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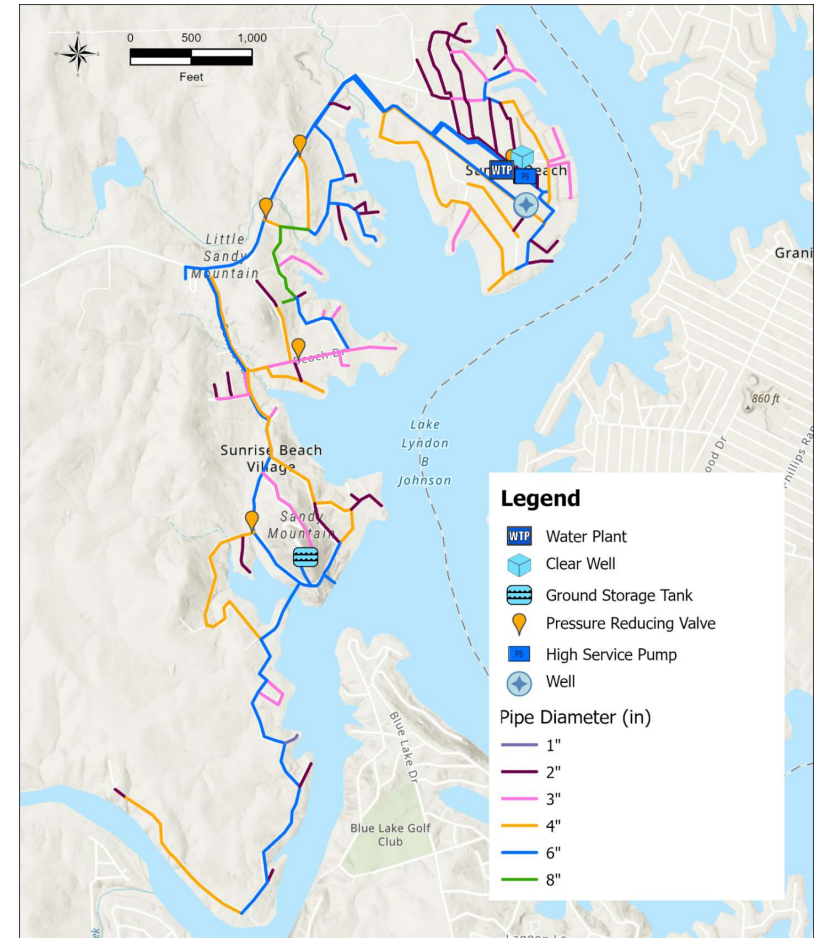


Sunrise Beach Village, TX Water Distribution System Improvements Updates

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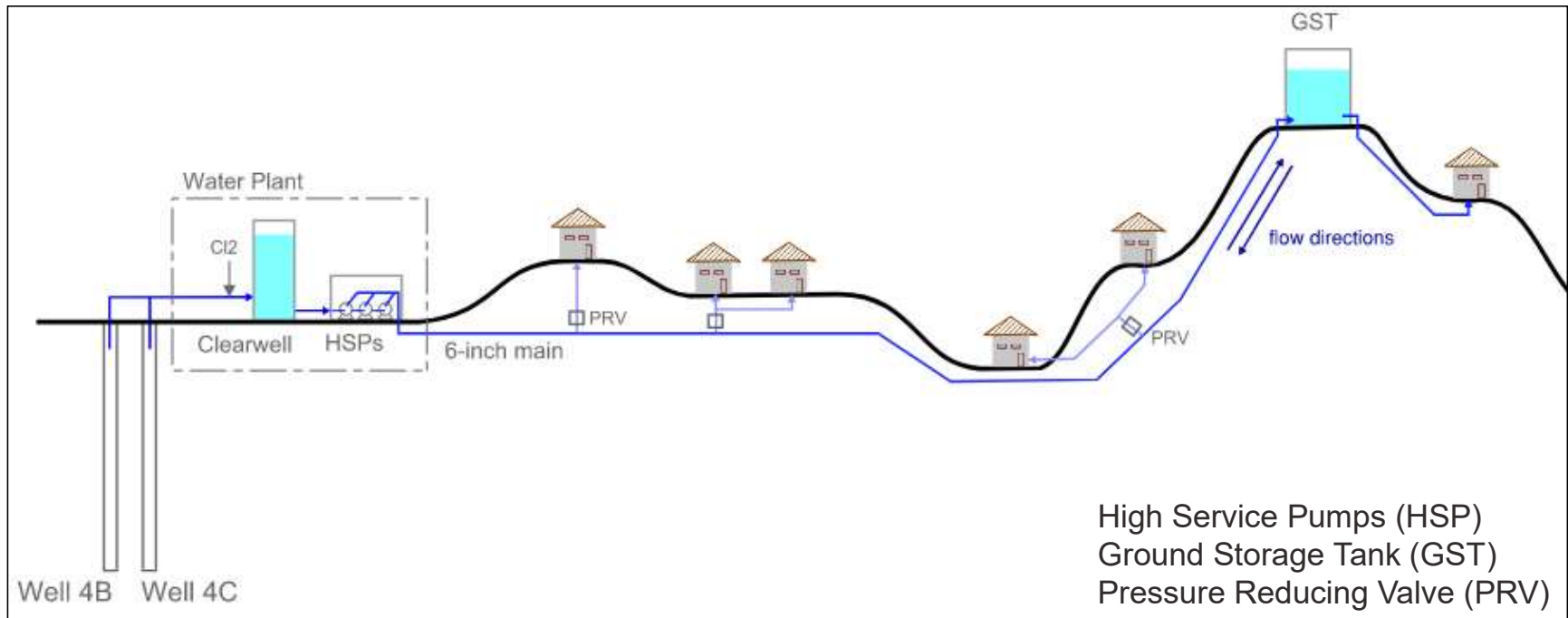
Existing Water System

SYSTEM COMPONENT	CHARACTERISTICS
Water Distribution System	Total Pipe Length = 112,622 LF
Water Pressure Maintenance	Five (5) System Pressure Reducing Valves (PRV)
Storage Capacity	102,200-gallon Ground Storage Tank (GST)
	19,000-gallon Clearwell
Well Production Capacity	Two (2) Operating Groundwater Wells
Pumping Capacity	Three (3) High Service Pumps (HSPs)



Existing Water System

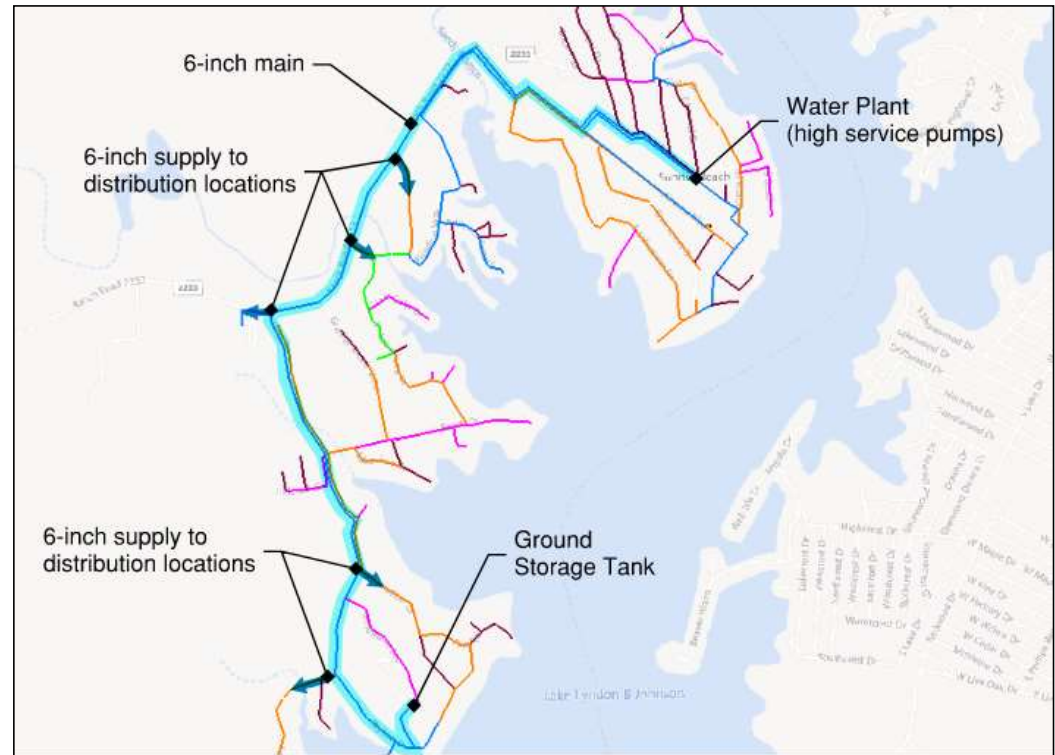
SBV WATER SYSTEM SCHEMATIC



Existing Water System

DISTRIBUTION SYSTEM OPERATIONS

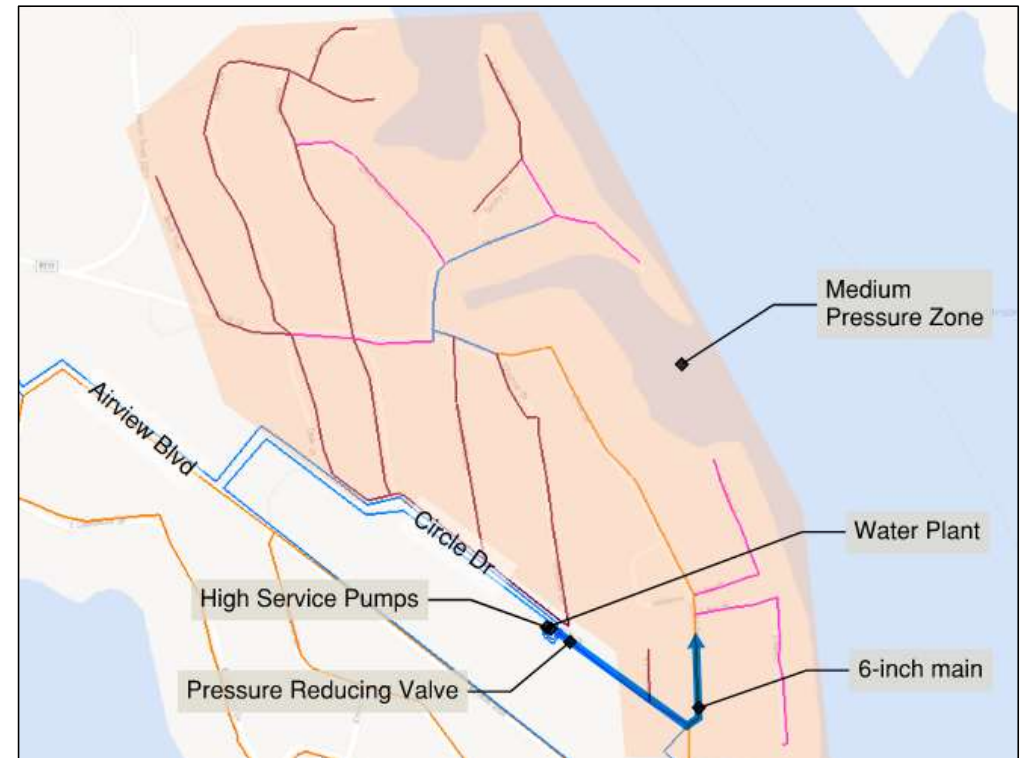
- ❖ 6-inch main:
 - ❖ Dual-purpose (transmission & distribution)
 - ❖ Bottleneck: limited flow capacity, high head loss
- ❖ HSPs operate beyond efficiency range due to head losses
- ❖ Small diameter pipes serving distribution demands (TCEQ minimum requirements)



Existing Water System

MEDIUM PRESSURE ZONE

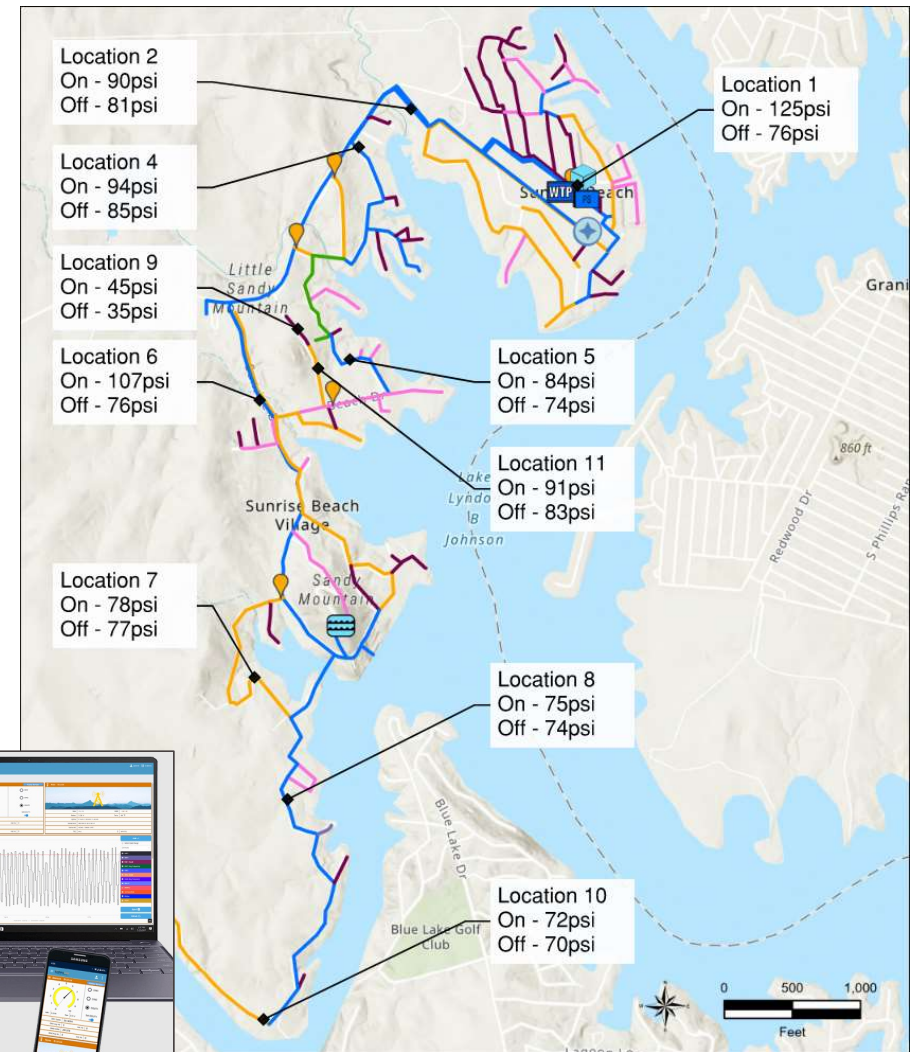
- ❖ Served directly by pipeline from the water plant
- ❖ PRV regulates the pressure, serving as a pressure zone
- ❖ Portions of the system experiencing >90 psi due to system configuration & HSP operations
- ❖ 2-inch mains serving >10 connections (TCEQ minimum requirements)



Existing Water System

FIELD PRESSURE MONITORING & FINDINGS

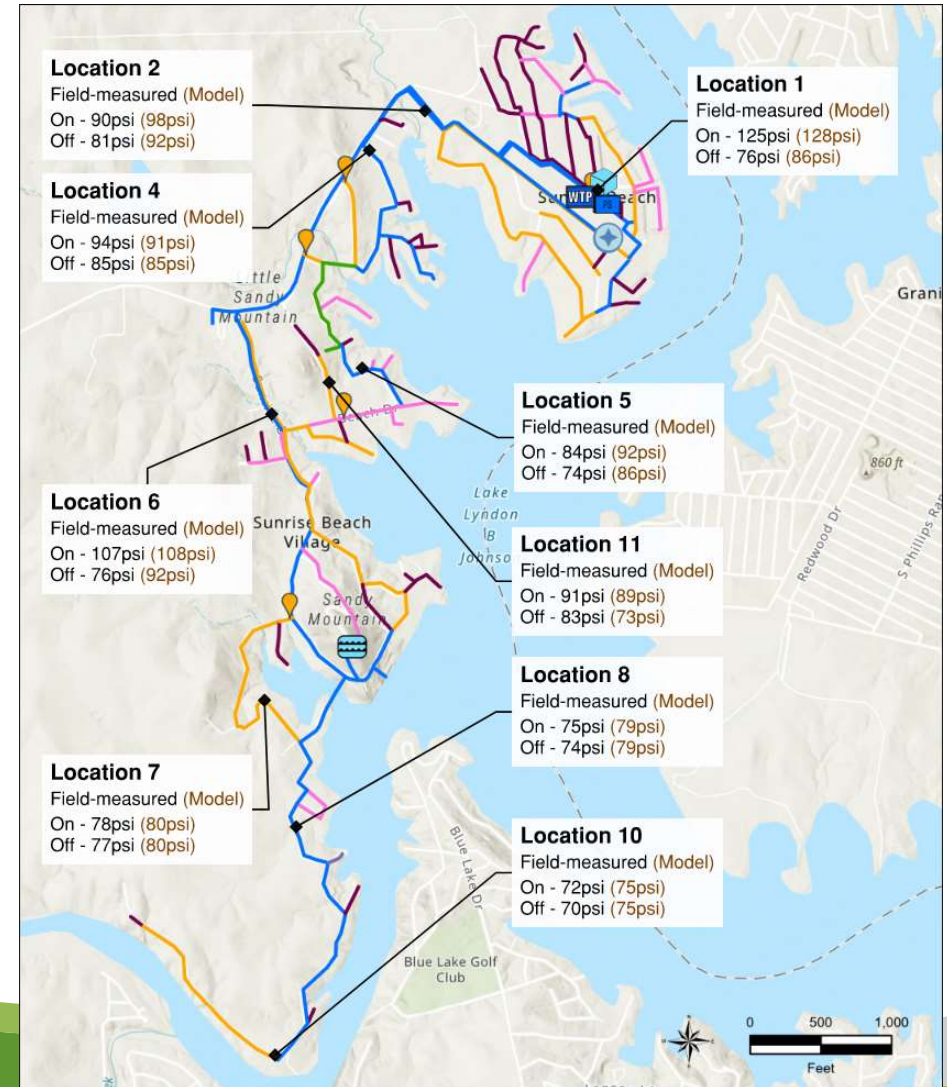
- ❖ Singal Fire Pressure Ranger LTE-M/NB-IoT Cellular Pressure Transmitter (installed and maintained by SBV)
- ❖ 11 monitoring locations with 24-hour data for 7-day period (per location)
- ❖ Monitoring data validated field operations' observations and model simulations
- ❖ SBV-recorded SCADA data



Existing Water System

MODEL CALIBRATION

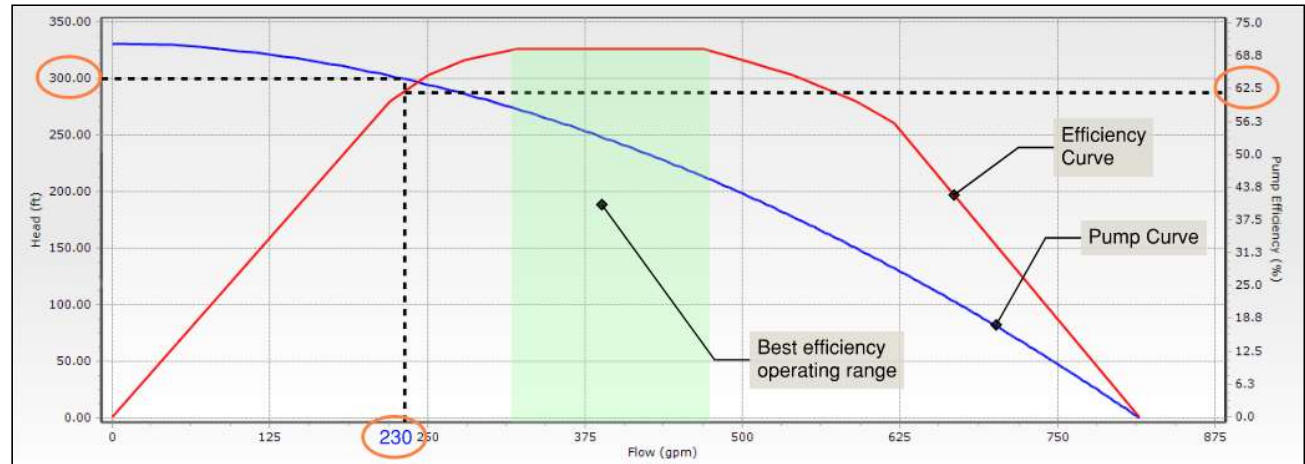
- ❖ Applied field monitoring pressure data to calculated hydraulic grade line (HGL) and simultaneously recorded SCADA flows
 - ❖ Adjusted tank operating levels, pipe roughness coefficient, pump curves, PRV settings, and valve operations
- ❖ Dynamic tool for on-going planning
- ❖ Minimal 5.2% variation between field monitoring and model results
- ❖ TCEQ hydraulic model requirements



Existing Water System

CURRENT PUMP OPERATIONS

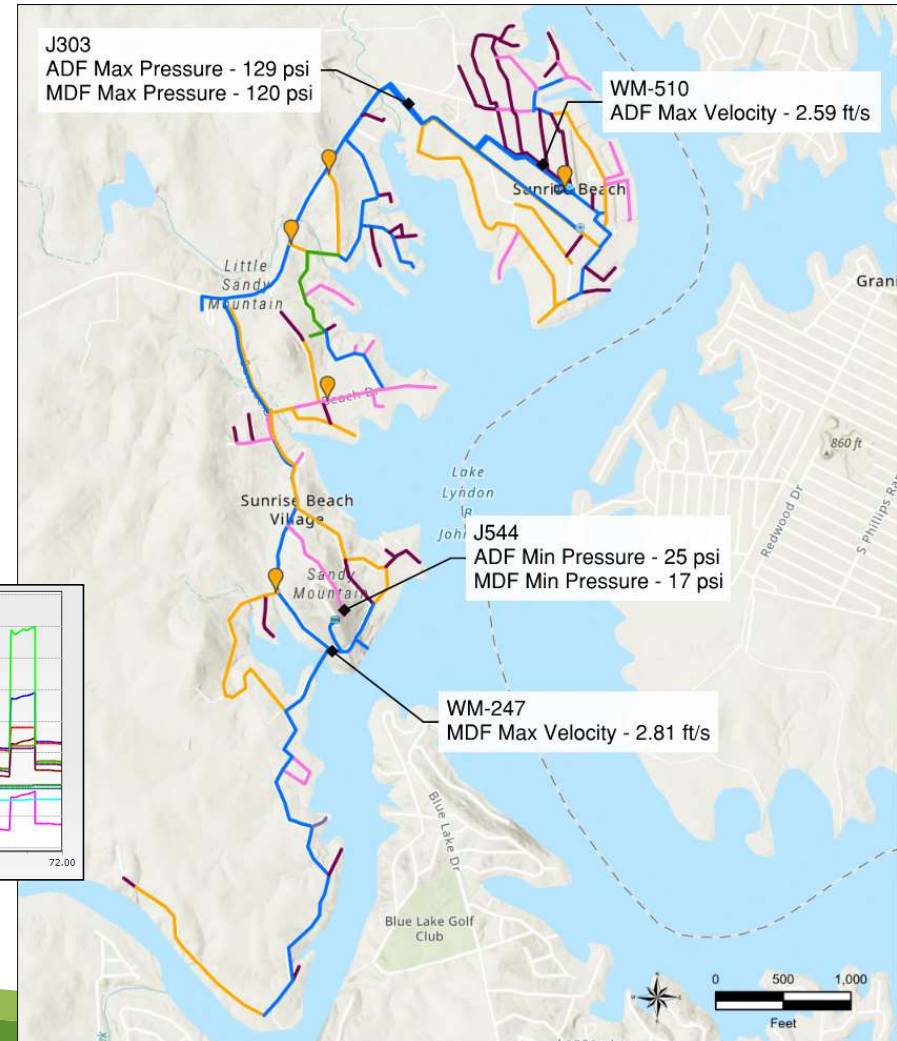
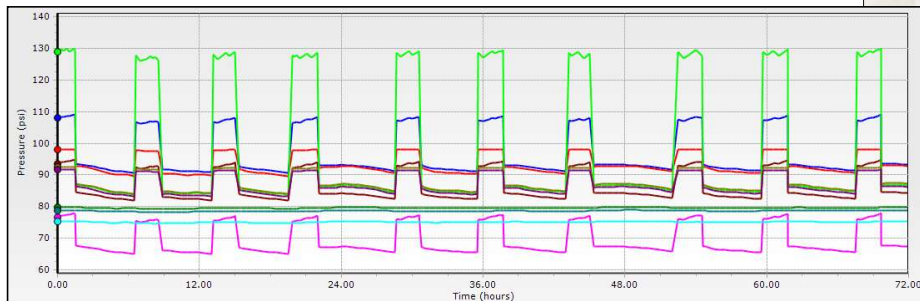
- ❖ Limited transmission pipe size
- ❖ High head = low flows
- ❖ 230 gpm at 62% efficiency
- ❖ Outside best efficiency range
- ❖ TCEQ minimum requirements



Existing Water System

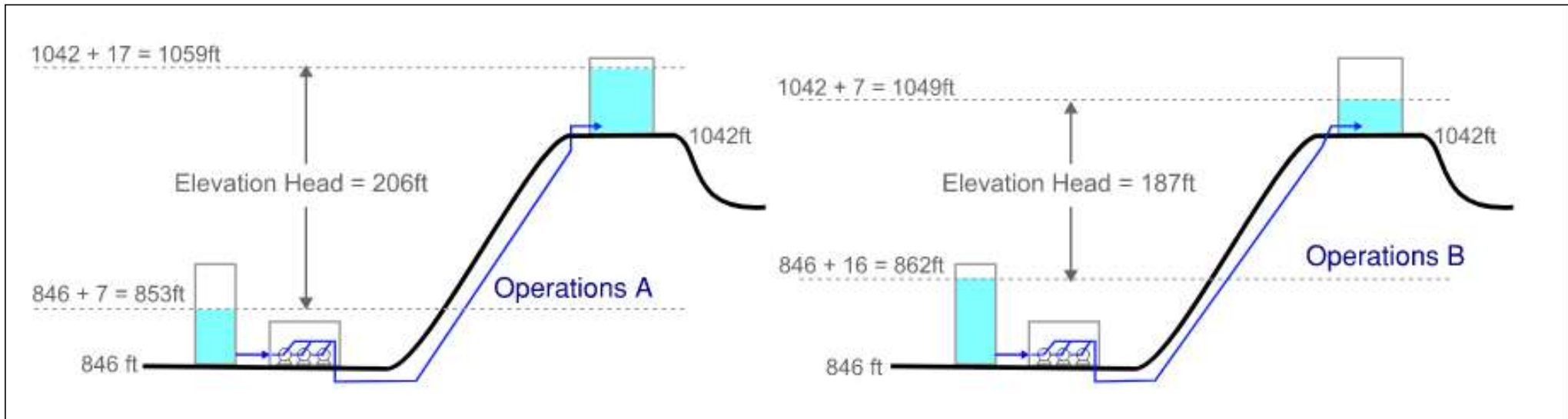
EXISTING SYSTEM MODEL RESULTS

- ❖ TCEQ minimum requirements
 - ❖ High pressures (>90psi) along 6-inch
 - ❖ Low pressures (<35 psi) along Mountain Top
- ❖ Pressure variations (industry standards)



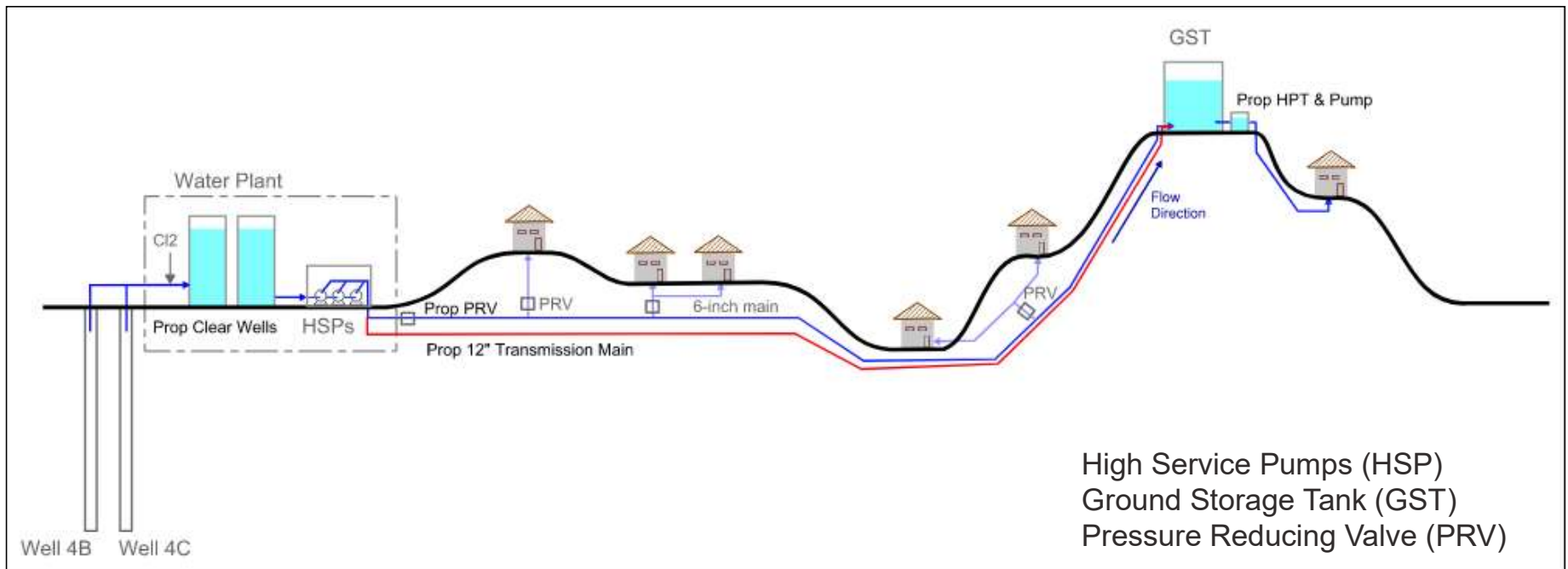
Existing Water System

TANK LEVELS VS. PUMP OPERATIONS



Proposed Water System Improvements

PROPOSED SUNRISE BEACH VILLAGE WATER SYSTEM SCHEMATIC

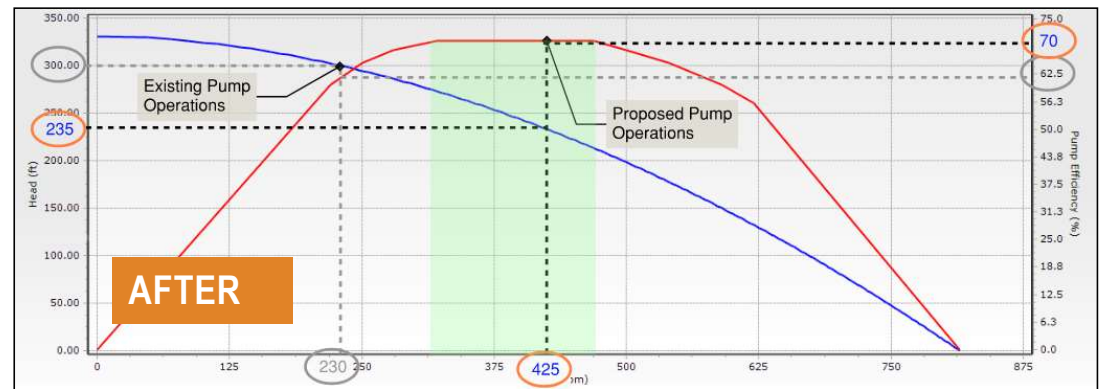
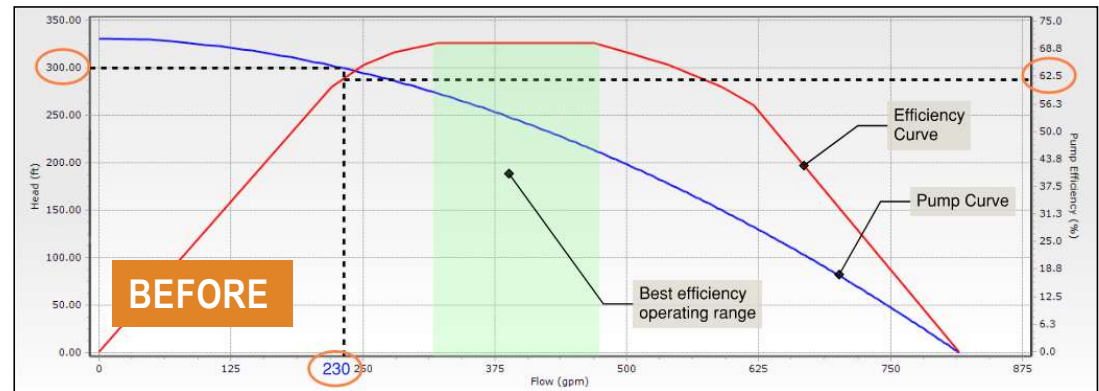


Water Distribution System Improvements
Sunrise Beach Village, TX

Proposed Water System Improvements

PUMPING & DISTRIBUTION SYSTEM IMPROVEMENTS

- ❖ Utilizing existing pumps and operating within best efficiency range
- ❖ Proposed 12" transmission line:
 - ❖ Reduced head losses
 - ❖ Increased pump capacity & efficiency
- ❖ Existing 6" operating as distribution and redundancy
- ❖ Miscellaneous pipeline improvements



Proposed Water System Improvements

DISTRIBUTION SYSTEM IMPROVEMENTS

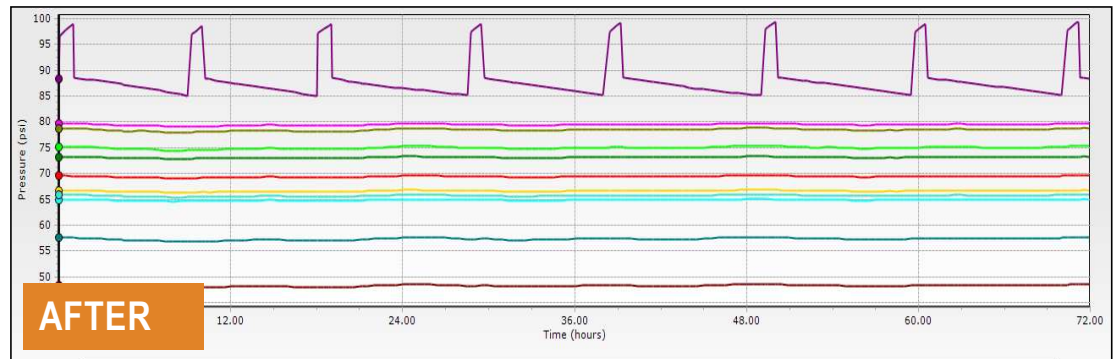
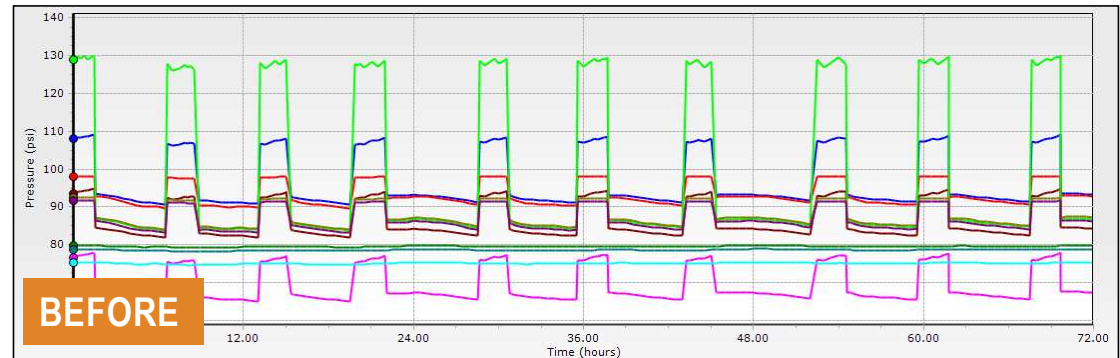


Water Distribution System Improvements
Sunrise Beach Village, TX

Proposed Water System Improvements

DISTRIBUTION SYSTEM IMPROVEMENTS

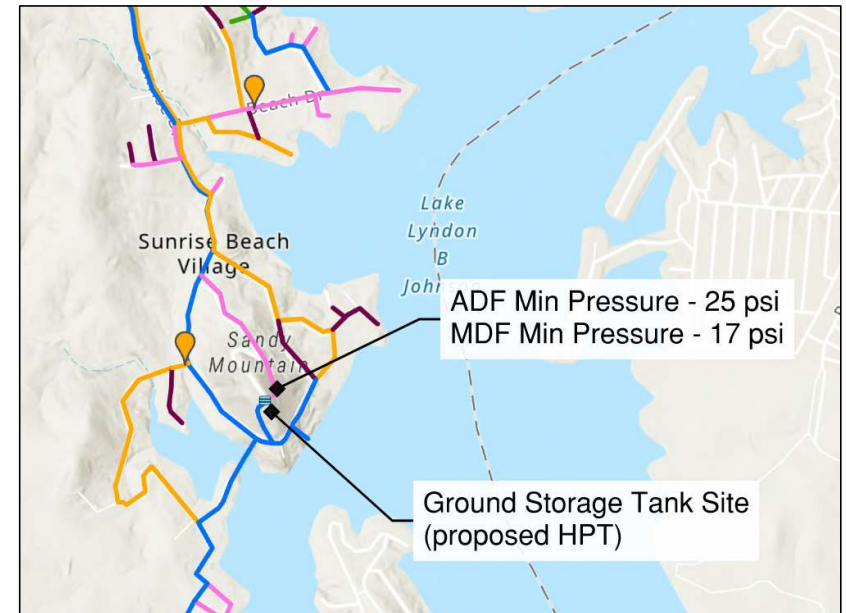
- ❖ Reduced pressure variations
- ❖ Pressures >35psi across the entire system
- ❖ Limited locations with pressures >90psi
- ❖ PRV improvements



Proposed Water System Improvements

PRESSURE MAINTENANCE SYSTEM IMPROVEMENTS

- ❖ TCEQ minimum requirements & Internal Plumbing Code (IPC) requirements
 - ❖ Pressures <35 psi at Mountain Top
 - ❖ Backup power (generator)
- ❖ HGL between GST and distribution
- ❖ Hydropneumatic Tank with booster pumps
 - ❖ Pressure maintenance in the immediate vicinity of the GST
 - ❖ Consistent pressures >50 psi in areas limited by GST's HGL



Proposed Water System Improvements

PRESSURE MAINTENANCE IMPROVEMENTS



Proposed Water System Improvements

STORAGE IMPROVEMENTS

- ❖ TCEQ minimum requirements
 - ❖ Minimum 200 gallons per connection
 - ❖ Existing system supplies 117 gallons per connection
- ❖ Two (2) Clearwells
 - ❖ 70,000 gallons each
 - ❖ Constructed and phased within existing water plant footprint
 - ❖ Resiliency & redundancy for system operations and maintenance
 - ❖ Designed for SBV-identified maximum connection count



Proposed Water System Improvements

STORAGE IMPROVEMENTS



Proposed Water System Improvements

ANTICIPATED DESIGN SCHEDULE

March 1st, 2025
TWDB Funding
Application (by SBV)

Q1 2025	Q2 2025	Q3 2025	Q4 2025	Q1 2026	Q2 2026
Final Design Phase (<i>pressure maintenance, storage, & transmission</i>)				TCEQ/FAA Review Requirements	
Surveying & Geotechnical					
Electrical and I&C					
	FAA Coordination (~30 days)				
				FAA & TCEQ Review (~90 days)	
					Advertising & Bid

* FAA and TCEQ approval timeline is estimated and subject to agency variability



Proposed Water System Improvements

ANTICIPATED CONSTRUCTION SCHEDULE

Construction Phase – anticipated 2026 through 2028			
HPT & Pump Packaged Improvements			
Clearwell 1			
	Decommission of existing Clearwell		
		Clearwell 2	
Transmission Main			



Proposed Water System Improvements

ENGINEER'S OPINION OF PROBABLE PROJECT COSTS

RECOMMENDED IMPROVEMENTS	2024 (\$)
General Requirements (contractor overhead, mobilization, testing, and site restoration)	\$ 889,000
Storage & Pumping Improvements (clearwells, HPT and booster pumps, and generator)	\$ 1,132,300
Pipeline Improvements (~16,500LF of 12", ~650LF of 3" to 6", and 3 PRVs)	\$ 4,791,250
	Contingency (30%) \$ 2,044,000
	Engineering (15%) \$ 1,022,000
	Total Estimated Project Cost \$ 9,878,550



Questions?



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