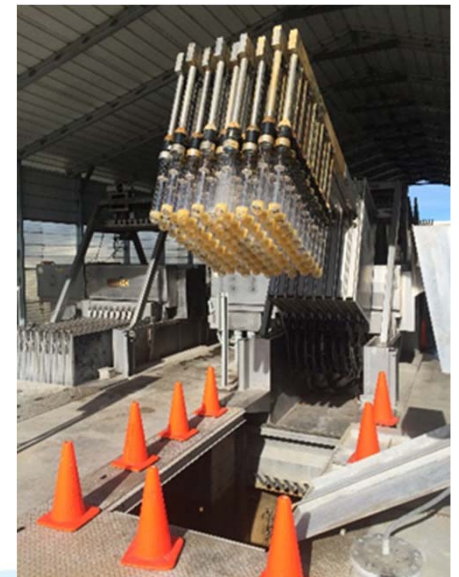


Project Update Laguna Treatment Plant Disinfection Improvements

November 15, 2018



OUR FUTURE IN EVERY DROP



Project Background

- Pre-1998 Gaseous Chlorine
- 1998 Ultraviolet System Commissioned
(67 MGD)
- 2012 Ultraviolet System De-Rated
(67 → 48.5 MGD)
- 2013-2017 Planning/Project Pre-Design

Project Alternatives

New UV System	New UV with Supplemental Hypo
Single Process	Dual/Parallel Processes
63 mgd Capacity	73 mgd Capacity
↑ Capital	↓ Capital
↓ O&M	↑ O&M

Operational Considerations

- West College Facility
- In-plant Upstream Processes
- Disinfection System Operations
- In-plant Downstream Operations
- Geysers Operations
- Reclamation Operations
- Discharge

Regulatory Considerations

- Disinfection By-Products
- Nutrient Removal
- Biofouling/Regrowth
- Available Discharge Locations
- Coliform Compliance Locations

Cost Considerations

	Ultraviolet	UV with Supplemental Hypo
Capital Costs (\$M)		
New UV	\$21.0	\$16.9
New Hypo	-	\$2.5
Associated Improvements	\$1.0	\$2.7
Off-Spec Diversion	\$6.4	\$6.4
West College Pump Station	\$3.0	-
Total Capital Costs	\$31.4	\$28.5
O&M Costs (\$M)		
Annual O&M Costs	\$0.53	\$0.6
20-year O&M Costs	\$10.6	\$12.0
Total Capital + 20-yr O&M	\$42.0	\$40.5

Recommended Approach – New UV

- Single Process
- Provides most Future Flexibility
- Challenges with Hypo don't outweigh Benefits of Additional Capacity

Next Steps

UV Project

- Amend Carollo Contract
 - BPU Approval
- Reengage with Calgon
- Design
- Bond Issuance
- Construction
- BPU Updates

Associated Efforts

- Pond Sampling Program
- Engage with Calpine to Better understand Regrowth and Potential Opportunities