Systems as described below.
   4. SCADA shall perform the following:
      a) Record/Report
         i) Pump 1 Runtime
         ii) Pump 2 Runtime
      b) Live Monitoring of:
         i) Pump/Power Status
         ii) Wet Well Level
         iii) Pump Head Condition
         iv) Pump Station Flow Rate
      c) Remote Control of:
         i) Pump(s) on/off
         ii) Valves

12.2 SCADA I/O

A. Type I SCADA I/O for Mission M 110

<table>
<thead>
<tr>
<th>I/O Type</th>
<th>SCADA Panel Module No.</th>
<th>I/O No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.1 Run</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.2 Run</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.3 Run (reserve if not used)</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>High-High Level Float</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Low Level Float</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.1 or No.2 Fail (Overtemp/ Seall Fail)</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Phase Fail</td>
</tr>
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</table>
### B. Type II SCADA I/O for Mission M 800

<table>
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<th>I/O Type</th>
<th>SCADA Panel Module No.</th>
<th>I/O No.</th>
<th>Description</th>
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</thead>
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<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.1 Run</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.2 Run</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.3 Run (reserve if not used)</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>High-High Level Float</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Low Level Float</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Pump No.1 or No.2 Fail (Overtemp/ *Seal Fail)</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Phase Fail</td>
</tr>
<tr>
<td>DI</td>
<td>Mission Unit No.1</td>
<td>IN</td>
<td>Reserved for Back Up System** if Necessary</td>
</tr>
<tr>
<td>DO</td>
<td>Mission Unit No.1</td>
<td>OUT</td>
<td>Pump Disable</td>
</tr>
<tr>
<td>DO</td>
<td>Mission Unit No.1</td>
<td>OUT</td>
<td>Pump Remote Call-to-Run</td>
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<td>AI</td>
<td>Mission Unit No.1</td>
<td>AI</td>
<td>Wetwell Level</td>
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<tr>
<td>AI</td>
<td>Mission Unit No.1</td>
<td>AI</td>
<td>Flow Meter</td>
</tr>
</tbody>
</table>

* *Seal sensor will not be required for self priming stations.

** Back up system could be back up pumps or a back up generator.

All SCADA systems will include the built in monitoring of AC fail, battery fail, and input wiring fault.

Installation of SCADA conduits/cables adhere to control panel penetration restrictions addressed elsewhere in this Specifications.

Record Drawings: Communication/Control module used is to be included in Record Drawings along with AsB SCADA schematic.

END OF SECTION