



# Lake Whatcom Water and Sewer District

Sudden Valley WTP Assessment Project

June 24, 2020



# Presentation Outline

- Introductions
- Project Description & Purpose
- Sudden Valley WTP History
- Project Approach
- Assessment Summary
- Summary of Findings
- Summary of Recommendations
- Next Steps



# Introductions

- Russell Porter, PE
- Keith Stewart, PE
- WTP Assessment Team
  - Myron Basden, PE, SE (Structural)
  - Aaron Pease, PE (Architectural / Mechanical)
  - Jason Newquist, PE (Electrical)



# Project Description & Purpose

- South Shore Water System Assessment
  - Assess conditions at Sudden Valley WTP
  - Provide basis for decision making with regards to WTP modifications and / or continued use
    - **Phase I (Current)**
      - **Assess existing condition of structures and equipment**
    - Phase II (Future)
      - Provide alternatives analysis for recommended modifications



# Project Description & Purpose

- **South Shore Water System Assessment**
  - Assess conditions at Sudden Valley WTP
  - Provide basis for decision making with regards to WTP modifications and / or continued use
    - **Phase I (Current)**
      - Assess existing condition of structures and equipment
    - **Phase II (Future)**
      - **Provide alternatives analysis for recommended modifications**



# Sudden Valley WTP History

- Constructed in 1970
- Major upgrade in 1990
- No significant upgrades in most recent 30 years
  - Several select, small projects have been completed:
    - Controls, SCADA, electrical, metering pumps, etc.



# Project Approach

- Review existing documentation
- Conduct on-site assessment at the WTP
  - February 12, 2020
  - G&O, WTP Staff (Kevin Cook and Ken Zangari)
- Prepare written report
  - Summarize findings from assessment
  - Provide recommendations for modifications
  - Used to guide decision making process
- Provide scoping for Alternatives Analysis (Phase II)



# Assessment Summary

- General Observations
  - WTP is in good condition and is well maintained
  - WTP performance is good
  - Issues identified generally relate to:
    - Lack of available space
    - Specific equipment requiring replacement or upgrade
    - Anchoring and supports
    - Minor corrosion and/or deterioration





# Assessment Summary

- Process / Operational
  - Space is very tight
  - Backwash system is expensive and cumbersome
  - Disinfection capacity limits flow
  - Chemical Systems should be upgraded
    - Tanks, pump skids, storage, etc.



# Assessment Summary

- Process / Operational
  - Tight space



**Tight Space**– Large tanks restricts use and/or potential reorganization of equipment. No space for new or larger equipment. Area includes low-hanging pipes and multiple floor obstructions.



**Tight Work Station** – Space is limited and lab counter is directly above computer equipment. Floor obstructions are nearby.



# Assessment Summary

- Process / Operational
  - Pumps



**Raw Water Pumps** – Raw Water Pump 2 is original (1970) and near the end of its recommended useful life.



**Transfer Pumps** – Pumps are original (1990) and near the end of their recommended useful life.



**Distribution Pumps** – Pumps are original (1990) and near the end of their recommended useful life.



**\*\* Testing** – Pumps have not been recently performance tested. Some spare motors are available at WTP.



# Assessment Summary

- Process / Operational
  - Chemical Systems



**Tank Access** – Staff must climb platform with heavy chemicals and add manually. Large platform restricts space.



**Old Equipment** – Existing alum tank is at end of useful life and should be replaced.



**Chemical Metering** – Dosing is tested manually on a daily basis by removing injection fittings. Common skid is desired.

# Assessment Summary

- Process / Operational
  - Disinfection System



**Disinfection** – WTP utilizes gas chlorine, which works, but has inherent safety risks. ANY modifications to this system would require bringing system into compliance with **current** codes and regulations.

TABLE 1-2

Water Demand Summary

Parameter	2020	2036	Buildout
Sudden Valley ADD (gpd) <sup>(1)</sup>	405,000	415,500	490,000
Geneva ADD (gpd)	200,000	208,000	217,000
<b>Combined ADD (gpd)</b>	<b>605,000</b>	<b>623,500</b>	<b>707,000</b>
Sudden Valley MDD (gpd) <sup>(2)</sup>	675,000	691,000	817,000
Geneva MDD (gpd)	422,000	440,000	458,500
<b>Combined MDD (gpd)</b>	<b>1,097,000</b>	<b>1,131,000</b>	<b>1,275,500</b>
8-Hour WTP Capacity (gpd) <sup>(3)</sup>	336,000		
12-Hour WTP Capacity (gpd)	504,000		
18-Hour WTP Capacity (gpd)	756,000		
WTP Rated Capacity (gpd) <sup>(4)</sup>	2,000,000		

- (1) ADD values taken from 2018 WSP and based on consumption of 150 gpd/ERU.
- (2) MDD values taken from 2018 WSP and based on consumption of 250 gpd/ERU.
- (3) Assumes current operational flow of 700 gpm for 8, 12, or 18 hours of daily operation.
- (4) Based on a current filter surface area of 252 sf and a maximum allowable filtration rate of 6.0 gpm/sf.

**Capacity**– Current max flow (1,000 gpm) limits ability to meet projected demands or treat to the WTP’s rated capacity.

# Assessment Summary

- Structural / Architectural



# Assessment Summary

- Structural / Architectural



# Assessment Summary

- Mechanical / Electrical





# Assessment Summary

- Mechanical / Electrical



# Summary of Recommendations

- Process / Operational
  - Alternatives Analysis
    - Disinfection System
    - CT System / Projected Demands
    - Backwash system
  - Pump performance testing
    - Prepare / budget for pump replacement
  - Chemical dosing system modifications



# Summary of Recommendations

- Structural / Architectural



# Summary of Recommendations

- Mechanical / Electrical



# Next Steps

- Develop and execute Scope for Phase II
- Complete Phase II
  - Alternatives Analysis
    - Structural / anchoring recommendations
    - Space utilization recommendations
    - Process recommendations
    - Cost Estimates
- Prepare financial and construction plan



# Questions?

