Measuring Total Water

Water Conservation Advisory Council

San Antonio Water System

Measurement Issues

- What to measure as total production
- Where to meter
- Estimates of pumping in absence of meters
- QA/QC of production data

What to measure as production

- All raw water at the source
- All treated water on entry into the distribution system
- ALL water then also includes:
  - Fire hydrant flushing
  - Leaks
  - Flushing for treatment
  - Other non-sold water categories

Where to measure production

- Measurement should be done as close to the raw water source as possible
- Ideally, measurement/metering should occur in these three places
  - At the source
  - Post treatment (for water loss analysis)
  - At the point of sale
- SAWS now captures data at the source (wellhead), at the point of sale and (in some cases) in after the high service wellfield and the distribution line

How to measure

- Different methods of measuring production
  - Mechanical
  - Electromechanical
  - Sonic
  - Pump run-time constant
  - (other?)
- SAWS currently
  - Uses all methods listed here
  - Switching more to electromechanical and sonic at the wellhead
  - Using run-time constants less at the well head and high service pumps
  - Traditional mechanical at the point of sale

QA/QC of measured data

- Issues that can affect production data quality
  - Mechanical issues with pump/ aging of pump
    - Run time constants may no longer be accurate
  - Wellfield or pump station design
  - Inadequate flow for accurate measurement at meter
  - Inadequate straight line pipe for flow measurement
  - SCADA system misread of flow data
  - System translation of data (electromechanical and sonic data)
  - Human translation of data (math errors)
  - Human input of data
  - Various combinations of the above

Summary to Get Accurate Information

- Flow metering should be done as close to every raw water source in the system as possible.
- The most appropriate metering method should be put in place (this does not mean the most high tech) based on multiple factors.
- Devote as many resources as possible to QA/QC of the output data as possible.
- Perfect production data does not exist; but all systems can be improved.

GPCD Data Records in Future

- Should utilities turn in some information on their data sources for production?
- Should there be some QA/QC information?
- Water loss audit analysis looks at some of these data challenges as well.
  - Utilities are moving in the direction of more accuracy.
- What is reasonable to ask about production data to help move in direction of future improvements?