Remote flow monitoring and use of real time data for evaluation of collection system performance

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District Background

- Founded in 1928 the District now serves over 100,000 people and 30,000 accounts in 6 communities in the south suburbs
- Average flows of 15 mgd
- Consists of the 20 acre main plant, a separate 5 acre excess flow plant, a 50 acre annex containing three large lagoons for sludge storage and wet weather retention and three lift stations
District Collection System

- Owns 14.2 miles of interceptor sewer lines but does not own local sewers
- Three large diameter trunk sewers ranging in size from 36-inch to 48-inch diameter
- Two local sewers from one community including 15-inch and 18-inch diameter
- Monitoring locations remote from Main Plant at distances ranging from 2 to 6 miles
Map of Collection System
Need for remote flow monitoring

• Normal flow 12 mgd, Storm Flow 120 mgd
• Implementation of District’s Infiltration / Inflow Ordinance in 2006
• Monitor system performance
• Real time data allows operating staff to make operational decisions at remote lift stations, wet weather retention facility, and satellite excess flow facility
Flow Monitoring Device
FLO-DAR

• Velocity and level measured using Doppler radar
• Equipment mounted at crown of pipe
• Same FLO-DAR model used at each location
• Surcharge sensor allows continuous flow data as pipe begins to flow full
Remote Installation
Remote Installation

- Locked metal enclosure on concrete pad that houses the following components
- Flow monitoring device
- Ethernet radio connection to directional antenna
- Back up battery
- DPU
- Electric meter
Flow monitoring device
Ethernet radio
Back up battery
DPU
Electric meter
Sample SCADA Screen Shot
Sample SCADA Screen Trend
Data used to assess I / I compliance
Data used to operate wet weather retention facility
Maintenance & Operation

- Proper installation critical
- Device may be retrieved from installation bracket without having to enter manhole
- Real time data review allows quick response if meter fails or provides inconsistent data
- Low maintenance
Acknowledgement

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Questions

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