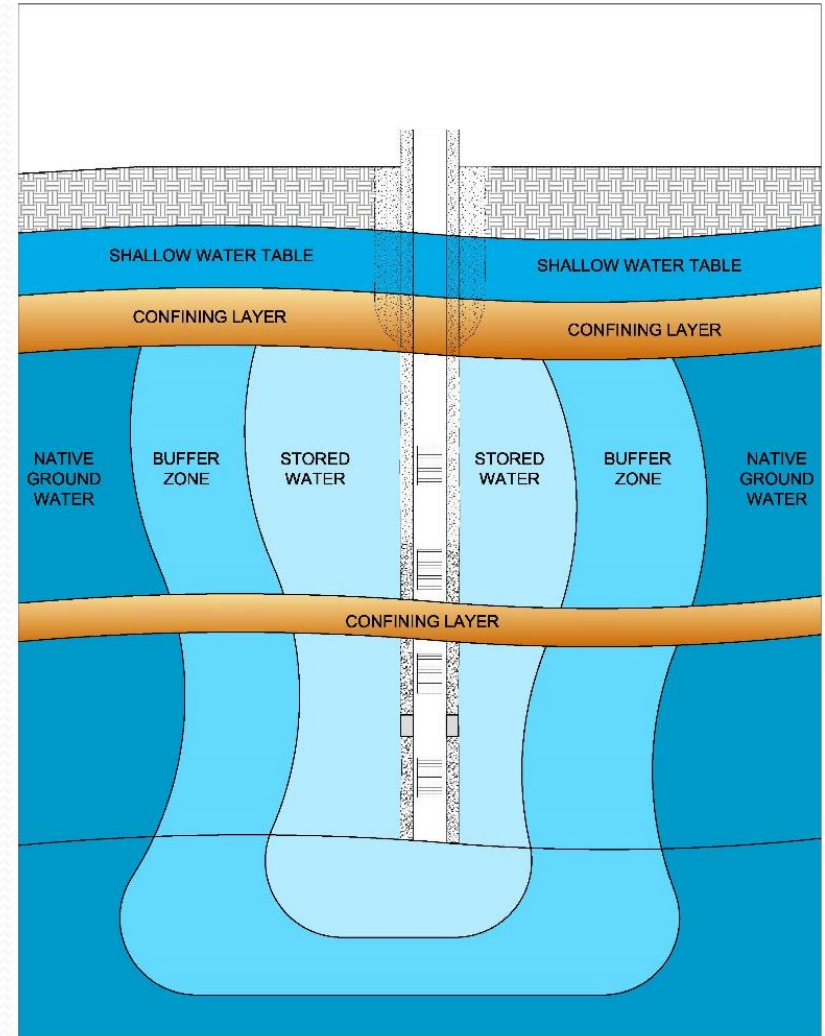


GSWSA Aquifer Storage and Recovery Program

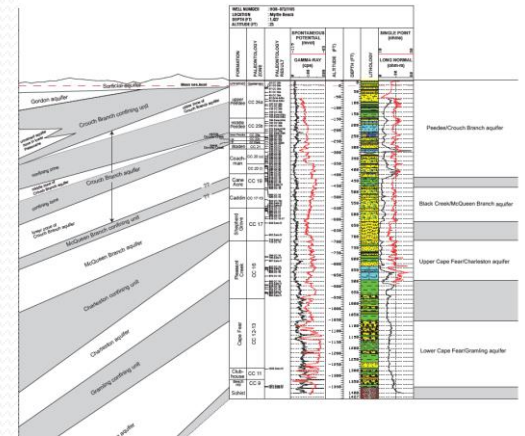
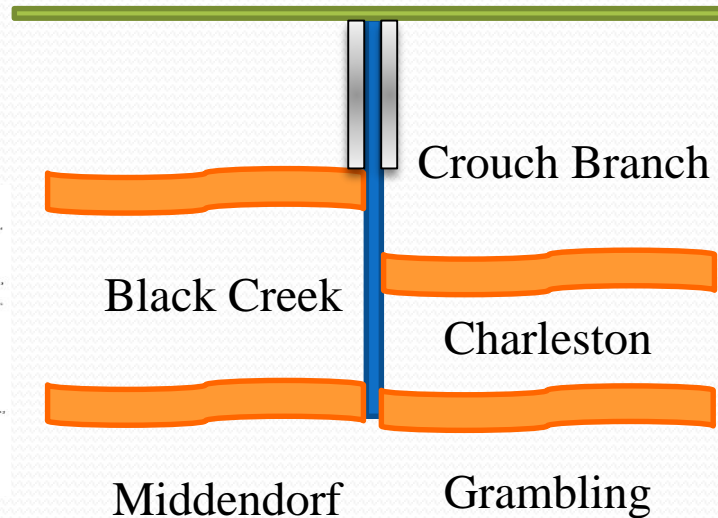
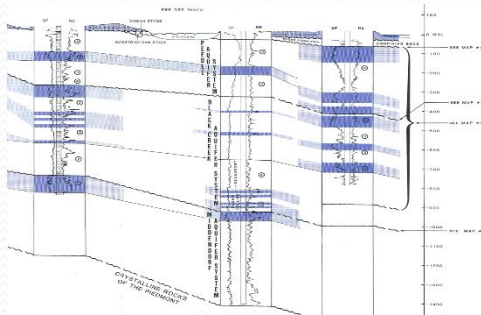
What is ASR?

ASR is the process of injecting water into an aquifer, where stored for use at a later time. GSWSA stores treated (drinking water) surface water from Bull Creek in the aquifer system when usage is low and recovers it when usage is high.

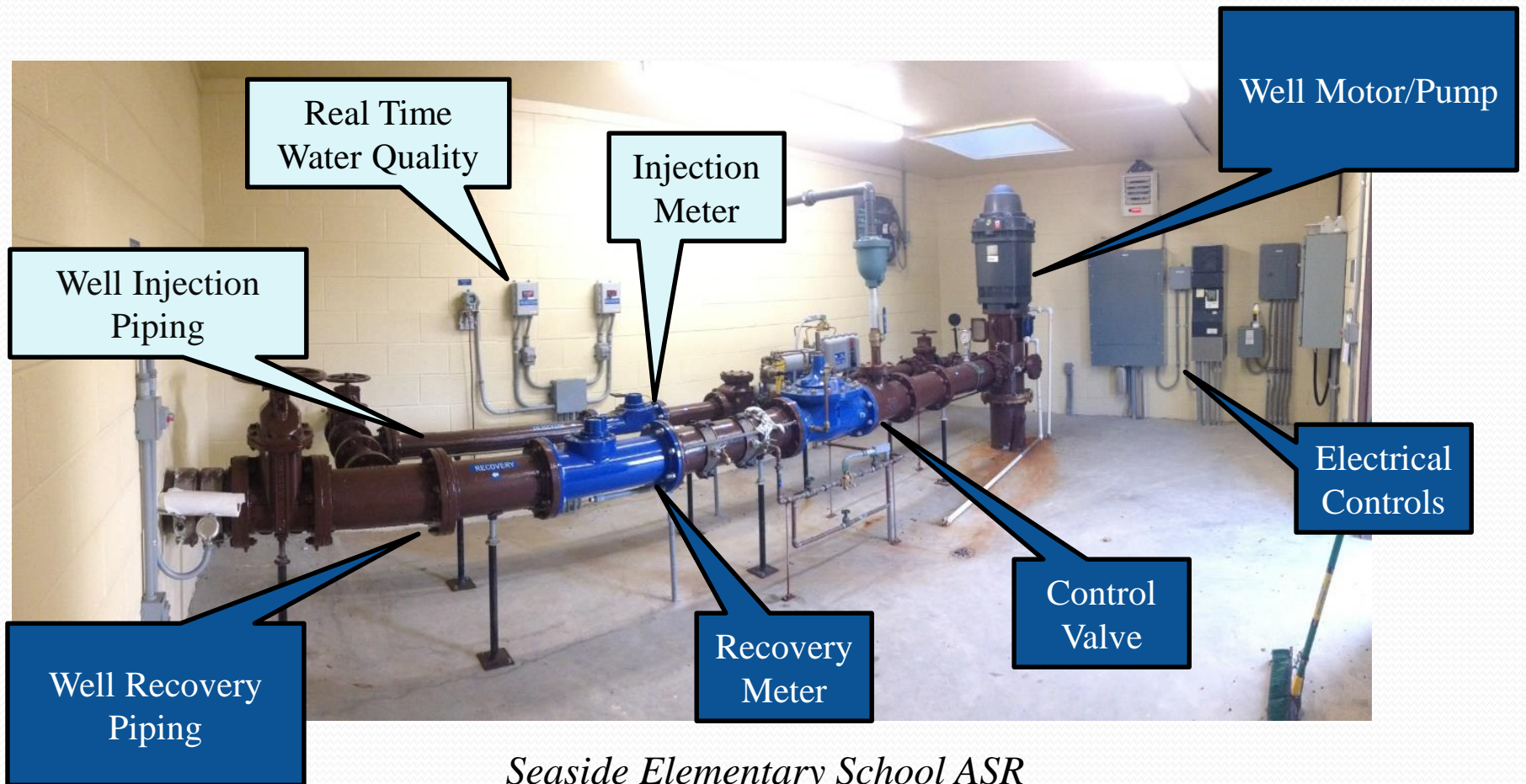


Horry County Aquifers

In general, GSWSA's ASR wells are constructed to be 800 feet in depth with grout to the first few hundred feet and connect to the Crouch Branch and Charleston Aquifers (formerly known as the Black Creek Aquifer).



ASR Well Components



Seaside Elementary School ASR

Benefits of ASR

There are several notable benefits with Aquifer Storage and Recovery. For GSWSA, the main three benefits are:

- System Capacity
- Water Quality
- Contingency Planning

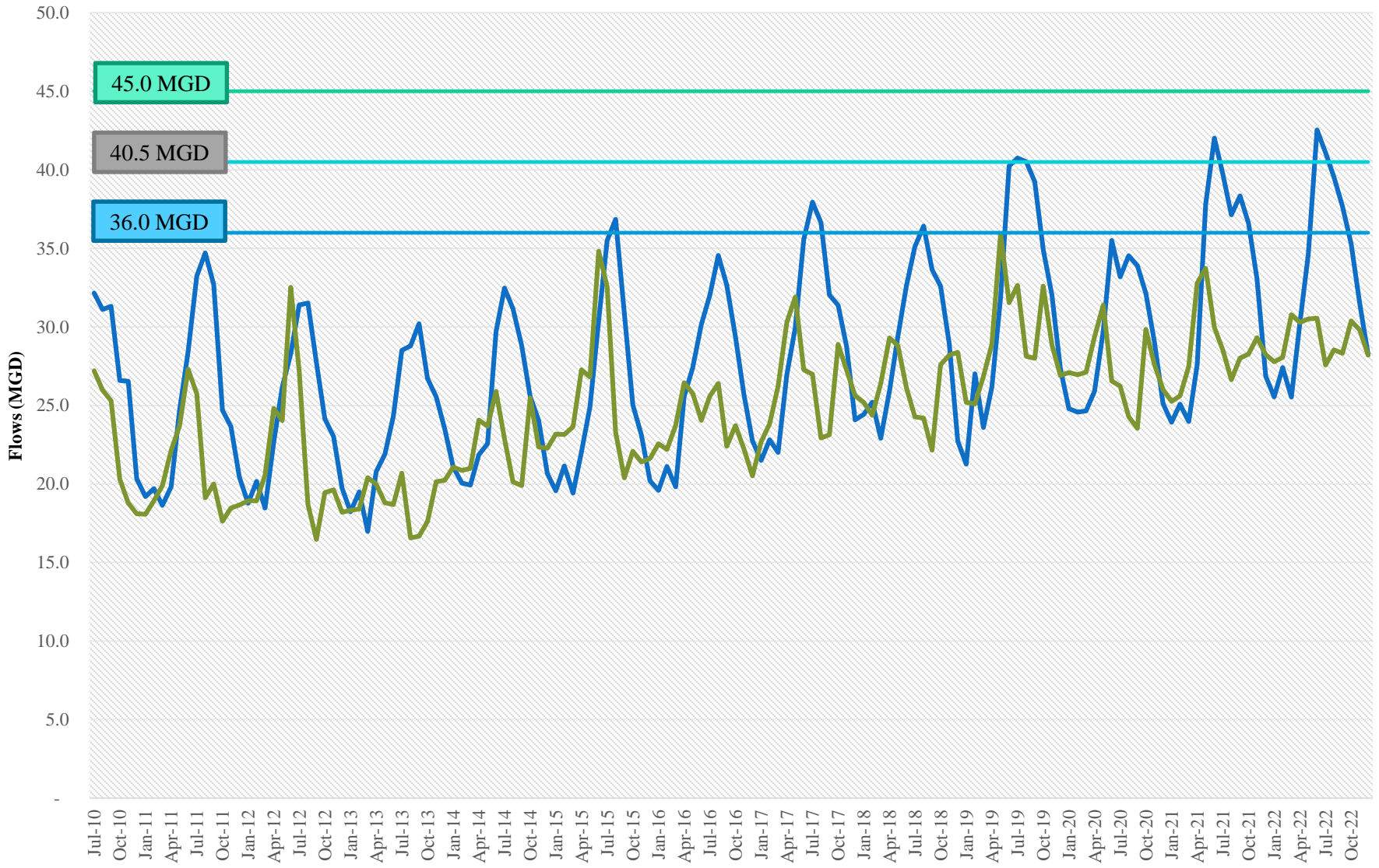


System Capacity



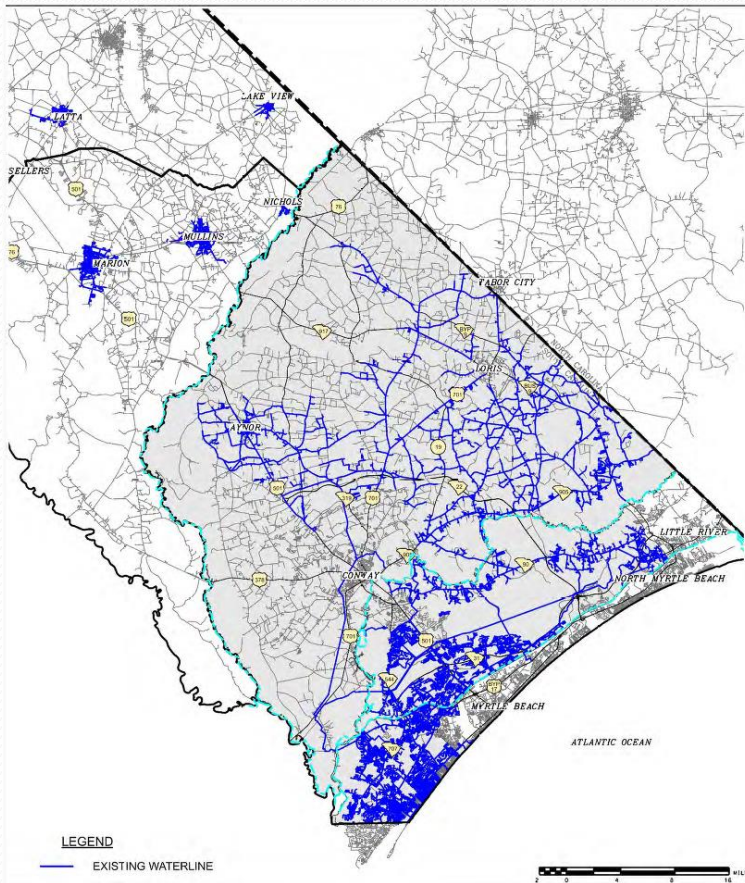
- Horry County has grown and continues to grow
- The Bull Creek Regional Water System must also keep pace to meet demands
 - Water Plant System
 - Water Transmission System

Bull Creek System Demands, Plant Flows and Regulatory Triggers



— Bull Creek System Demands
 — Bull Creek SWTP Flows
 — 80%
 — 90%
 — 100%

Water Quality



- Large Water System
 - 2,117 miles of pipe
- Water Degradation
 - Lower Chlorine Residuals in outer parts of system

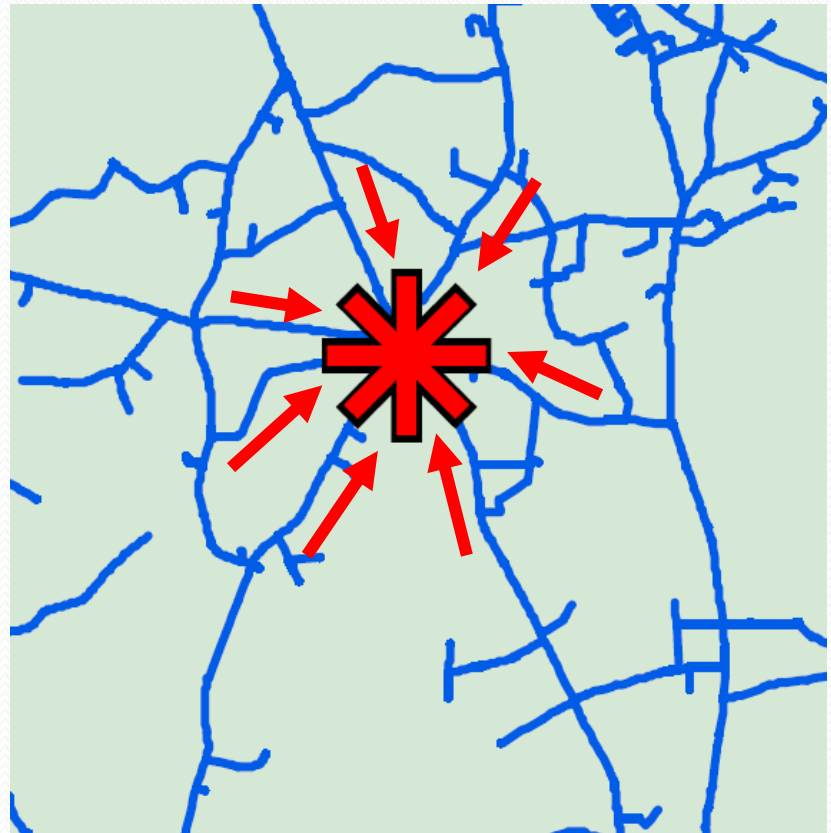


Water Quality

Injecting Water Scenario

- Vary amongst wells (e.g. 250 to 350 gallons per minute)
- Strategic locations of wells create flushing points, lowering an area's water age and maintaining chlorine residual
- Water is not “wasted” since it will be recovered in future
- Reduces overall flushing waste

*ASR Injected Water helps maintains
Maintain Quality*

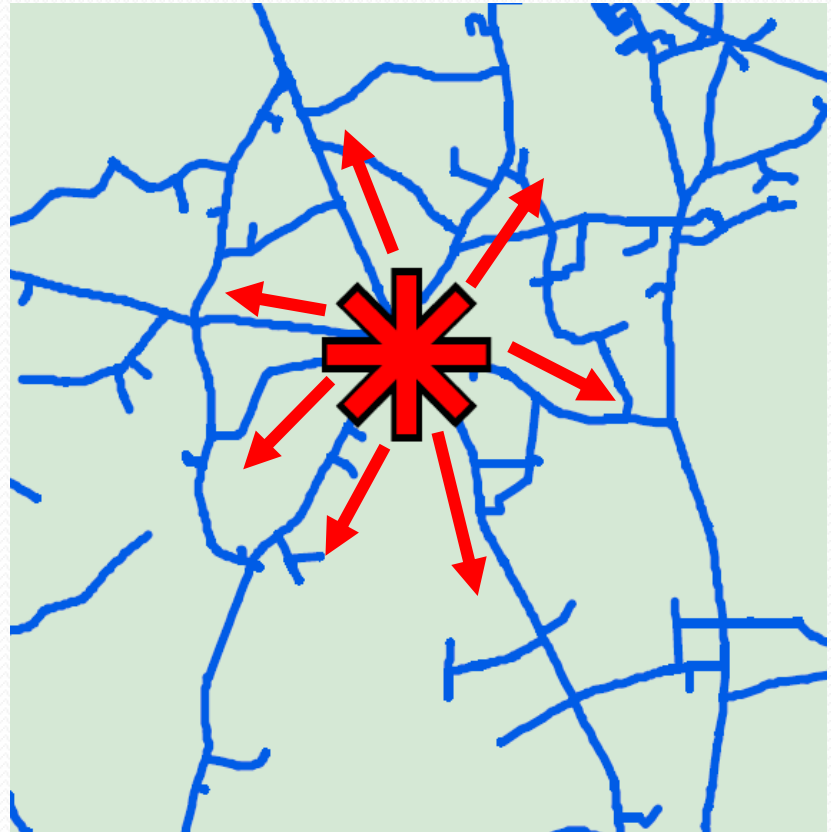


Water Quality

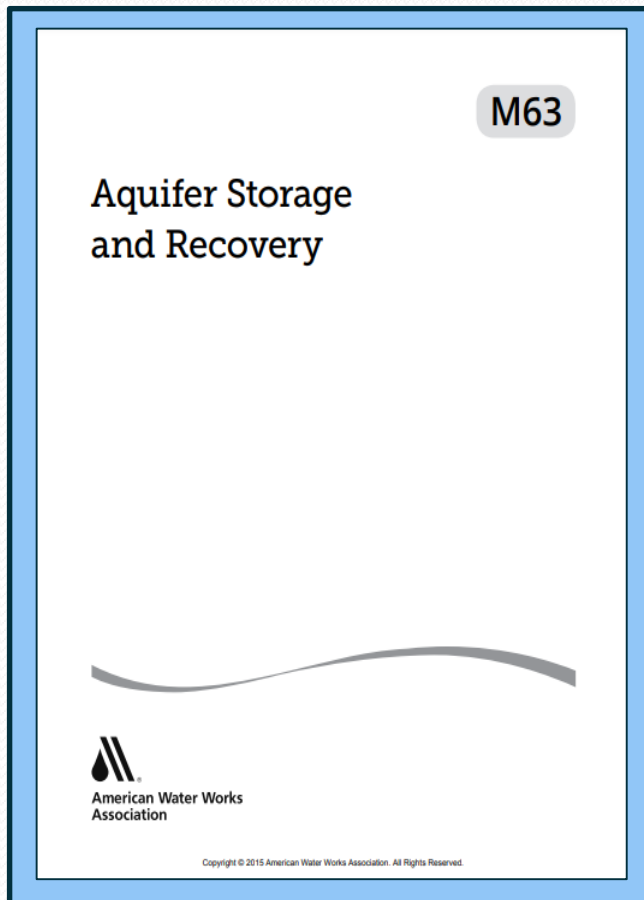
Recovered Water Scenario

- Total Residual Chlorine of 4.0 mg/L in system
- Dissolved Oxygen of 0.00 mg/L (vs 9.0 mg/L with treated surface water)
- Temperatures of 15°C (vs 25°C with treated surface water)

ASR Recovered Water helps maintain Maintain Quality



Water Quality



- GSWSA is regulated for Water Quality for Disinfection By-Products (HAAs and THMs)
- These items are more prevalent in the outskirts of the distribution system
- In Aynor community where an ASR well is present, GSWSA receives extremely low values during the summer months when the ASR well is recovering into the system.
- The American Water Works Association has published the effectiveness of DBPs with the use of ASR

Contingency Planning



Hurricane Florence (2018)

Inclement Weather Brings...

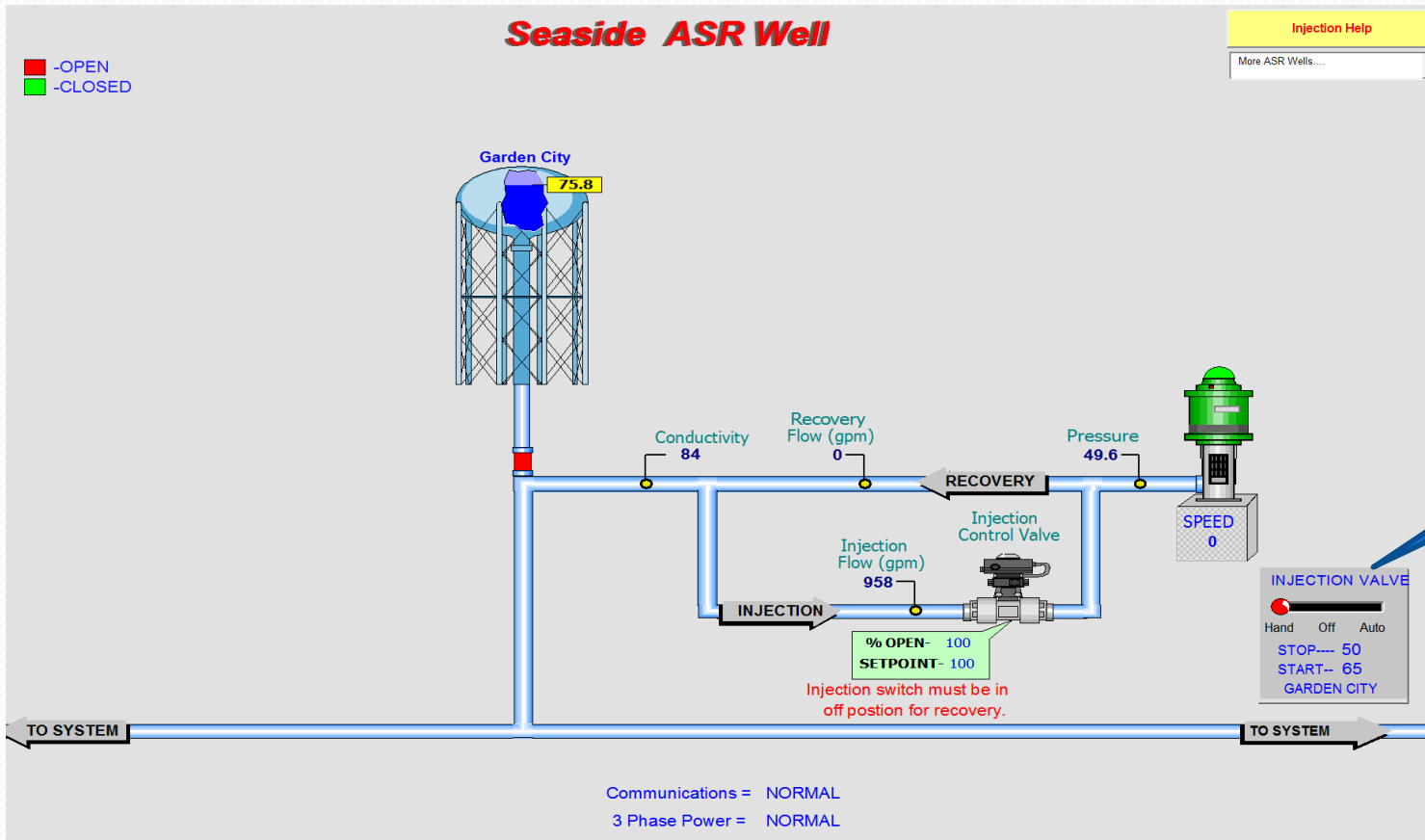
- Power Outages
- Leaks / Breaks

Christmas Eve (2022)

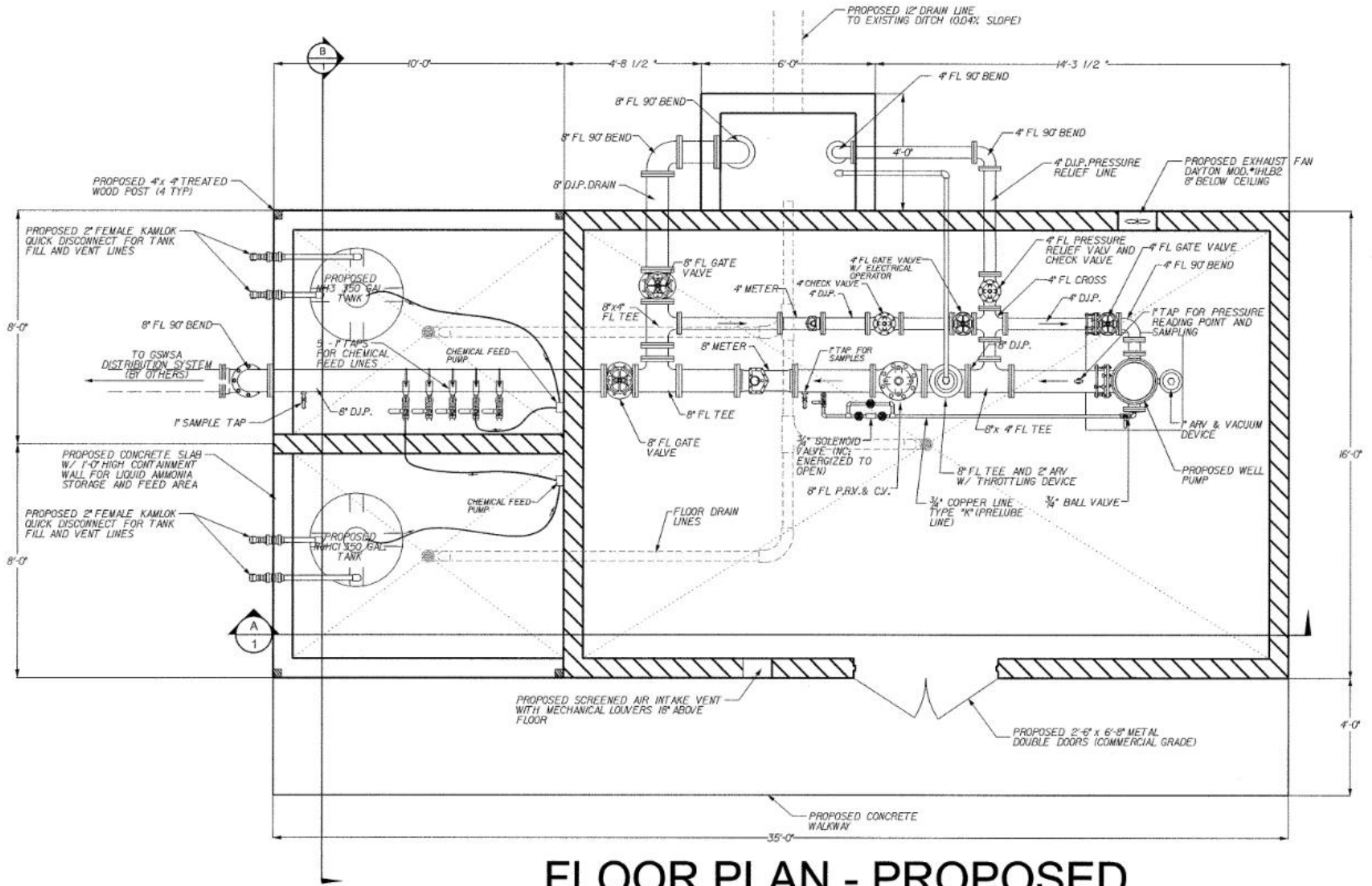
SATURDAY MORNING WIND CHILLS



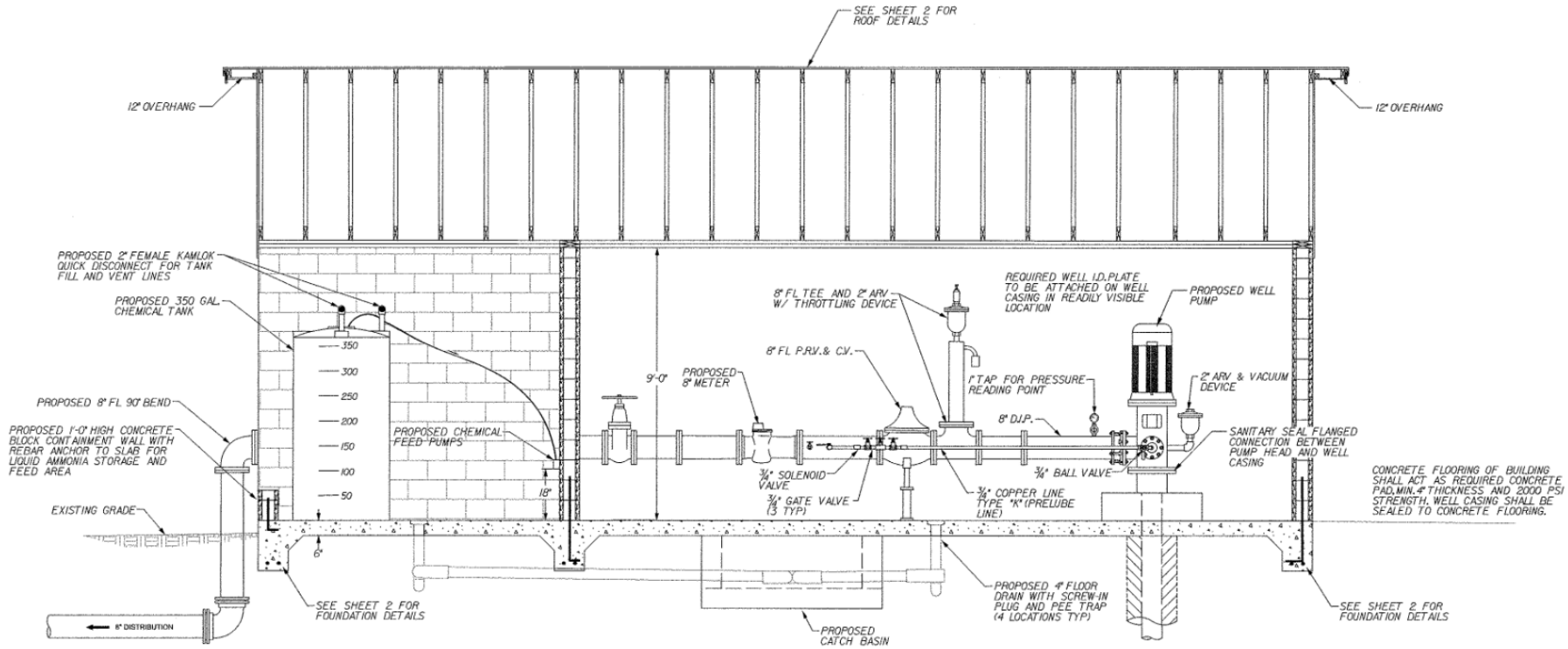
Contingency Planning



Typical Plan



Typical Profile



PROPOSED - SECTION

A
1



ASR Well Program Snapshot

(Existing Sites and Wells Under Construction)

