

Jefferson PUD Quilcene Water Tank Project

Board of Commissioners Special Meeting

October 13, 2020

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Outline

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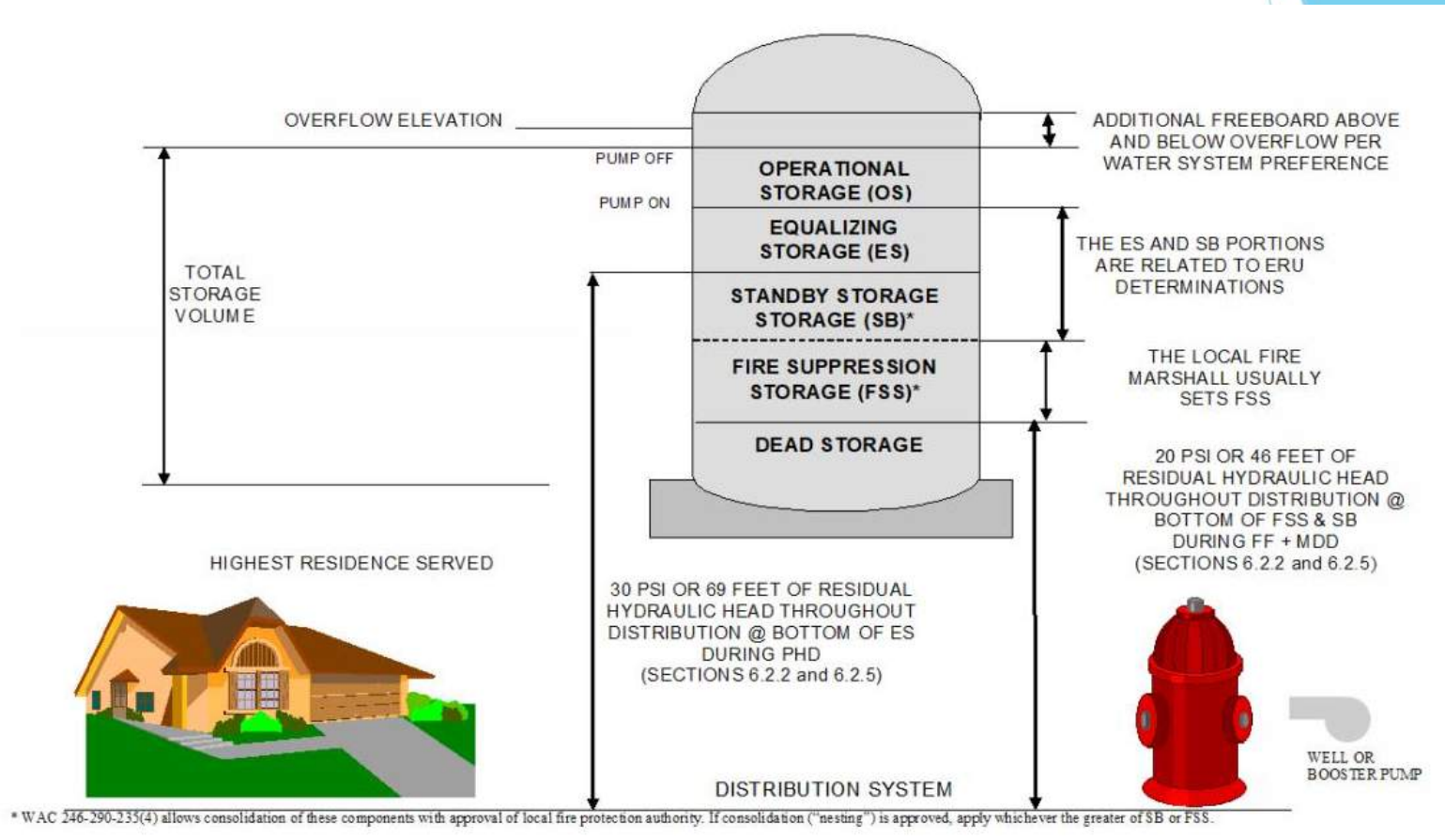
Acronyms

- ▶ DOH - Department of Health
- ▶ DWSRF - Drinking Water State Revolving Fund
- ▶ FEMA - Federal Emergency Management Agency
- ▶ Gpm - gallons per minute
- ▶ PIF - Public Infrastructure Fund
- ▶ Psi - pounds per square inch
- ▶ Qa - Annual withdrawal
- ▶ Qi - Instantaneous withdrawal
- ▶ USDA - United States Department of Agriculture
- ▶ USFS - United States Forest Service

Definitions

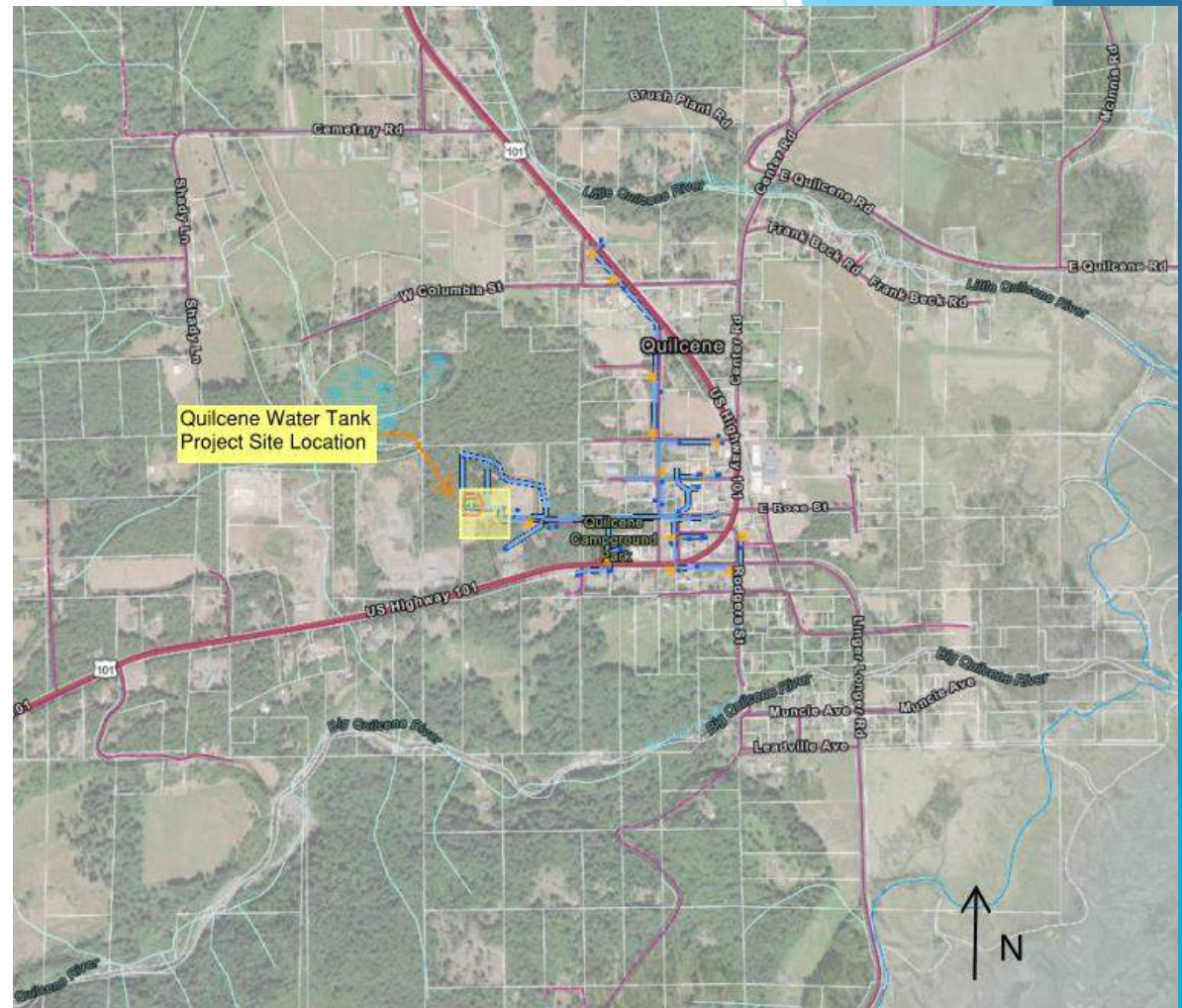
- ▶ Operational storage (OS) supplies the water system while the pumps supplying the water tank are in “off” status.
- ▶ Equalizing Storage (ES) is used when the source pumping capacity cannot meet the peak hourly demand.
- ▶ Standby Storage (SB) is to provide continued water supply during normal operating conditions.
- ▶ Fire Suppression Storage (FSS) depends on maximum flow rate and duration. Provided fire flow must build and maintain facilities, including storage reservoir, capable of meeting fire flow requirements while maintaining 20psi pressure throughout the distribution system.
- ▶ Dead Storage (DS) is the volume of stored water not available to all consumers at the minimum design pressure.
- ▶ Peak hourly demand means largest hourly volume of water consumed.

Definitions - Water Tank Storage Components



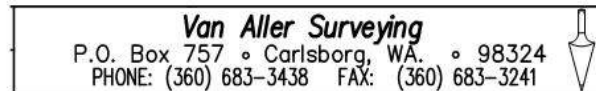
Background

- ▶ JPUD acquired the Quilcene water system from the USFS in 2005
- ▶ The system included a 30,000-gallon elevated water tank and a 28 gpm well.
 - ▶ 50gpm Qi water right
- ▶ The tank was constructed in 1984 and has several deficiencies:
 - ▶ It does not provide enough storage capacity to meet current requirements, particularly commercial fire flow
 - ▶ It is seismically deficient
 - ▶ The coating system is past its useful life
- ▶ Given deficiencies, JPUD decided to construct a new tank instead of rehabilitating the existing tank
- ▶ JPUD selected BHC Consultants in June 2020 to design a tank to replace this existing tank.



Project Team

- ▶ BHC Consultants
- ▶ Evergreen Coating Engineers
- ▶ Washington Project Consultants
- ▶ Pan Geo
- ▶ Van Aller Surveying



Design Requirements and Considerations

- ▶ Must meet design fire flow of 1,000 gpm for 1 hour (60,000 gallons total)
- ▶ Meet Max Buildout Storage Requirements:
 - ▶ Max Day Demand: 38,400 gallons
 - ▶ Fire Flow: 60,000 gallons
 - ▶ Total Storage Required: 98,400 gallons
- ▶ Not exceed water age criteria of maximum turnover of 5 days
- ▶ Long term operating costs and other considerations

Alternatives for New Tank - Steel Elevated Tank



Steel Elevated Tank

Advantages:

- ▶ No dead storage
- ▶ Provides system pressure by gravity

Disadvantages:

- ▶ Initial and life cycle costs
- ▶ Requires recoating
- ▶ Challenging seismic design

Alternatives for New Tank - Steel Standpipe



Steel Standpipe

Advantages:

- ▶ Provides system pressure by gravity
- ▶ Local contractors

Disadvantages:

- ▶ Initial and lifecycle costs
- ▶ Significant dead storage
- ▶ Requires recoating

Alternatives for New Tank - Steel or Concrete Ground Storage Tank and Booster Pump Station



Steel or Concrete Ground Storage Tank and Booster Pump Station

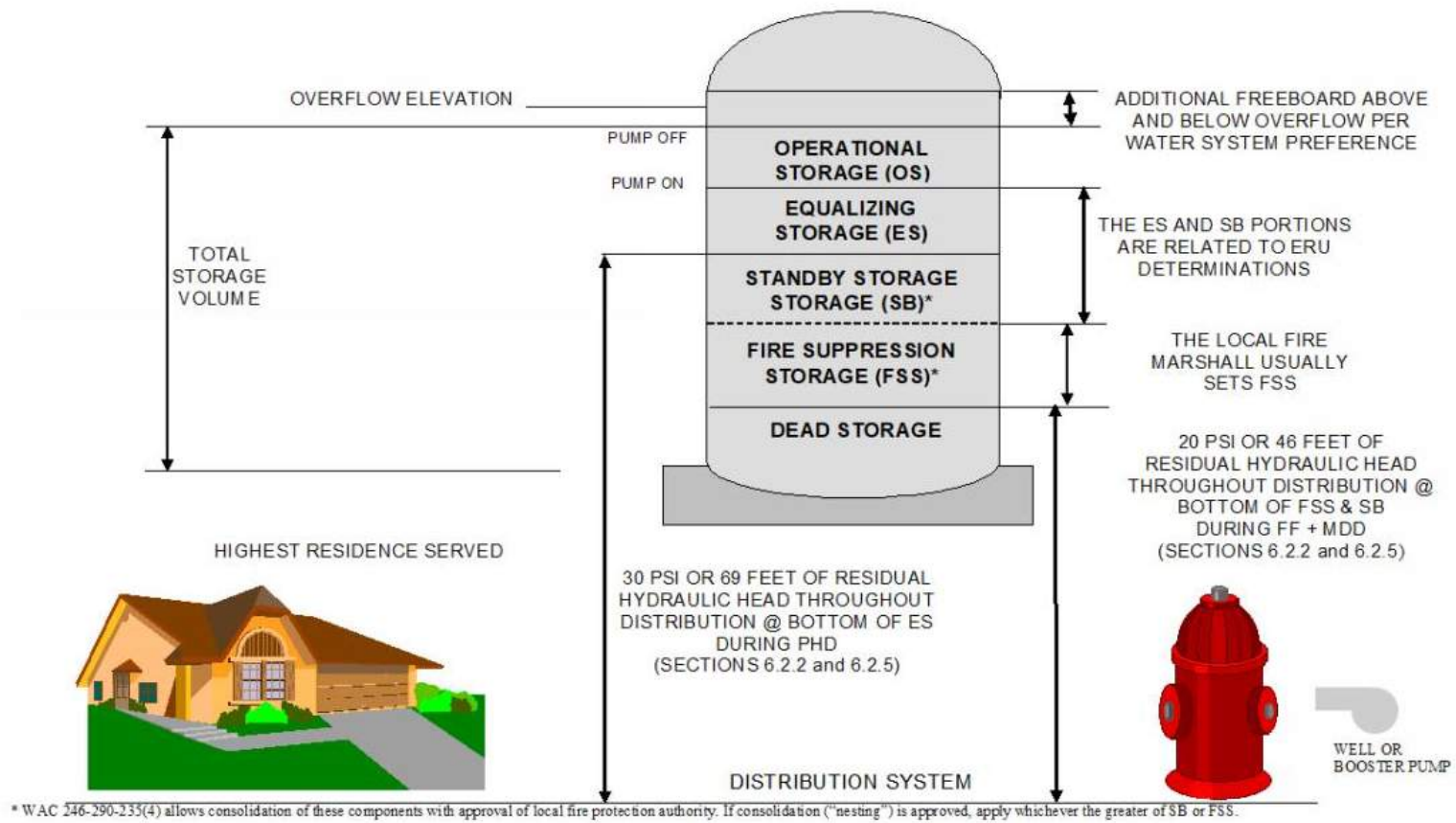
Advantages:

- ▶ No dead storage
- ▶ Operational storage flexibility
- ▶ Seasonally adjustable volume without affecting system pressure
- ▶ Cost

Disadvantages:

- ▶ Requires pumps for system pressure
- ▶ Ongoing maintenance and electricity costs

Water Tank Storage Components



Steel or Concrete Tank with Booster Station?

Steel

- ▶ Approximately double the cost of concrete to construct
- ▶ Needs to be recoated every 20-25 years
- ▶ Expected lifespan of 100 years

Concrete

- ▶ Half the price of steel to construct
- ▶ May need coatings at some point but not a requirement yet
- ▶ Expected lifespan of 50 years
- ▶ Exterior can be hard to maintain
- ▶ Life cycle costs show long term cost of concrete less than half the cost of steel

Selected Alternative: Concrete tank with Booster Pump Station

This project will consist of constructing:

- ▶ 94,000 gallon concrete tank
- ▶ Booster Pump Station
- ▶ Generator
- ▶ Miscellaneous water main improvements

And demolition and removal of the
existing tank



Public Information

- ▶ Website updates
- ▶ Updates to Quilcene School Board, Quilcene Fire Rescue, USFS, Jefferson County Chamber of Commerce, Jefferson County Public Infrastructure Fund Board
- ▶ Commissioner briefings
- ▶ Press releases to PT Leader, Peninsula Daily News and Kitsap Sun

Construction Funding Support

- ▶ Evaluate programs such as:
 - ▶ DOH Drinking Water State Revolving Fund (DWSRF)
 - ▶ USDA Rural Development
 - ▶ FEMA
 - ▶ Public Works Trust Fund

Schedule

	2020			2021											
	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December
Task															
Design															
Permitting															
Public Information															
Apply for DWSRF															
Bid Advertisement															
Contract Award															
Construction															

NOTE: Permitting timeframe may vary due to National Environmental Policy Act (NEPA) requirements.

Questions?