May 13, 2024

Consideration to Authorize a Sole Source Purchase of a Residual Control System for the Bonita Valley Reservoir from PSI Water Technologies

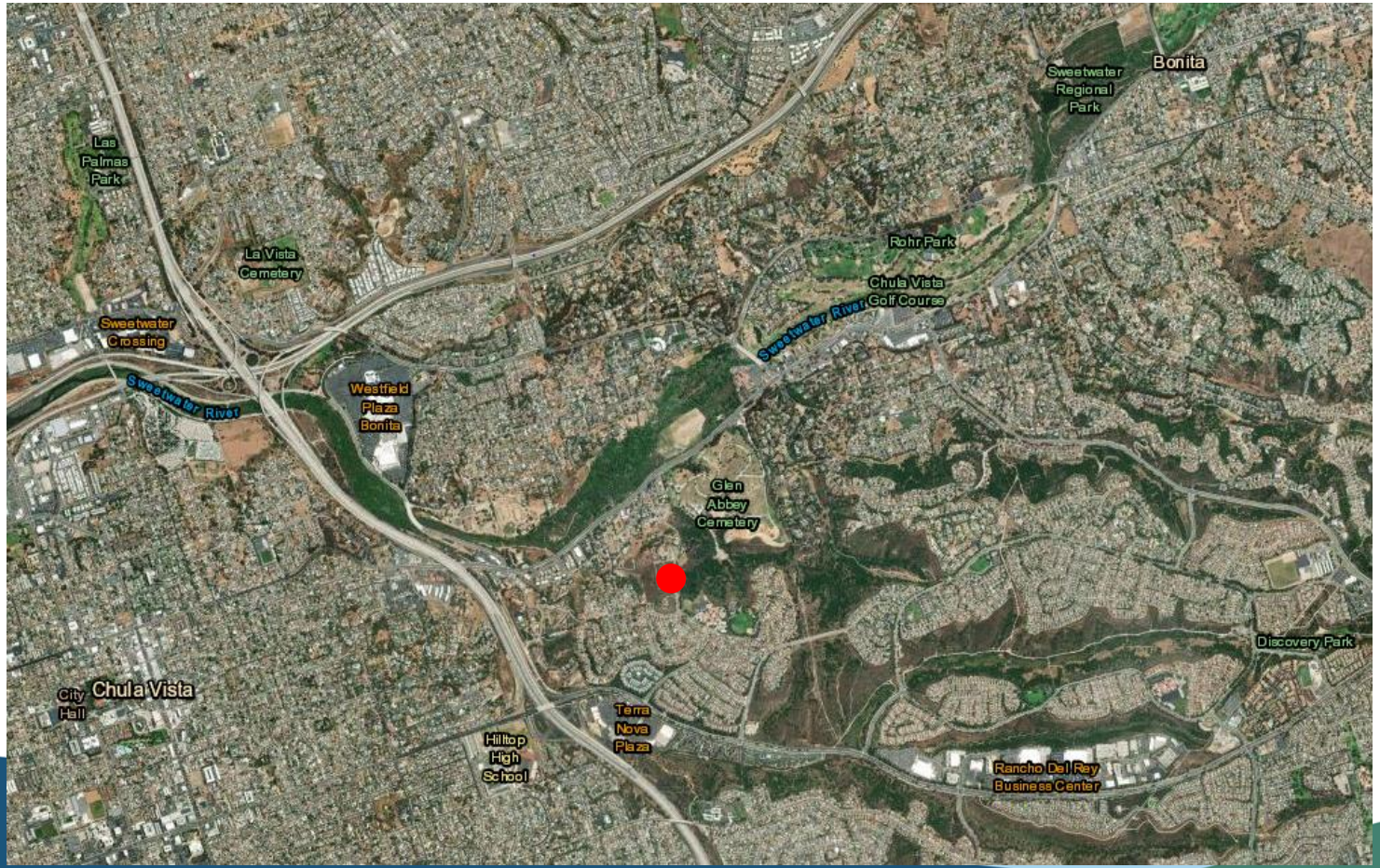
Justin Brazil, Director of Water Quality

Background

Bonita Valley Reservoir (BVR)

- Authority's largest treated water reservoir
- Consists of two 9 million gallon (MG) basins
- Located in Bonita, top of Randy Lane (below grade)
- Intermediary in the distribution system
- Critical for system storage

Background (BVR)



Background (BVR)

Background

Water Quality (Nitrification)

- A condition that can lead to a problematic degradation of chlorine residual in a distribution system

- Typically occurs when:
  - The source water being treated has a high chlorine demand
  - Water usage is low (long system water detention times)
  - Water temperatures are warm

Background

Water Quality Remediation (Typical)

- Deep cycling
- Water treatment plant operational adjustments
- Tank draining/disinfection
- Placing basins out of service
- Changing water sources

Background

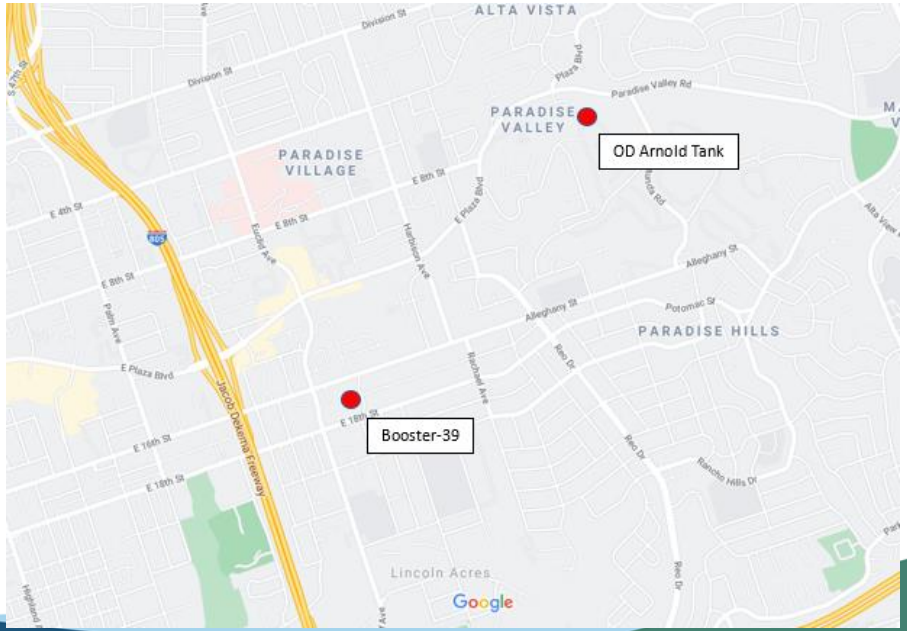
Residual Control System History

- FY 2020-21
  - Pilot test performed (August 2020-November 2020)
    - O.D. Arnold tank in National City

- FY 2021-22
  - August 11, 2021, the Board approved the sole source purchase of an RCS from PSI Water Technologies
    - O.D. Arnold tank in National City

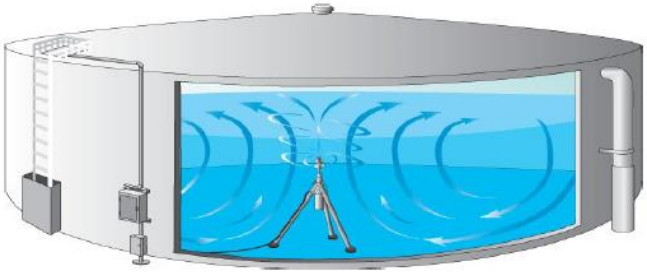
Background

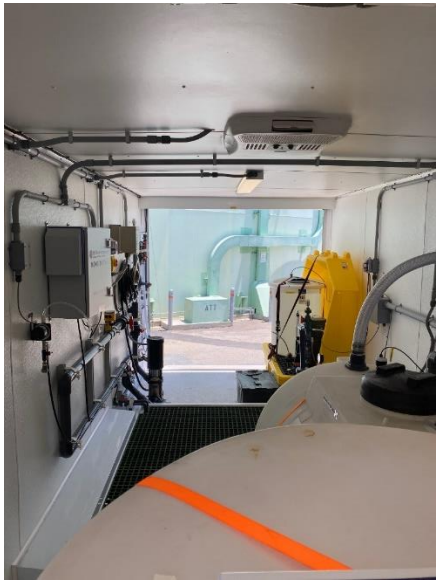
Residual Control System History – O.D. Arnold Tank, National City



Background

Residual Control System History O.D. Arnold Tank, National City



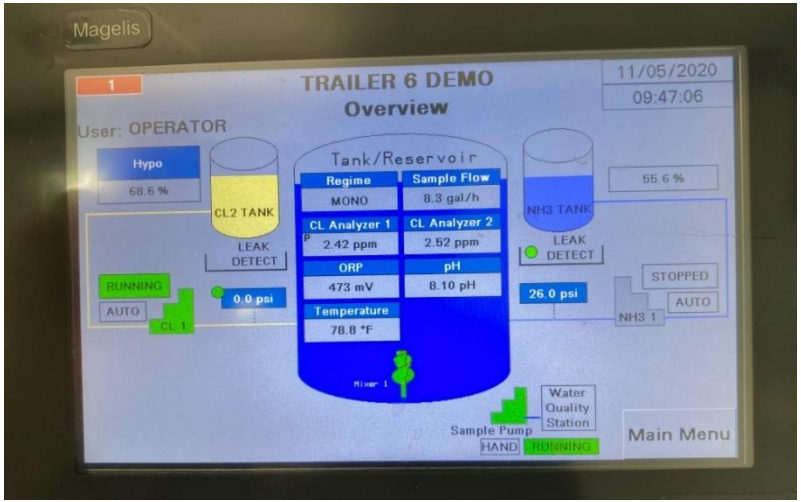


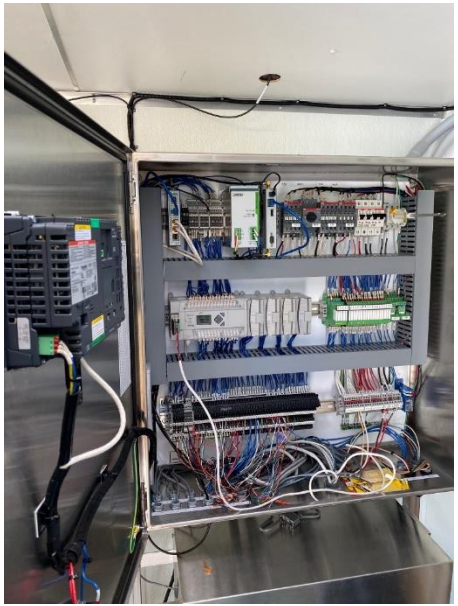
Background

Residual Control System History O.D. Arnold Tank, National City

Background

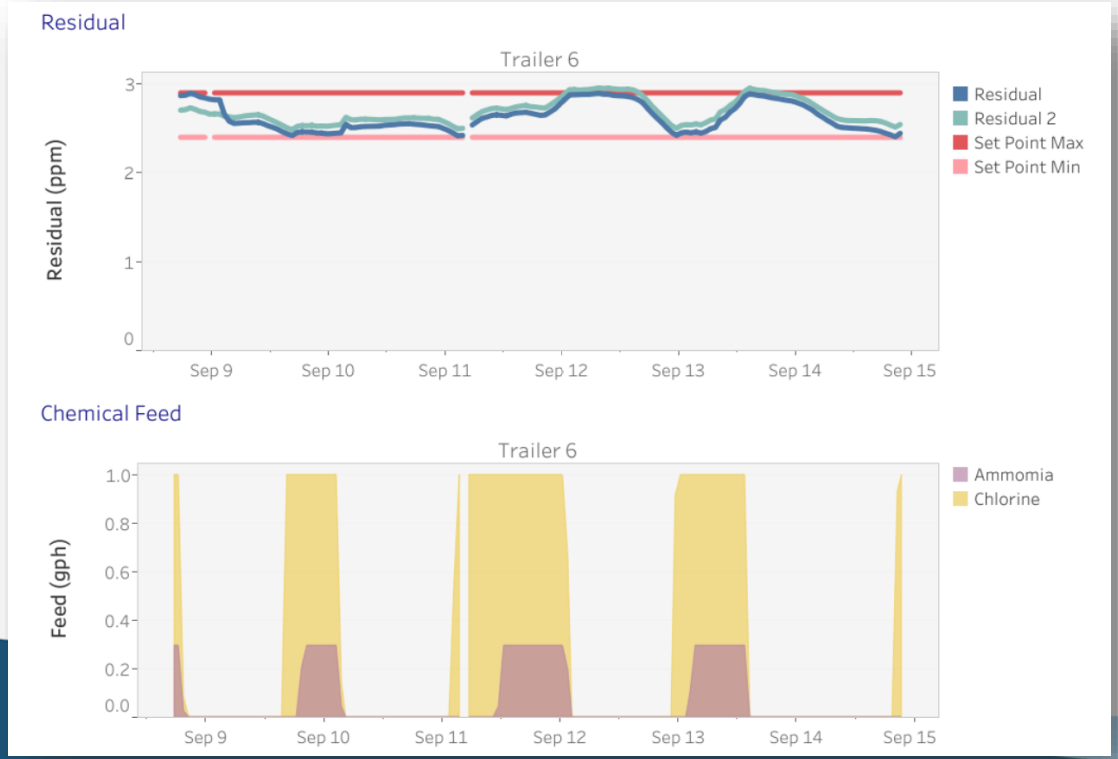
Residual Control System History O.D. Arnold Tank, National City





Background

Residual Control System History O.D. Arnold Tank, National City

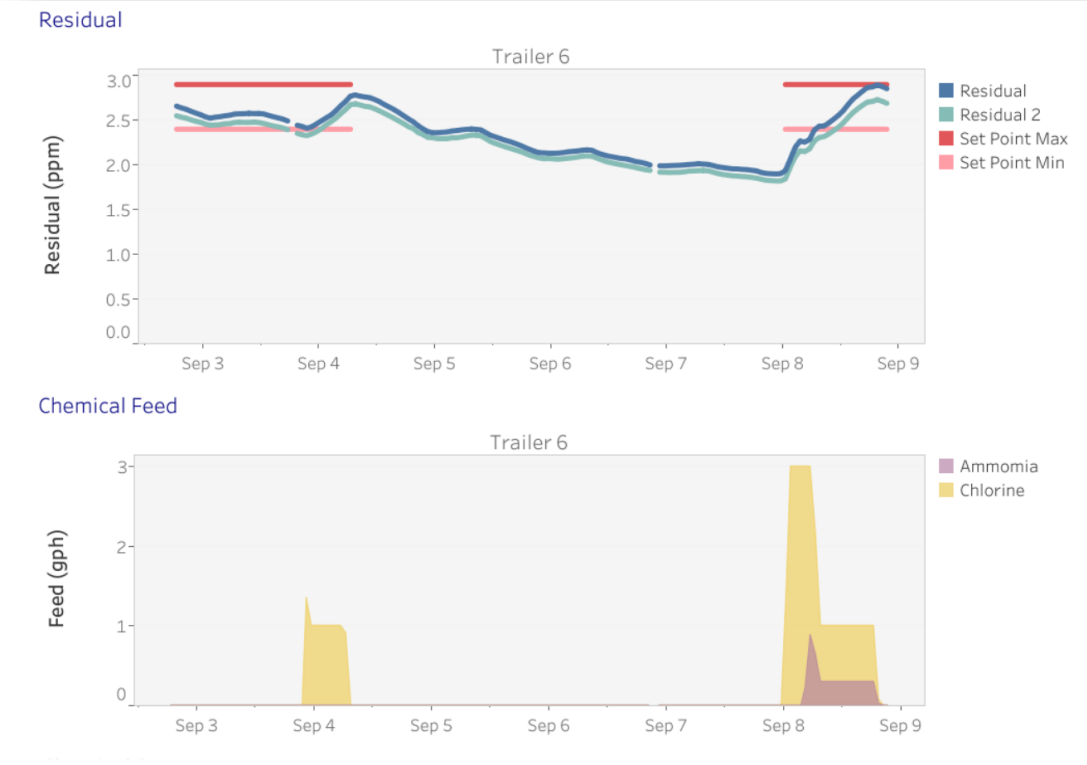


Continuous Operation

- Maintains a consistent chlorine residual

Background

Residual Control System History O.D. Arnold Tank, National City



Water Quality Recovery test

- Chlorine residual recovers when system is enabled

Background

Residual Control System History O.D. Arnold Tank, National City

- Success story
  - During the 5-year period leading up to this project, approximately 19 million gallons of treated drinking water had to be discharged from the O.D. Arnold tank zone to remediate water quality issues (i.e. nitrification and/or low chlorine residuals).

  - Since the installation of an RCS at the O.D. Arnold tank, no water from this tank has had to be wasted from the system to maintain water quality.

Background

Rational for Sole Sourcing

- Successfully demonstrated at an Authority tank site
- Another pilot is not necessary
- Operations staff are trained on the system
- SCADA integration would be similar
- Operational efficiencies from standardization
- An alternative system would require a pilot demonstration

Fiscal Impact

Residual Control System Total Project Cost Estimation

Item	Cost
Residual Control System	$366,436
Residual Control System Sales Tax (8.75%)	$32,063.15
SCADA Integration	$25,000
Electrical Upgrades	$97,000
Chemical Containment	$30,000
Contingency (9%)	$49,500.85
Total Estimated Project Cost	$600,000

- Purchase of a residual control system (including tax) would be $398,499.15
- Additional items required for installation (estimates) would be $152,000
- Approximately $15,000 less to integrate into SCADA than a different system

BVR (18 MG) is 7.2X larger than the O.D Arnold tank (2.5 MG); however, the RCS purchase cost would only be 2.7X the cost of the system previously installed

Fiscal Impact

Purchased Imported Water Savings

- Recovery of water quality at BVR can require a source change at the Perdue Water Treatment Plant to imported raw water from the San Diego County Water Authority

- BVR is a large intermediary reservoir in the Authority's system that subsequently supplies a large portion of the system downstream of it, maintaining water quality at this location would maximize the benefit of an RCS and also reduce the need to purchase expensive imported water to remediate water quality elsewhere in the system.

September 2023 Nitrification Event

- August 20, 2023, tropical storm Hilary passed over San Diego
    - Warm water, high chlorine demand, low water usage (long detention times) = start of nitrification

- Source water change to 100% raw imported supply from SDCWA was necessary
    - 529 acre feet purchased at $1,258/acre-foot = $665,482

- It is possible that a RCS could pay for itself by remediating a single water quality event
    - **Total estimated project cost of $550,499.15 versus $665,482 in purchased water costs**

Alternatives/Recommendation

Alternatives

1. Award a contract to PSI Water Technologies (A cleanwater1 Company) of Milpitas, CA in the amount of $398,499.15 for the purchase of a Residual Control System.

2. Direct staff to initiate a competitive process for the purchase of a chloramine boosting system and bring a recommendation back to the Governing Board.

3. Other direction as determined by the Governing Board.

Recommendation

Staff recommends that the Governing Board award a contract to PSI Water Technologies (A cleanwater1 Company) of Milpitas, CA in the amount of $398,499.15 for the purchase of a Residual Control System.

Questions?