



SANTA CLARA VALLEY WATER DISTRICT

# NON-AGENDA

July 26, 2024

**Board Policy EL-7 Communication and Support to the Board**  
*The BAOs shall inform and support the Board in its work.*

		<b><u>CEO BULLETIN &amp; NEWSLETTERS</u></b>
		CEO Bulletin: None
		<b><u>BOARD MEMBER REQUESTS &amp; INFORMATIONAL ITEMS</u></b>
4		<b>BMR/IBMR Weekly Reports: 07/24/24</b>
5		Memo from Aaron Baker, Chief Operating Officer, to Chair Hsueh, dated 07/15/24, providing a response to BMR R-24-0011.
		<b><u>INCOMING BOARD CORRESPONDENCE</u></b>
53		<b>Board Correspondence Weekly Report: 07/24/24</b>
54		Email from Nestor De la O Vargas to the board, dated 07/17/24, providing Keep Coyote Creek Beautiful upcoming event flyers. C-24-0180
58		Email from Dhruv Khanna to the board, dated 07/18/24, sharing a link to an article titled "Apple affordable housing push helps Santa Cruz, San Francisco projects". C-24-0181
59		Email from Jethroe Moore to the board, dated 07/17/24, offering feedback on the proposed water resources protection zones ordinance. C-24-0182
60		Email from Jethroe Moore to the board, dated 07/18/24, Sharing a link to an article titled "Bodycam video shows moment before officers shoot suspect near RNC". C-24-0183
61		Email from Hanoch Raviv to Chair Hsueh, dated 07/18/24 inquiring about a letter they received about property encroachment. C-24-0184
66		Email from Alan and Meg Giberson to the board, dated 07/19/24, providing a comment letter on Pacheco Reservoir Expansion, Draft IS/MND; Geotech investigations. C-24-0185
69		Email from Tiffany Howard to the board, dated 07/21/24, reporting the destruction of trees by unhoused individuals residing behind her property. C-24-0186
76		Email from Wendi Li to Mark Bilski, Assistant Officer and the board, dated 07/23/24, giving her feedback on the proposed Water Resources Protection Zones Ordinance in response to an email from Director Keegan. C-24-0187
80		Email from Jim Kuhl to the board, (copied to Darin Taylor) dated 07/23/24, with follow-up questions about the Water Affordability Study in response to an email from Chair Hsueh. C-24-0188
86		Email from Mansour Nasser to Valley water staff (copied to Director Keegan), dated 07/16/24, with questions about the delay of the Upper Guadalupe Project (UGP). C-24-0189
		<b><u>OUTGOING BOARD CORRESPONDENCE</u></b>

<b>89</b>	Email to Jim Kuhl from Chair Hsueh, dated 07/19/24, replying to an email in which they expressed thoughts about what should be addressed in the Water Affordability Study that is being conducted for Valley Water.
<b>94</b>	Email from Director Keegan to Wendy Li, dated 07/22/24, replying to their email about <i>Grants Pass v. Johnson</i> and how it will affect Valley Water on an operational level.
<b>97</b>	Email from Director Santos to Thunder Parley, dated 07/23/24, replying to their email in which they expressed concerns with encampment activity near Penitencia Creek.

# **BOARD MEMBER REQUESTS and Informational Items**

Report Name: Board Member Requests

Request	Request Date	Director	BAO/Chief	Staff	Description	20 Days Due Date	Expected Completion Date	Disposition
I-24-0010	07/17/24	Beall	Yoke	Mcelroy Gordon	Provide Director Beall with a comprehensive list of all crimes reported on Valley Water property.	08/06/24		
I-24-0009	07/09/24	Estremera	Hakes	Infante Bourgeois	Provide Director Estremera with a list of surplus properties that can be used by others for unhoused support.	07/29/24		07/18/24 CEO Bulletin: Response in 7/18/24 CEO Bulletin and 7/19/24 NA.



# MEMORANDUM

FC 14 (08-21-19)

**TO:** Chair Hsueh

**FROM:** Aaron Baker, P.E.  
Chief Operating Officer

**SUBJECT:** BMR R-24-0011

**DATE:** July 15, 2024

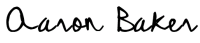
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Chair Hsueh requested that we provide Mr. Kuhl with information he requested on the Palo Alto Purified Water Project through Board Member Request 24-0011.

Attached please find the conceptual / study level cost estimates prepared during the planning phase for the Palo Alto Purified Water Project which were used for the Water Supply Master Plan 2050 analysis. The cost estimate reflects the Association of Advancement of Cost Engineering’s (AACE) Class 4 and 5 estimates and have the commensurate level of uncertainty. These estimates are included in our financing analysis and are part of the rate development process.

At this early state, the Capital Construction Cost was developed with assumptions for: conceptual facility layout (attached), pipeline alignment, construction schedule, treatment facility design, equipment capacities, and operational modes. The Capital Construction Cost estimate includes direct costs, contractor markups, contingencies, and soft costs such as design, engineering, and construction management.

O&M Cost was developed assuming operation conditions for the purification facility and pipelines based on project knowledge and best engineering practices. Planned operational expenditures include repair and replacement costs, and unit costs assumed for energy, chemicals, and labor.

DocuSigned by:  
  
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Aaron Baker, P.E.  
Chief Operating Officer

Attachment 1: PA AWPf Site Layout  
Attachment 2: Cost Estimate Details

cc: Rick L. Callender, Esq. Chief Executive Officer  
Kirsten Struve, Assistant Officer  
Vincent Gin, P.E., Deputy Operating Officer



# Scaled Down Project Costs – 7.9 MGD Project Capacity

	12 MGD	7.9 MGD - Without Secondary MF	7.9 MGD - With Secondary MF
<b>Project Cost and Allocation</b>			
Total Project Cost – (From FY2015 till Project Operations)			
- Construction Cost	939,008	728,903	756,976
- Easements, Wetland Mitigation, Sewer Connection	-	26,410	26,410
- Design Cost	76,591	(Included above)	(Included above)
- Planning Cost	13,924	(Included above)	(Included above)
- Environment, Right of Way, Close-out, and Past Expenses	17,725	17,725	17,725
- Inflation related escalation*	112,632	83,766	93,965
<b>Total</b>	<b>1,159,880</b>	<b>856,804</b>	<b>887,990</b>
Project Cost Allocation (From FY2024 till Project Operations)			
- Project Cost allocated to P3	1,091,106	788,031	819,217
- Project Cost allocated to VV	25,106	25,106	25,106
	<b>1,116,212</b>	<b>813,137</b>	<b>844,323</b>
<b>Annual Cost – First Year of Operations</b>			
Debt Service*	124,277	90,533	94,005
O&M Cost&	18,715		
- Energy		4,103	4,342
- Chemicals		2,951	3,107
- Labour		3,507	3,507
- R&R		20,934	21,844
- Sewer Connection		2,380	720
Lease Payment&	1,900	2,704	2,704
	<b>144,891</b>	<b>127,113</b>	<b>130,230</b>

\*Debt Service amount has been scaled down in proportion to the reduction in Project Cost allocated to P3. Debt assumed at blended rate of 6.8%

&O&M Costs and Lease Payments have been escalated by 3.2% annually from 2022 to 2030.

**Valley Water - P3 Purified Water Program**  
**Unit Cost Calculation**  
**Version: August 14, 2023**

*Summary Table, P3 Purified Water Program*



Peak Capacity	12 MGD without Secondary MF	12 MGD with Secondary MF	7.9 MGD without Secondary MF	7.9 MGD with Secondary MF
Average Production Capacity, Millions of gallons per day (MGD)	8.1	8.5	7.1	7.5
(AFY)	9,070	9,520	7,950	8,400
30 Year Lifecycle	\$9,200	\$8,700	\$8,400	\$8,100
100 Years	\$6,900	\$6,500	\$6,400	\$6,100

Capital Cost, Base

\$ 946,544,000 → \$ 728,902,534 *Applied 5/8ths rule to peak capacities*  
 \$ 728,903,000 *Rounded*

Values from 7/17/2023 delivery

Lifecycle	Unit Cost (\$/AFY) – More Conservative R&R Approach
30 Years	\$6,990
100 Years	\$5,180



2100	78					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,407,547	50	5321,878	\$2,310	\$325,008	\$170,720	\$3,231,443	\$5,460,955	0.073	1,338
2101	79					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,474,103	50	5318,203	\$2,256	\$317,906	\$168,721	\$3,154,888	\$5,331,589	0.073	1,364
2102	80					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,345,029	50	5305,791	\$2,201	\$350,791	\$162,722	\$3,000,338	\$5,255,203	0.073	1,351
2103	81					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,309,887	50	5304,395	\$2,150	\$360,446	\$158,915	\$3,007,100	\$5,081,803	0.073	1,361
2104	82					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,278,788	50	5291,253	\$2,099	\$285,270	\$155,118	\$2,835,861	\$4,951,010	0.073	1,270
2105	83					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,248,495	50	5287,280	\$2,049	\$268,282	\$153,473	\$2,866,281	\$4,843,870	0.073	1,240
2106	84					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,218,009	50	5283,472	\$2,001	\$248,451	\$147,884	\$2,798,369	\$4,729,082	0.073	1,210
2107	85					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,188,025	50	5279,826	\$1,953	\$278,788	\$144,379	\$2,732,067	\$4,617,093	0.073	1,180
2108	86					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,158,426	50	5276,332	\$1,907	\$268,270	\$140,958	\$2,667,317	\$4,507,615	0.073	1,154
2109	87					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,128,294	50	5273,000	\$1,862	\$261,218	\$137,638	\$2,604,100	\$4,400,299	0.073	1,128
2110	88					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,100,415	50	5254,812	\$1,818	\$255,707	\$134,397	\$2,542,401	\$4,296,511	0.073	1,100
2111	89					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,081,173	50	5248,272	\$1,775	\$249,647	\$131,173	\$2,482,105	\$4,194,702	0.073	1,074
2112	90					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,050,553	50	5243,884	\$1,731	\$243,731	\$127,064	\$2,423,336	\$4,095,201	0.073	1,048
2113	91					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,030,140	50	5237,128	\$1,692	\$237,958	\$123,030	\$2,365,911	\$3,998,236	0.073	1,021
2114	92					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$1,009,114	50	5231,009	\$1,652	\$232,317	\$119,067	\$2,309,887	\$3,901,511	0.073	999
2115	93					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$985,278	50	5226,051	\$1,614	\$226,851	\$115,174	\$2,255,111	\$3,811,611	0.073	973
2116	94					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$959,001	50	5220,462	\$1,574	\$221,437	\$111,300	\$2,201,672	\$3,720,202	0.073	952
2117	95					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$938,174	50	5215,438	\$1,537	\$216,100	\$107,593	\$2,149,000	\$3,631,234	0.073	930
2118	96					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$914,081	50	5210,333	\$1,500	\$211,057	\$103,801	\$2,098,564	\$3,546,451	0.073	908
2119	97					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$892,428	50	5205,349	\$1,465	\$206,265	\$100,273	\$2,048,031	\$3,462,416	0.073	886
2120	98					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$872,261	50	5200,483	\$1,430	\$200,180	\$96,708	\$2,000,284	\$3,380,388	0.073	865
2121	99					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$853,034	50	5195,732	\$1,396	\$194,411	\$93,203	\$1,952,884	\$3,300,264	0.073	845
2122	100					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$834,777	50	5191,094	\$1,363	\$188,720	\$90,757	\$1,905,607	\$3,222,000	0.073	825
2123	101					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$817,395	50	5187,216	\$1,331	\$183,216	\$88,370	\$1,857,817	\$3,145,207	0.073	805
2124	102					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$799,384	50	5183,444	\$1,299	\$180,780	\$86,039	\$1,813,318	\$3,081,164	0.073	786
2125	103					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$772,824	50	5177,838	\$1,269	\$178,449	\$84,763	\$1,774,263	\$2,998,280	0.073	767
2126	104					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$754,533	50	5173,614	\$1,239	\$174,226	\$84,541	\$1,732,209	\$2,927,336	0.073	749
2127	105					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$738,634	50	5169,500	\$1,209	\$170,093	\$84,372	\$1,691,162	\$2,867,968	0.073	731
2128	106					59,138,000	50	\$2,102,664	\$15,000	\$2,110,000	\$1,108,663	520,879,000	\$35,453,327	50	50	50	50	\$724,496	50	5165,496	\$1,181	\$166,061	\$82,254	\$1,651,067	\$2,796,261	0.073	714

# 7.9 MGD Life Cycle Cost

Valley Water - P3 Purified Water Program

Unit Cost Calculation

Approach: Update unit cost using 2022 cap tal, O&M, and VW R&R estimate approach, based on the lifecycle cost methodology in CoRe Plan Appendix A-5, Section 7.

Summary Table

Alternative	Lifecycle	Cap tal Cost, Base	Capital Cost, Secondary MF	Easements	Wetland Mitigation	O&M, Base	Source Water Delivery Payment	R&R	Total Cost, present value	Annual Yield (AF)	Present value yield (AF)	Unit Cost, Base (\$/AF)	Unit Cost, Secondary MF (\$/AF)	Unit Cost, Easements (\$/AF)	Unit Cost, Wetland Mitigation (\$/AF)	Unit Cost, O&M Base (\$/AF)	Unit Cost, O&M Secondary MF (\$/AF)	Unit Cost, Lease of Facility (\$/AF)	Unit Cost, Stormwater Handling (\$/AF)	Unit Cost, Sewer Service Fee (\$/AF)	Unit Cost, Source Water Delivery Payment (\$/AF)	Unit Cost, R&R (\$/AF)	Unit Cost, Total (\$/AF)
7.9 MGD w thoutSecondary y MF	30 Yea s	\$728,903,000	\$0	\$500,000	\$16,000,000	\$266,720,000	\$33,279,888	\$1,034,912,888	\$1,223,147,641	7,953	185,560	\$4,520	\$0	\$3	\$107	\$1,032	\$0	\$264	\$2	\$294	\$179	\$2,041	\$8,493
7.9 MGD w thoutSecondary y MF	100 Yea s	\$728,903,000	\$0	\$500,000	\$16,000,000	\$820,960,000	\$110,866,293	\$1,677,169,293	\$1,640,880,231	7,953	257,864	\$2,550	\$0	\$2	\$58	\$1,032	\$0	\$264	\$2	\$267	\$139	\$2,041	\$6,361

Notes: All costs in 2022 dollars. Cell notes present methodology as described in CoRe Plan.

Cost Estimate

Alternative	Item	Capital Costs (2022 \$)					Annual Operations, Maintenance, Replacement and Renewal						
		Cap tal Costs, Base <sup>1,2</sup>	Capital Cost, Secondary MF	Easements <sup>3</sup>	Wetland Mitigation	Sewer Connection	Annual Operations and Maintenance, Base (O&M) <sup>4</sup>	Annual Operations and Maintenance, Secondary MF (O&M) <sup>4</sup>	Lease of Facility <sup>5</sup>	Stormwater Handling	Sewer Service Fee	Source Water Delivery Payment	Annual Replacement and Renewal (R&R)
7.9 MGD w thoutSecondary y MF	AWPF, incl. Pump Stations Pipeline Construction Cost	\$728,903,000	\$0	\$500,000	\$16,000,000	\$9,910,000	\$8,200,000	\$0	\$2,102,664	\$15,000	\$1,850,000	\$1,108,663	\$16,271,000

<sup>1</sup> Includes construction, owner's fees, engineering, and design costs.

<sup>2</sup> Includes construction, management, and independent engineering.

<sup>3</sup> Excludes financing costs.

<sup>4</sup> Does not reflect the change in construction cost for the revised pipeline alignment that avoids going through NASA property.

<sup>5</sup> Includes temporary and permanent easements.

<sup>6</sup> O&M cost includes energy, chemicals, and labor costs.

<sup>7</sup> Lease of space at Palo Alto RWQCF facility.

**Data Sources:**  
 Cap tal Costs: 2021 Flow Balance.xlsx  
 Easements: Updated Pipeline Water Parcel Data-06302023.xlsx  
 Wetland Mitigation: PMAC Assumption  
 Sewer Connection: 2021 Flow Balance.xlsx  
 O&M: Va ley Water \_Palo Alto AWPF OPEX 5.4 no second y m f  
 R&R - AWPF: Va ley Water \_Palo Alto AWPF OPEX 5.4 no second y m f  
 R&R - Pipeline: Va ley Water \_Palo Alto AWPF OPEX 5.4 no second y m f

Assumptions

Inflation Rate	3.0%
Discount Rate	5.5%
Net Discount Rate	2.43%



Cost Assumptions

OMR&R Cost Estimate Summary

Alternative	Energy	Chemicals	Labor	Repair & Replacement	Secondary MF		Total OPEX	Source	Link
					Total OPEX Estimate				
7.9 MGD withoutSecondary MF	\$3,189,000	\$2,294,000	\$2,726,000	\$16,271,000		\$0	\$24,480,000	Valley Water_Palo Alto AWPf OPEX 5.4 no secondary mf	<a href="#">Valley Water_Palo Alto AWPf OPEX 5.4 no secondary mf.xlsx</a>
7.9 MGD withSecondary MF	\$3,375,000	\$2,415,000	\$2,726,000	\$16,978,000	\$117,000	\$117,000	\$25,611,000	Valley Water_Palo Alto AWPf OPEX 5.4 w-secondary mf	<a href="#">Valley Water_Palo Alto AWPf OPEX 5.4 w-secondary mf.xlsx</a>
12 MGD withoutSecondary MF	\$3,795,000	\$2,617,000	\$2,726,000	\$20,979,000		\$0	\$30,117,000	Valley Water_Palo Alto AWPf OPEX 5.5 (8.1 product no secondary mf)	<a href="#">Valley Water_Palo Alto AWPf OPEX 5.5 (8.1 product no secondary mf).xlsx</a>
12 MGD withSecondary MF	\$4,006,000	\$2,737,000	\$2,726,000	\$21,180,000	\$117,000	\$117,000	\$30,766,000	Valley Water_Palo Alto AWPf OPEX 5.5 (8.5 product w-secondary mf)	<a href="#">Valley Water_Palo Alto AWPf OPEX 5.5 (8.5 product w-secondary mf).xlsx</a>

Facility Lease

Parameter	Value	Source
AWPF Lease (\$)	\$2,000,000	Dan Lopez email: 8/8/2003
AWPF Total Area (sq ft)	297,086	Dan Lopez email: 8/8/2003
RWQCP Site Leased Portion (sq ft)	12,200	Dan Lopez email: 8/7/2003
RWQCP Lease (\$)	\$ 102,664	
Combined AWPF and RWQCP Lease Cost (\$)	\$2,102,664	

Stormwater Handling

Parameter	Value	Source
Stormwater Handling	\$15,000	Dan Lopez email: 8/8/2003 based on Palo Alto s Rule 25, which includes rules and regulations regarding storm drainage fees

Easements

Parameter	Value	Source	Link
Temporary Easements	\$71,415	Updated Purifie	<a href="#">Updated Purified Water Parcel Data-06302023.xlsx</a>
Permanent Easements	\$153,730	Updated Purifie	<a href="#">Updated Purified Water Parcel Data-06302023.xlsx</a>
Other (Encmnt Permits, addtnl MWs, etc)	\$274,855	VW/PMC Assumption	

Mitigation

Environmental Mitigation	\$16,000,000	VW/PMC Assumption
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Source Water Delivery Payment

Parameter	Value	Source	Link
Source Water Delivery Payment_July 2019 dollars	\$1,000,000		
Source Water Delivery Payment_July 2022 dollars	\$1,108,663		

Price Index	
Annual 2019	295.004
Annual 2022	327.060
Factor	1.109

Source [https://data.bls.gov/timeseries/CUURS49BSA0?amp%253bdata\\_tool=XGtable&output\\_view=data&include\\_graphs=true](https://data.bls.gov/timeseries/CUURS49BSA0?amp%253bdata_tool=XGtable&output_view=data&include_graphs=true)

Notes:  
 1. The area ratio for the SWPS lease should be applied to the unreduced AWPf lease amount, i.e., to \$2.5M/year. I've made the correction on "Costs\_Assumptions" - see the yellow highlighted cell.  
 2. Changed the AWPf lease to \$2M on "Costs\_Assumptions."  
 3. Increased the Easements cost to \$0.5M (assume includes Encl. Permit fees and additional 2 wells).  
 4. Accounts for \$16M wetland mitigation cost (once).

**12 MGD Cost Estimate Details**

**Estimate of Purified Water Project Company's Cost by PMC**

**10/11/2022**

<b>Capital Costs</b>		
AWPF, incl. Pump Stations Construction Cost <sup>1</sup>		\$ 338,992,000
Pipelines Construction Cost <sup>2</sup>		\$ 339,663,000
<b>Total Construction Cost (Sep 2022 Dollars)</b>		<b>\$ 678,655,000</b>
<b>Owner's Reserve for Change Orders</b>	15%	<b>\$ 101,798,000</b>
<b>Design Cost</b>	8%	<b>\$ 54,292,000</b>
<b>Engineering Services During Construction Cost</b>	5%	<b>\$ 33,933,000</b>
<b>Construction Management</b>	10%	<b>\$ 67,866,000</b>
<b>Independent Engineer (Allowance)</b>		<b>\$ 10,000,000</b>
<b>Total Capital Cost Estimate</b>		<b>\$ 946,544,000</b>

**Comments**

28% of Construction Cost by PMC is for Indirect Costs (General Conditions, Taxes, Overhead & Profit, Bonds, Insurance, etc) compared to previous estimates where 17% of Construction Cost is for Indirect Costs

- 15% used for Owner's Reserve by others in previous estimates
- 15% used for Design by others in previous estimates
- 12% used for ESDC by others in previous estimates
- 13% used for CM by others in previous estimates

1. BV Opinion of Probable Construction Cost, 9/23/22. Includes Source Water and Purified Water Pump Stations. Cost in Sep 2022 Dollars, i.e. cost is not escalated to mid-point construction.
2. CDM Smith Opinion of Probable Construction Cost, 9/23/22 Update for additional AC Paving (approx. 16' wide x 2" lift). OPCC also includes 8" x 4" AC and 40' wide slurry topping for entire length of pipelines.  
9/28/22 - Added 3 monitoring wells; See Pipelines OPCC Total Tab  
Cost in Sep 2022 Dollars, i.e. cost is not escalated to mid-point construction.
3. Construction Milestones:
  - Start: Jan 2025 (Assume design starts Jan 2024; 1.5 year duration)
  - End: Jul 2028 (Assume 3.5 year construction duration)
  - Midpoint: Oct 2026
4. General Construction Cost Notes/Assumptions:
  - a. 12-mgd Purified Water production capacity
  - b. Allowance for price increase due to BABA requirements is based on 10% mark-up on applicable materials and equipment. (5% used by others on previous estimate on a lower direct cost amount.)
  - c. ~~5% escalation mark up to mid-point construction~~ Not used
  - d. 30% Construction Cost contingency (25% used by others in previous estimates)
  - e. 5% market conditions mark-up on direct costs (Previous estimates by others does not include this.)
  - f. OPCCs are consistent with Association for Advancement of Cost Engineering (AACE) Class 5 estimates

Estimate Totals						
Description	Amount	Totals	Hours	Rate	Percent of Total	
Labor	2,043,664		24,218		0.60%	
Material	13,686,986				4.04%	
Subcontract	142,139,335				41.93%	
Equipment	582,564		10,249		0.17%	
Other	90,300				0.03%	
<b>TOTAL DIRECT COST</b>	<b>158,542,849</b>	<b>158,542,849</b>			<b>46.77%</b>	
<b>ALLOWANCES</b>						
Allowance - Build America Buy America	12,000,000				3.54%	
<b>TOTAL DIRECT COST W/ ALLOWANCE</b>	<b>12,000,000</b>	<b>170,542,849</b>			<b>3.54%</b>	
<b>SUBCONTRACTOR MARK-UP'S</b>						
Subcontractor-General Conditions	7,736,421				2.28%	
Subcontractor-Overhead	5,802,316				1.71%	
Subcontractor-Fee	5,802,316				1.71%	
Subcontractor-Bond/Insurance	2,417,632				0.71%	
<b>GRAND TOTAL DIRECT COST</b>	<b>21,758,685</b>	<b>192,301,534</b>			<b>6.42%</b>	
<b>RISK ASSESSMENT MARK-UP'S</b>						
Construction Contingency	57,690,461			30.00 %	17.02%	57,690,461
Market Adjustment	9,615,077			5.00 %	2.84%	9,615,077
Escalation to Mid-Point Construction (October 2026)	0			0.00 %	0.00%	
<b>TOTAL INCLUDING RISK</b>	<b>67,305,538</b>	<b>259,607,072</b>			<b>19.85%</b>	
<b>GENERAL REQUIREMENTS</b>						
General Conditions Management	14,927,407			5.750 %	4.40%	
General Conditions Subsistence	5,192,141			2.000 %	1.53%	
General Conditions Temp Facilities	2,596,071			1.000 %	0.77%	
General Conditions Equipment	1,298,035			0.500 %	0.38%	
General Conditions Start-up	3,894,106			1.500 %	1.15%	
General Conditions Permits	1,298,035			0.500 %	0.38%	
Sales Tax	1,364,186			9.500 %	0.40%	
<b>TOTAL INCLUDING GC'S</b>	<b>30,569,981</b>	<b>290,177,053</b>			<b>9.02%</b>	
<b>CONTRACTOR FEE</b>						
General & Administrative Costs	17,410,623			6.000 %	5.14%	
Profit (Fee)	23,138,736				6.83%	
<b>TOTAL INCLUDING FEE</b>	<b>40,549,359</b>	<b>330,726,412</b>			<b>11.96%</b>	
<b>INSURANCES &amp; BOND</b>						
Builders All Risk Insurance	2,480,448			0.750 %	0.73%	
General Liability Insurance	1,928,228				0.57%	
Payment & Performance Bond	3,856,456				1.14%	
<b>TOTAL CONSTRUCTION COST</b>	<b>8,265,132</b>	<b>338,991,544</b>			<b>2.44%</b>	
<b>Total</b>		<b>338,991,544</b>				<b>30% 101,143,157 Indirect Costs</b> 237,848,387

OPCC Date Constructi	Midpoint	Construction End	Duration to Midpoint, mos	Escalation	Total Escalation Factor
9/1/2022	1/1/2025	10/1/2026	7/1/2028	49	5% 0.2042

Direct Cost Comparison (For Scaling Total Construction Cost)	
AWPF Direct Cost	\$155,714,800.24
PA PS Direct Cost	\$2,828,049.40
Total Direct Cost (AWPF+PS)	\$158,542,849.00
Total Construction Cost (Minus BABA and Contingency)(AWPF+PS)	\$269,301,083.00
AWPF Construction Cost (Minus BABA and Contingency)	\$264,497,355.81
PA PS Construction Cost (Minus BABA and Contingency)	\$4,803,728.27

385645602 20.42  
338991544  
46654058

Estimate Totals		UPDATED TOTALS WITH ADDIT AVG 16"x2" AC		
Description	Rate	Amount	Totals	
Labor		47,283,373		
Material		95,914,651		
Subcontract		10,229,023		
Equipment		22,587,262		
Other		707,369		
<b>TOTAL DIRECT COST</b>		<b>176,721,678</b>	<b>176,721,678</b>	52%
<b>ALLOWANCES</b>				
Bu Id America Buy America	10%	9,591,465		
<b>SUBCONTRACTOR MARK UPS</b>				
Subcontractor GC	8.0%	818,322		
Subcontractor Overhead	6.0%	613,741		
Subcontractor Fee	6.0%	613,741		
Subcontractor Bond/Ins	2.5%	255,726		
<b>GRAND TOTAL DIRECT COST</b>		<b>11,892,995</b>	<b>188,614,673</b>	
<b>RISK ASSESSMENT MARK UP'S</b>				
Construction Contingency	30.0%	56,584,401.98		
Market Volatility Factor	5.0%	9,430,733.66		
<b>Escalation - Mid-Point Construction (Oct-2026)</b>	<b>0.00%</b>	<b>-</b>	<b>-</b>	
<b>TOTAL INCLUDING RISK</b>		<b>66,015,136</b>	<b>254,629,809</b>	
<b>GENERAL REQUIREMENTS</b>				
General Conditions Management	5.75%	14,641,214.01		
General Conditions Subsistence	2.00%	5,092,596.18		
General Conditions Temp Facili	1.00%	2,546,298.09		
General Conditions Equipment	0.50%	1,273,149.04		
General Conditions Start-up	1.50%	3,819,447.13		
General Conditions Permits	0.50%	1,273,149.04		
Sales Tax (MEO)	9.50%	11,324,881.79		
<b>TOTAL INCLUDING GC'S</b>		<b>39,970,735</b>	<b>294,600,544</b>	
<b>CONTRACTOR FEE</b>				
General & Admin Fee	6.00%	17,676,032.65		
Profit (Fee)	6.00%	17,676,032.65		
<b>TOTAL INCLUDING FEE</b>		<b>35,352,065</b>	<b>329,952,610</b>	
<b>INSURANCES &amp; BOND</b>				
Bu Idler's All Risk Insurance	0.75%	2,474,644.57		
General Liability Insurance	0.50%	1,649,763.05		
Payment and Performance Bond	1.00%	3,299,526.10		
<b>Total</b>		<b>7,423,934</b>	<b>339,662,543</b>	

Total Includes Monitoring Wells Qty 3 Cost Each (See Below) \$762,000 Total for Monitoring Wells \$2,286,000 >> Total Direct Costs for Monitoring Wells \$1,197,000

Direct Construction Cost 177,919,000  
 Contingency 53,376,000  
 BABA Allowance 9,591,000  
 Market Conditions Adjustment 9,491,000  
 Indirect 89,286,000  
 Total Construction Cost 339,663,000

Cost of Monitoring Well based on Valley Water John D. Morgan Park Project (Nov 2016 Bid)

Cost for a Monitoring Well per Items Below \$450,000 Cost in Nov. 2016  
 Contingency 30% \$135,000  
 Subtotal \$585,000

ENR CCI - SFO  
 Nov. 2016 11579.33  
 Sep. 2022 15083.26

CCI Multiplier 1.303 \$762,000 Monitoring Well Construction Cost in Sep. 2022  
**\$762,000 Cost accounting for MidPoint Escalation**

**Santa Clara Valley Water District**  
 5750 Almaden Expwy., San Jose, CA 95118

SUMMARY OF THE PROPOSALS OPENED 9-Nov-16 AWARDED TO  
 FOR THE **JOHN D. MORGAN PARK MONITORING WELLS PROJECT**  
 PROJECT NO. 91304001  
 CONTRACT NO. C0622

ITEMS	QUANTITIES		ENGINEER'S ESTIMATE		Yellow Jacket Drilling Gilbert, AZ		Cascade Drilling Richmond, CA	
	Quantity	Unit	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT
BID BOND, CASH OR CERTIFIED CHECK ACCOMPANYING BID								
1 Mobilization	1	LS	\$53,000.00	\$ 53,000.00	N		\$ 75,500.00	\$ 75,500.00
2 Sampling and Records	1	LS	\$14,000.00	\$ 14,000.00	O		\$ 27,000.00	\$ 27,000.00
3 Sonic Borehole Drilling	406	LF	\$469.00	\$ 190,506.00	N		\$ 469.00	\$ 190,506.00
4 Direct or Reverse Rotary Borehole Drilling	406	LF	\$195.00	\$ 78,975.00			\$ 245.00	\$ 99,225.00
5 Borehole Geophysical Testing	1	LS	\$9,000.00	\$ 9,000.00	R		\$ 8,500.00	\$ 8,500.00
6 2-Inch Well Casing	950	LF	\$11.00	\$ 10,450.00	E		\$ 14.00	\$ 13,300.00
7 2-Inch Well Screen	100	LF	\$13.00	\$ 1,300.00	S		\$ 16.00	\$ 1,600.00
8 Artificial Filter Pack	170	LF	\$33.00	\$ 5,610.00	P		\$ 26.00	\$ 4,420.00
9 Annular Sealing - Bentonite	590	LF	\$85.00	\$ 50,150.00	O	Assume 1/2	\$ 34.00	\$ 20,060.00
10 Annular Sealing - Cement	55	LF	\$35.00	\$ 1,925.00	N		\$ 47.00	\$ 2,585.00
11 Well Development	1	LS	\$24,000.00	\$ 24,000.00	S	Assume 2/3	\$ 29,000.00	\$ 29,000.00
12 Wellhead Completion	2	EA	\$4,000.00	\$ 8,000.00	I	Assume 1/2	\$ 2,800.00	\$ 5,600.00
13 Paving and Surfacing	1	LS	\$98,000.00	\$ 98,000.00	V	Assume 1/2	\$ 95,000.00	\$ 95,000.00
14 Sound Control	1	LS	\$100,000.00	\$ 100,000.00	E		\$ 95,000.00	\$ 95,000.00
15 Disposal of Drilling Fluids and Cuttings	1	LS	\$55,000.00	\$ 55,000.00		Assume 2/3	\$ 36,000.00	\$ 36,000.00
16 Discharge Water	1	LS	\$10,000.00	\$ 10,000.00			\$ 18,450.00	\$ 18,450.00
<b>TOTAL BID</b>				<b>\$ 586,210.00</b>			<b>\$ 593,640.00</b>	<b>\$ 593,640.00</b>

\$75,500 100% \$75,500  
 \$27,000 100% \$27,000  
 \$62,400 0% \$0  
 \$99,225 100% \$99,225  
 \$8,500 100% \$8,500  
 \$13,300 100% \$13,300  
 \$1,600 100% \$1,600  
 \$4,420 100% \$4,420  
 \$2,585 67% \$2,585  
 \$29,000 67% \$19,333  
 \$5,600 50% \$2,800  
 \$95,000 50% \$47,500  
 \$95,000 100% \$95,000  
 \$36,000 67% \$24,000  
 \$18,450 100% \$18,450  
**\$593,640 \$450,000**

		Spreadsheet Level	Takeoff Quantity	Labor Man Hrs	Labor Amount	Material Amount	Equip Amount	Sub Amount	Other Amount	Total Cost/Unit	Total Amount		
<b>0100 Palo Alto RWQCP Pump Station</b>													
<b>4.010 Pump Station Facility</b>													
	080 015 Hydraul c Pump Systems	Vertical	urbine Pumps Line Shaft w/Can										
	100 010 Buildings	CMU	Process	15 000 000	GPD	562	55 595	95 434	5 550	225 000	0.03 /GPD	381 579	
				1 254 00	SF					515 673	411.22 /SF	515 673	
				1.00	LS	562	55 595	95 434	5 550	740 673	897,251.54 /LS	897 252	
<b>4.020 Sodium Hypochlorite Chemical Storage and Feed</b>													
	065 010 Chemical Systems	NaOCI (Sodium Hypochlorite)		1.00	LS					400 000	400 000.00 /LS	400 000	
	115 015 Sodium Hypochlorite	Containment Structure		1.00	LS					18 750	18 750.00 /LS	18 750	
				1.00	LS					418 750	418,750.00 /LS	418 750	
<b>4.030 Sitemwork</b>													
	010 005 Sitemwork	Site Demolition		1.00	LS	29	2 054	740	649	23 000	300	26 742.94 /LS	26 743
	010 015 Sitemwork	Site Prep & Clearing		0.52	AC	80	6 069			2 987		17 415.60 /AC	9 056
	010 030 Sitemwork	Site Earthwork		1 130 00	CY	25	1 928	22 600	1 014	40 000		58.00 /CY	65 542
	010 045 Sitemwork	Retaining Walls		1 200 00	SFCA					26 246		21.87 /SFCA	26 246
	010 055 Sitemwork	Site Finishes	Paving & Surfacing	2 755 00	SY	87	6 302	48 809	4 036	69 796		46.80 /SY	128 943
				1.00	LS	221	16 353	72 149	8 685	159 042	300	256,529.09 /LS	256 529
<b>4.040 Yard Piping</b>													
	005 100 Buried Utilities	Yard Piping	Pressure Process Mains	665 00	LF	1 558	142 118	358 401	48 000			824.84 /LF	548 519
				1.00	LS	1,558	142 118	358 401	48 000			548,518.77 /LS	548 519
<b>6.010 Electrical</b>													
	005 170 Site Electrical	Buried		1.00	ls					100 000	100 000.00 /ls	100 000	
	010 090 Electrical Equipment	Indoor		1.00	ls					405 000	405 000.00 /ls	405 000	
				1.00	LS					505 000	505,000.00 /LS	505 000	
<b>7.010 I&amp;C</b>													
	010 205 Sitemwork	SCADA & Master PLC		1.00	ls					202 000	202 000.00 /ls	202 000	
				1.00	LS					202 000	202,000.00 /LS	202 000	
				1.00	LS	2,342	214 065	525 984	62 236	2 025 464	300	2,828,049.40 /LS	2 828 049
<b>0200 P3 Advanced Purification Treatment Facility</b>													
<b>5.010 Equalization Basin</b>													
	102 010 Structures	CIP Straight Wall	Buried ank	2.50	MG	336	26 363	57 600	20 137	8 594 834		3 479 573.30 /MG	8 698 933
				2.50	MG	336	26 363	57 600	20 137	8 594 834		3,479,573.30 /MG	8 698 933
<b>5.020 Ultrafiltration System</b>													
	055 010 Water Membrane Systems	Ultrafiltration (UF)		15 00	MGD					22 500 000	1 500 000 00 /MGD	22 500 000	
	055 011 Water Membrane Systems	Ultrafiltration (UF) CIP Neutralization		15 00	MGD					2 400 000	160 000 00 /MGD	2 400 000	
	055 012 UF Filtrate	anks		300 000 00	GAL					2 364 818	7.88 /GAL	2 364 818	
	080 030 Hydraul c Pump Systems			10 417 00	GPM					2 291 740	220 00 /GPM	2 291 740	
	115 125 UF Backwash Pump System	Concrete Pad		1.00	ls					109 613	109 613.02 /ls	109 613	
				15.00	MGD					29 666 171	1,977,744.76 /MGD	29 666 171	
<b>5.030 UF and Other Waste System</b>													
	102 010 Structures	CIP Straight Wall	Buried ank	0.10	MG	16	1 336			1 508	1 042 821	10 456 648.80 /MG	1 045 665
				0.10	MG	16	1 336			1 508	1 042 821	10,456,648.80 /MG	1 045 665
<b>5.040 Reverse Osmosis</b>													
	055 020 Water Membrane Systems	Reverse Osmosis (Low)		12 00	MGD					960 000 00	11 520 000 /MGD	11 520 000	
	055 021 Water Membrane Systems	Reverse Osmosis (Low) CIP Neutralization		12 00	mgd					1 920 000	160 000 00 /mgd	1 920 000	
	080 030 Hydraul c Pump Systems			8 333 00	GPM					1 833 260	220 00 /GPM	1 833 260	
	115 115 RO Feed Pumps & Cartridge System	Concrete Pad and Containment		1.00	ls					815 472	815 471.76 /ls	815 472	
				12.00	MGD					16 088 732	1,340,727.65 /MGD	16 088 732	
<b>5.050 Reverse Osmosis Concentrate</b>													
	102 010 Structures	CIP Straight Wall	Buried ank	0.05	MG	16	1 336			1 508	749 980	15 056 489.20 /MG	752 824
				1.00	LS	16	1 336			1 508	749 980	752,824.46 /LS	752 824
<b>5.060 Decarbonator System</b>													
	105 045 Decarbonator Systems			30 000 00	SCFM					845 000	28.17 /SCFM	845 000	
	115 060 Decarbonator System	Concrete Pad		1.00	LS					521 659	521 659.17 /LS	521 659	
				30,000.00	SCFM					1 366 659	45.56 /SCFM	1 366 659	
<b>5.070 UVA/OP System</b>													
	060 010 Disinfection	UV (In Channel)		12 00	MGD					6 000 000	500 000 00 /MGD	6 000 000	
	080 030 Hydraul c Pump Systems			10 556 00	GPM					2 322 320	220 00 /GPM	2 322 320	
				12.00	MGD					8 322 320	693,526.67 /MGD	8 322 320	
<b>5.080 2.3 MG Purified Water Storage Clearwell</b>													
	110 040 Storage	Welded Steel	ank	2 300 000 00	GAL					9 722 622	4.23 /GAL	9 722 622	
				1.00	LS					9 722 622	9,722,622.15 /LS	9 722 622	
<b>5.090 Purified Water Transfer Pump Station</b>													
	080 015 Hydraul c Pump Systems	Vertical	urbine Pumps Line Shaft w/Can	12 000 000 00	GPD	19	1 534			1 357	1 007 383	8.08 /GPD	1 010 275
				1.00	LS	19	1 534			1 357	1 007 383	1,010,274.88 /LS	1 010 275
<b>5.100 Sodium Hypochlorite Chemical Storage and Feed</b>													
	065 010 Chemical Systems	NaOCI (Sodium Hypochlorite)		1.00	LS					942 000	942 000.00 /LS	942 000	
	115 015 Sodium Hypochlorite	Containment Structure		1.00	LS					85 500	85 500.00 /LS	85 500	
				1.00	LS					1 027 500	1,027,500.00 /LS	1 027 500	
<b>5.110 Sodium Hydroxide Chemical Storage and Feed</b>													
	065 015 Chemical Systems	NaOH (Sodium Hydroxide)		1.00	LS					1 005 000	1 005 000.00 /LS	1 005 000	
	115 020 Sodium Hydroxide	Containment Structure		1.00	LS					63 660	63 660.00 /LS	63 660	
				1.00	LS					1 068 660	1,068,660.00 /LS	1 068 660	
<b>5.120 Aqueous Ammonia Chemical Storage and Feed</b>													
	065 050 Chemical Systems	NH4OH (Aqua Ammon a)		1.00	LS					725 000	725 000.00 /LS	725 000	
	115 025 Aqueous Ammonia	Containment Structure		1.00	LS					63 660	63 660.00 /ls	63 660	
				1.00	LS					788 660	788,660.00 /LS	788 660	
<b>5.130 Sulfuric Acid Chemical Storage and Feed</b>													
	065 030 Chemical Systems	H2SO4 (Sulfuric Acid)		1.00	LS					1 320 000	1 320 000.00 /LS	1 320 000	
	115 030 Sulfuric Acid	Containment Structure		1.00	LS					57 420	57 420.00 /ls	57 420	
				1.00	LS					1 377 420	1,377,420.00 /LS	1 377 420	
<b>5.140 Antiscalant Chemical Storage and Feed</b>													
	065 080 Chemical Systems	Antiscalant		1.00	LS					196 000	196 000.00 /LS	196 000	
	115 031 Antiscalant	Containment Structure		1.00	ls					57 420	57 420.00 /ls	57 420	
				1.00	LS					253 420	253,420.00 /LS	253 420	
<b>5.150 Sodium Bisulfite Chemical Storage and Feed</b>													
	065 020 Chemical Systems	NaHSO4 (Sodium Bisulfite)		1.00	LS					620 000	620 000.00 /LS	620 000	
	115 035 Sodium Bisulfite	Containment Structure		1.00	ls					58 680	58 680.00 /ls	58 680	
				1.00	LS					678 680	678,680.00 /LS	678 680	
<b>5.160 Hydrogen Peroxide Chemical Storage and Feed</b>													
	065 110 Chemical Systems	H2O2 (Hydrogen Peroxide)		1.00	LS					230 000	230 000.00 /LS	230 000	
	115 040 Hydrogen Peroxide	Containment Structure		1.00	ls					303 270	303 270.00 /ls	303 270	
				1.00	LS					533 270	533,270.00 /LS	533 270	
<b>5.170 Calcium Chloride Chemical Storage and Feed</b>													
	065 100 Chemical Systems	CaCl2 (Calcium Chloride)		1.00	LS					460 000	460 000.00 /LS	460 000	
	115 045 Calcium Chloride	Containment Structure		1.00	ls					79 260	79 260.00 /ls	79 260	
				1.00	LS					539 260	539,260.00 /LS	539 260	
<b>5.180 RO/UF/UV Building</b>													
	100 025 Buildings	Pre Engineered	Process	65 000 00	SF	10 870	1 006 803	8 129 660	27 424	17 483 247	75 000	411.11 /SF	26 722 133
				65,000.00	SF	10,870	1,006,803	8,129,660	27,424	17,483,247	75,000	411.11 /SF	26 722 133
<b>5.190 Site Earthwork &amp; Remediation</b>													
	010 020 Sitemwork	Dewatering		1.00	LS					2 500 000	2 500 000.00 /LS	2 500 000	
	010 028 Site Remed ation			30 000 00	CY					3 000 000	100 00 /CY	3 000 000	
	010 030 Sitemwork	Site Earthwork		135 000 00	CY	2 980	231 136	2 420 000	121 509	205 500		22.06 /CY	2 978 146



**7.9 MGD OPEX Details**



Client Name: Valley Water  
 Project Name: P3 Purified Water Program  
 Project No.: 413065.0000  
 Calculation Title: Operations & Maintenance Cost Estimate Without Secondary MF System

Rev No. 1

Prepared By: McKay Breuner  
 Date: Jul 28, 2023  
 Verified By: Dan Lopez  
 Date: Aug 3, 2023

Palo Alto AWPf Product Water Capacity **7.1 MGD**

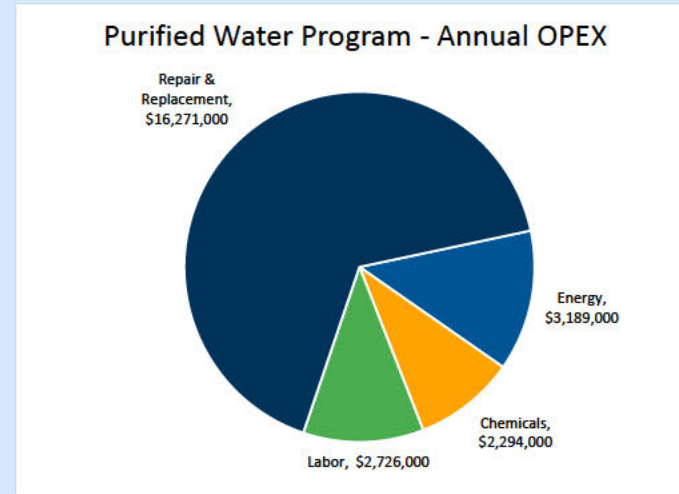
Cost of Electricity, \$/kWh **\$ 0.12**

Palo Alto AWPf and SWPS Construction Cost **\$338,992,000**

Palo Alto AWPf and SWPS Construction Management (10%) **\$33,899,000**

Conveyance Pipeline Construction Cost **\$339,663,000**

Conveyance Pipeline Construction Management (10%) **\$33,966,000**



**Advanced Water Purification Facility (AWPF) and Source Water Pump Station (SWPS) Annual Summary<sup>1</sup>**

Energy	Chemicals	Labor	Repair & Replacement <sup>2 3</sup>	Total AWPf	Unit Cost. \$ / acre-foot
\$ 3,189,000	\$ 2,294,000	\$ 1,948,000	\$ 11,515,000	\$ 18,946,000	\$ 2,382

**Conveyance Pipeline Annual Summary<sup>1</sup>**

Energy	Chemicals	Labor	Repair & Replacement <sup>3</sup>	Total Conveyance	Unit Cost. \$/acre-foot
N/A	N/A	\$ 778,000	\$ 4,756,000	\$ 5,534,000	\$ 696

**Combined Annual Summary**

Energy	Chemicals	Labor	Repair & Replacement	Total OPEX	Unit Cost. \$ / acre-foot
\$ 3,189,000	\$ 2,294,000	\$ 2,726,000	\$ 16,271,000	\$ 24,480,000	\$ 3,078

<sup>1</sup> Refer to Assumptions, AWPf OPEX Calculations, and Pump Station Power Consumption tabs for details on OPEX costs.

<sup>2</sup> Value includes routine replacement of Primary MF/UF and RO membranes, cartridge filters, and UV lamps and ballasts. See assumptions for replacement periods.

<sup>3</sup> See assumptions for Repair & Replacement cost calculation using VW's Asset Management tables for equipment life cycles.

	AWPS and SWPS	Conveyance Pipeline	Combined
<b>Total O&amp;M Cost</b>	\$ 18,946,000	\$ 5,534,000	\$ 24,480,000
<b>Unit Cost, \$/thousand gallons</b>	\$ 7.31	\$ 2.14	\$ 9.45
<b>Unit Cost, \$/acre-foot</b>	\$ 2,382	\$ 696	\$ 3,078

**Energy**

**Membrane Filtration:**

- 1 MF Feed Pumps TDH assumed from similar projects
- 2 For monthly cost calculations, 30-day months are assumed
- 3 MF Backwash Pumps TDH assumed from desired psi
- 4 MF Compressor assumed horsepower of 20, varies across suppliers

**Reverse Osmosis:**

- 5 MW/CIP Tank Heaters assumed horsepower of 60, varies across suppliers
- 6 TDH for RO Feed, Booster, and Flush Pumps assumed from desired psi at inlet
- 7 RO recovery assumed at 85%

**Decarbonator:**

- 8 Power requirements of Decarbonator fans adjust based on operational flow rate input

**UV-AOP:**

- 9 Purified Water Pump TDH assumes a 20inch pipe diameter
- 10 Required power for UVAOP system prorated to nominal 8MGD product flow
- 11 Assumed UV/AOP H2O2 system

**Chemical Feed Pumps**

- 12 For pumps that serve 2 chemical feeds, the pump usage rate is the sum of the 2 feed usage rates
- 13 Chemical dose points based on projects with similar treatment systems

**Miscellaneous**

- 14 For miscellaneous plant load energy requirements, value taken from projects with similar ancillary electrical components
- 15 **This OPEX does not include Ozone or BAC for future DPR**

**Chemical Consumption**

- 16 Dosages taken from similar projects and calculations
- 17 Usage rate along main water line 100%
- 18 Ancillary (cleaning) system usage rates based on similar size project
- 19 Initial chemical prices do not include taxes or delivery fees

**Process Consumables (add to Repair & Replacement)**

- 20 Replace MF modules every 10 years
- 21 Replace RO elements every 5 years
- 22 Replace cartridge filters twice a year
- 23 RO system supplier provided costs for RO elements and cartridge filters, based on previous projects
- 24 MF membrane costs based on average costs from our database of recent projects
- 25 Replace UVAOP lamps every 5 years
- 26 Cost and number of UV lamps based on similar projects

**Repair & Replacement**

27

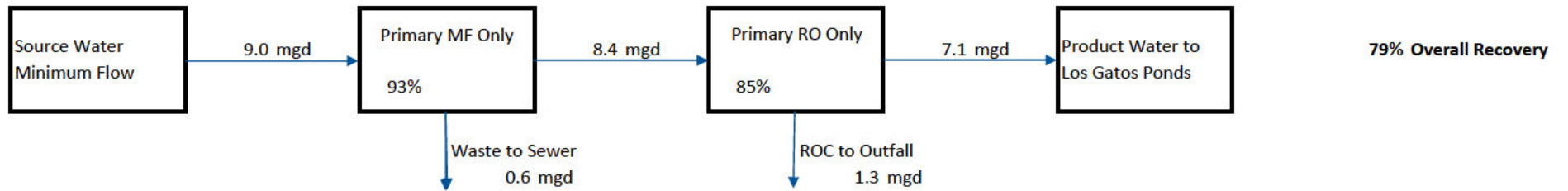
Refer to AWPF R&R Estimate and Pipeline R&R Estimate tabs for R&R cost estimates based on a more conservative approach using VW's Asset Management tables for equipment life cycles.

**Abbreviations**

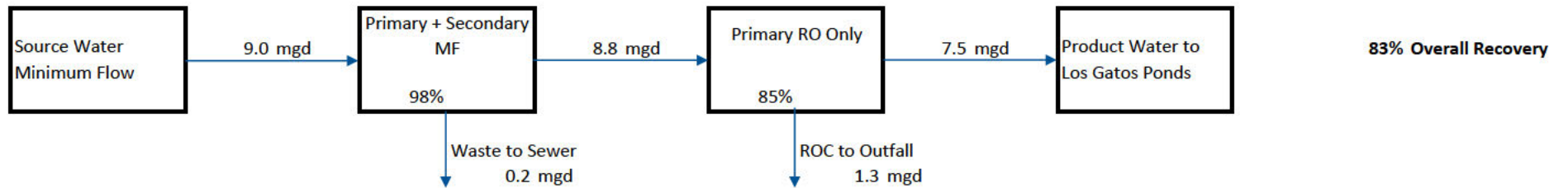
AOP	Advanced Oxidation Process
AWPF	Advanced Water Purification Facility
CIP	Clean in Place
GPH	Gallons per Hour
GPM	Gallons per Minute
HP	Horsepower
kWh	Kilowatt-hour
MF	Microfiltration
MFF	Microfiltration Feed
MGD	Million Gallons per Day
MW	Maintenance Wash
O&M	Operations & Maintenance
OPEX	Operational Expenditures
PSI	Pounds per Square Inch
RO	Reverse Osmosis
ROC	Reverse Osmosis Concentrate
SCFM	Standard Cubic Feet per Minute
TDH	Total Dynamic Head
UV	Ultraviolet
VFD	Variable Frequency Drive

Input Cell

**9.0 mgd Source Water without Waste Stream Scenario**



**9.0 mgd Source Water with Waste Stream Scenario (Waste Stream Concentration)**



Client Name:	Valley Water
Project Name:	P3 Purified Water Program
Project No.:	413065.0000
Calculation Title:	Operations & Maintenance Cost Estimate
Calculation No./File No.:	

Prepared By:	McKay Breuner
Date:	Jul 28 2023
Verified By:	Dan Lopez
Date:	Aug 3 2023
Page:	of

O&M Cost Estimate				
Inputs		Flow (MGD)	Recovery	Flow (GPM)
MF Feed Rate		8.98 MGD	93%	6237 gpm
RO Feed Rate		8.35 MGD	85%	5801 gpm
Purified Water Flow		7.10 MGD		4931 gpm
Cost of Electricity, \$/kWh				\$ 0.12

Chemicals	\$/lb	\$/gal	Specific Gravity
Antiscalant	\$2.00	\$20.02	1.2
Lime	\$0.55	\$5.69	1.24
Ammonium Hydroxide	\$0.78	\$5.79	0.89
Hydrogen Peroxide	\$1.00	\$10.01	1.20
Sodium Bisulfite	\$0.22	\$2.39	1.30
Sodium Hydroxide	\$0.24	\$2.56	1.28
Sodium Hypochlorite	\$0.18	\$1.80	1.2
Sulfuric Acid	\$0.36	\$5.52	1.84

Labor	No. Staff	Salary (\$/yr)
Operations staff	7.50	\$ 188,000
Maintenance staff	2.25	\$ 201,000
Laboratory staff	0.50	\$ 172,000

Energy	TDH ft <sup>1</sup>	TDH psi	Flow MGD	Pump Efficiency <sup>1</sup>	Process Use Factor <sup>1</sup>	Total Power hp	Total Power kW	Daily Cost \$/day	Monthly Cost \$/month	Annual Cost \$/yr
<b>Membrane Filtration:</b>										
MF Feed Pumps	165	71.43	9	70%	100%	417	311	\$ 895	\$ 26 845	\$ 326 609
Autostrainer Backwash	20	8.66	0.5	70%	10%	281	2.10	\$ 0.60	\$ 18.1	\$ 220
MF Scour Blowers	-	-	-	-	8.0%	30	22.37	\$ 5.15	\$ 155	\$ 1881
MF Backwash Pumps	92.4	40.00	1.55	70%	8.0%	40.29	30.04	\$ 6.9	\$ 208	\$ 2 527
MF CIP Pumps	92.4	40.00	0.35	70%	1.096%	9.02	6.73	\$ 0.21	\$ 6.4	\$ 78
MF Compressor (air flow in scfm)	-	-	-	-	25%	20	14.91	\$ 10.7	\$ 322	\$ 3 919
MF CIP Acid Tank Mixer	-	-	-	-	0.548%	2.0	1.49	\$ 0.02	\$ 0.71	\$ 8.59
MF CIP Acid Tank Heater	-	-	-	-	0.548%	113.99	85	\$ 1.34	\$ 40.2	\$ 490
MF CIP Base Tank Mixer	-	-	-	-	0.548%	2.0	1.49	\$ 0.02	\$ 0.71	\$ 8.59
MF CIP Base Tank Heater	-	-	-	-	0.548%	113.99	85	\$ 1.34	\$ 40.2	\$ 490
MF Neutralization Tank Mixer	-	-	-	-	1.096%	2.0	1.5	\$ 0.05	\$ 1.4	\$ 17.2
<b>Reverse Osmosis:</b>										
Low Pressure RO Feed Pumps	69.3	30	8.35	70%	100%	163	121.36	\$ 350	\$ 10 486	\$ 127 574
High Pressure RO Feed Pumps	554.4	240	8.35	70%	100%	1302	970.88	\$ 2 796	\$ 83 884	\$ 1 020 589
RO Flush Pumps	138.6	60	0.41	70%	5.00%	16.1	12.04	\$ 1.73	\$ 52.00	\$ 633
RO CIP Pumps	180	78	1.16	70%	1.096%	59	43.85	\$ 1.38	\$ 41.53	\$ 505
RO CIP Acid Tank Mixer	-	-	-	-	0.548%	2.0	1.49	\$ 0.02	\$ 0.71	\$ 8.59
RO CIP Acid Tank Heater	-	-	-	-	0.548%	160.92	120	\$ 1.89	\$ 56.82	\$ 691
RO CIP Base Tank Mixer	-	-	-	-	0.548%	2.0	1.49	\$ 0.02	\$ 0.71	\$ 8.59
RO CIP Base Tank Heater	-	-	-	-	0.548%	160.92	120	\$ 1.89	\$ 56.82	\$ 691
RO Neutralization Tank Mixer	-	-	-	-	1.096%	2.0	1.49	\$ 0.05	\$ 1.41	\$ 17.2
ROC Pumps	100	43	2.51	70%	100%	70	52.54	\$ 151	\$ 4 539	\$ 55 227
<b>Decarbonator:</b>										
Product Water Transfer Pumps to Product Water Tank	60	26	7.1	70%	100%	120	89.31	\$ 257	\$ 7 717	\$ 93 885
Decarbonator Fans	-	-	-	-	100%	40	0.00	\$ -	\$ -	\$ -
<b>Second Stage Booster Pumps:</b>										
Second Stage Booster Pumps	138.6	60.00	4.18	70%	100%	162.75	121.36	\$ 350	\$ 10 486	\$ 127 576
<b>UV-AOP:</b>										
UV-AOP Transfer Pumps to CCT	40	17.32	7.1	70%	100%	79.85	59.54	\$ 171	\$ 5 144	\$ 62 590
UV-AOP	-	-	-	-	100%	69.82	68.98	\$ 199	\$ 5 960	\$ 72 517
Purified Water Clear Well and Pump Station	630.87	273.10	7.1	70%	100%	1259.32	939.07	\$ 2 705	\$ 81 136	\$ 987 155
<b>Chemical Feed Pumps:</b>										
Antiscalant - RO Low Pressure Pump Station	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 784
Ammonium Hydroxide - MF Pump Station	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Lime - Post Stabilization	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 784
Hydrogen Peroxide - Pre UV	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sodium Bisulfite - RO Low Pressure Pump Station	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sodium Bisulfite - MF Base Neutralization Tank	-	-	-	-	10.4%	1	0.75	\$ 0.22	\$ 6.70	\$ 81.5
Sodium Hydroxide - RO Permeate Tank Influent	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sodium Hydroxide - MF MW/CIP Base Tank	-	-	-	-	2%	1	0.75	\$ 0.05	\$ 1.42	\$ 17.2
Sodium Hydroxide - RO Acid Neutralization Tank	-	-	-	-	0.10%	1	0.75	\$ 0.00	\$ 0.06	\$ 0.78
Sodium Hydroxide - MF Acid Neutralization Tank	-	-	-	-	2.20%	1	0.75	\$ 0.05	\$ 1.42	\$ 17.2
Sodium Hydroxide - RO CIP Base Tank	-	-	-	-	0.03%	1	0.75	\$ 0.00	\$ 0.02	\$ 0.24
Sodium Hypochlorite - MF Pump Station	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sodium Hypochlorite - MF MW/CIP Base Tank	-	-	-	-	22%	1	0.75	\$ 0.47	\$ 14.0	\$ 170.1
Sodium Hypochlorite - Post Stabilization	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sulfuric Acid - RO Low Pressure Pump Station	-	-	-	-	100%	1	0.75	\$ 2.15	\$ 64.4	\$ 783.9
Sulfuric Acid - MF Base Neutralization Tank	-	-	-	-	22%	1	0.75	\$ 0.46	\$ 13.9	\$ 168.6
Sulfuric Acid - MF MW/CIP Acid Tank	-	-	-	-	6.03%	1	0.75	\$ 0.13	\$ 3.88	\$ 47.2
Sulfuric Acid - RO CIP Acid Solution	-	-	-	-	0.10%	1	0.75	\$ 0.00	\$ 0.07	\$ 0.81
Sulfuric Acid - RO Base Neutralization Tank	-	-	-	-	0.10%	1	0.75	\$ 0.00	\$ 0.07	\$ 0.81
<b>Miscellaneous Plant Loads:</b>										

Note

Sum

\$ 1 269 649 \$ (282 494)

Client Name: Valley Water  
 Project Name: P3 Purified Water Program  
 Project No.: 413065.0000  
 Calculation Title: Operations & Maintenance Cost Estimate  
 Calculation No./File No.:  
 Rev No.: 1

Prepared By: McKay Breuner  
 Date: Jul 28 2023  
 Verified By: Dan Lopez  
 Date: Aug 3 2023  
 Page: of

Misc Building Loads	-	-	-	-	100%	200	149	\$	429.52	\$	12 885.7	\$	156 776.0
Fire Water Pumps	250	108.23	3.46	-	1%	243	181	\$	5.22	\$	156.7	\$	1 906.4
Misc Lighting Panels	-	-	-	-	70%	-	-	\$	42.95	\$	1 288.6	\$	15 677.6
<b>Energy Subtotal</b>								\$	<b>8,357</b>	\$	<b>250,706</b>	\$	<b>3,067,835</b>
<b>Energy Unit Cost</b>								\$	<b>1.18</b>	\$	<b>1.18</b>	\$	<b>1.18</b>

\$75k/month at SVAWPC

Chemicals	Flow Rate GPH	Flow Rate MGD	Dose as 100% mg/L	Concentration %	Usage Rate %	Unit Cost \$/lb	Annual Chemical Use lb/yr	Daily Chemical Cost \$/day	Monthly Chemical Cost \$/month	Annual Chemical Cost \$/yr			
Antiscalant -RO Low Pressure Pump Station	-	8.35	3.2	100.0%	100%	\$2.00	81 416	\$ 446	\$ 13 572	\$ 162 864			
Ammonium Hydroxide - MFF Pump Station	-	9	0.8	40.0%	100%	\$0.78	54 715	\$ 117	\$ 3 556	\$ 42 678			
Lime - Post Stabilization	-	7	20	30.0%	100%	\$0.55	1 441 738	\$ 2 172.48	\$ 66 000	\$ 792 956			
Hydrogen Peroxide - Pre UV	-	7	3	25.0%	100%	\$1.00	259 513	\$ 711	\$ 21 626	\$ 259 513			
Sodium Bisulfite - RO Low Pressure Pump Station	-	8.35	6.6	25.0%	100%	\$0.22	671 680	\$ 405	\$ 12 314	\$ 147 770			
Sodium Bisulfite - MF CIP Neutralization Tank	32	0.000	1651	25.0%	0.68%	\$0.22	0	\$ -	\$ -	\$ -			
Sodium Bisulfite - MF MW Base Neutralization Tank	15.8	0.0000	6605	25.0%	10.4%	\$0.22	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - MF CIP	23.6	0.000	1265	25.0%	0.2%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - MF MW	12	0.00000	634	25.0%	5.2%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - RO Acid Neutralization Tank	122	0.000	15681	25.0%	0.1%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - MF CIP Acid Neutralization Tank	70	0.000	15000	25.0%	0.7%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - MF MW Acid Neutralization Tank	21.6	0.000	750	25.0%	1.5%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - RO CIP Base Tank	31.2	0.000	1000	25.0%	0.03%	\$0.24	0	\$ -	\$ -	\$ -			
Sodium Hydroxide - Post Stabilization	-	7	16	25.0%	100%	\$0.24	1 384 068	\$ 910.07	\$ 27 681	\$ 332 176			
Sodium Hypochlorite - MFF Pump Station	-	9	3	12.5%	100%	\$0.18	656 579	\$ 324	\$ 9 841	\$ 118 090			
Sodium Hypochlorite - MF CIP	36	0.000	3000	12.5%	0.7%	\$0.18	0	\$ -	\$ -	\$ -			
Sodium Hypochlorite - MF MW	9	0.0000	750	12.5%	21%	\$0.18	0	\$ -	\$ -	\$ -			
Sodium Hypochlorite - Post Stabilization	-	7	3	12.5%	100%	\$0.18	519 026	\$ 255.75	\$ 7 779.2	\$ 93 350			
Sulfuric Acid - RO Low Pressure Pump Station	-	8.35	35	93.0%	100%	\$0.36	957 511	\$ 944	\$ 28 725	\$ 344 704			
Sulfuric Acid - MF MW Base Neutralization Tank	0.82	0.00000	933	93.0%	21%	\$0.36	0	\$ -	\$ -	\$ -			
Sulfuric Acid - MF CIP Base Neutralization Tank	1.63	0.00000	1861	93.0%	1%	\$0.36	0	\$ -	\$ -	\$ -			
Sulfuric Acid - MF MW Acid Tank	0.53	0.00000	600	93.0%	6%	\$0.36	0	\$ -	\$ -	\$ -			
Sulfuric Acid - RO CIP Acid Solution	1.5	0.00000	1000	93.0%	0.1%	\$0.36	0	\$ -	\$ -	\$ -			
Sulfuric Acid - RO CIP Base Neutralization	2.1	0.0000	1471	93.0%	0.1%	\$0.36	0	\$ -	\$ -	\$ -			
<b>Chemical Subtotal</b>								\$	<b>6,285.21</b>	\$	<b>191,175.00</b>	\$	<b>2,294,099.98</b>
<b>Chemical Unit Cost</b>								\$	<b>0.89</b>	\$	<b>0.90</b>	\$	<b>0.89</b>

Process Consumables	Modules per train	Number of trains	Unit Cost (\$/unit)	Replacement Rate (%)	Daily Consumables Cost \$/day	Monthly Consumables Cost \$/month	Annual Consumables Cost \$/yr
MF Membrane Modules	112	6	\$ 2 000	0%	\$ -	\$ -	\$ -
Cartridge Filter Elements	390	4	\$ 11	0%	\$ -	\$ -	\$ -
RO Membrane Elements	630	4	\$ 500	0%	\$ -	\$ -	\$ -
UVAOP Lamps Ballasts	250	2	\$ 1 450	0%	\$ -	\$ -	\$ -
<b>Consumables Subtotal</b>					\$ -	\$ -	\$ -
<b>Consumables Unit Cost</b>					\$ -	\$ -	\$ -

Labor	No. Staff	Salary (\$/yr)	Daily Labor Cost \$/day	Monthly Labor Cost \$/month	Annual Labor Cost \$/yr
Operations staff SEIU WQC Operator II 73.7% benefits ratio	7.50	\$ 188,000	\$ 3 863	\$ 117 500	\$ 1 410 000
Maintenance staff - Electrician 73.7% benefits ratio	2.25	\$ 201,000	\$ 1 239	\$ 37 688	\$ 452 250
Laboratory staff - Laboratory Tech WQC 73.7% benefits ratio	0.50	\$ 172,000	\$ 236	\$ 7 167	\$ 86 000
<b>Labor Subtotal</b>			\$	<b>5,338</b>	\$
<b>Labor Unit Cost</b>				<b>0.75</b>	\$

Repair & Replacement	Direct Capital Cost	Percent of Direct Capital Cost	Maintenance Cost \$/day	Maintenance Cost \$/month	Maintenance Cost \$/yr
Maintenance and Repairs	#####	2.2%	\$ -	\$ -	\$ -
<b>Maintenance Subtotal</b>			\$ -	\$ -	\$ -
<b>Maintenance Unit Cost</b>			\$ -	\$ -	\$ -

Low

<b>Total O&amp;M Cost</b>	\$	<b>19,980</b>	\$	<b>604,235</b>	\$	<b>7,310,185</b>
<b>Unit Cost, \$/thousand gallons</b>	\$	<b>2.81</b>	\$	<b>2.84</b>	\$	<b>2.82</b>
<b>Unit Cost, \$/acre-foot</b>	\$	<b>916.96</b>	\$	<b>924.37</b>	\$	<b>919.17</b>

<b>Motor/VFD Efficiency</b>						
Motor Efficiency	0.9					
VFD Efficiency	0.99					
<b>Relevant Conversions</b>						
Horsepower	Kilowatts	MGD	GPH	Gallons	Pounds	
1	0.7457	1.0	41 667	1	8	
PSI	Feet	Month	Minutes	Gallons	Acre-Foot	
1	2.31	1.0	43 200	1000	0.0030689	

1 Palo Alto AWWP Power Demand Estimate by PMC\_r1.xlsx emailed to Valley Water on 8/23/22

REVISED SUPERSEDED AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED INITIALED AND DATED BY THE RESPONSIBLE INDIVIDUAL.

0.125

	\$/lb	\$/gal		
<b>Chemicals</b>				
Ammonium Hydroxide	\$0.78	\$5.79		
Lime	\$0.55	\$5.69		
Antiscalant	\$2.00	\$20.02		
Hydrogen Peroxide	\$1.00	\$10.01		
Sodium Bisulfite	\$0.22	\$2.39		
Sodium Hydroxide	\$0.24	\$2.56		
Sodium Hypochlorite	\$0.18	\$1.80		
Sulfuric Acid	\$0.36	\$5.52		
<b>Labor</b>				
Operations staff, SEIU WQC Operator II, 73.7% benefits ratio	7.50	\$188,000	\$1,410,000	2.00
Maintenance staff - Electrician, 73.7% benefits ratio	2.25	\$201,000	\$452,250	2.00
Laboratory staff - Laboratory Tech WQC, 73.7% benefits ratio	0.50	\$172,000	\$86,000	0.00
			\$1,948,250	

Present Worth Factors (Assumed 3% Interest) 3%

Year	P/A	A/P	P/F
1	0.971	1.030	0.971
2	1.913	0.523	0.943
3	2.829	0.354	0.915
5	4.580	0.218	0.863
7	6.230	0.161	0.813
8	7.020	0.142	0.789
9	7.786	0.128	0.766
10	8.530	0.117	0.744
11	9.253	0.108	0.722
12	9.954	0.100	0.701
13	10.635	0.094	0.681
14	11.296	0.089	0.661
15	11.938	0.084	0.642
16	12.561	0.080	0.623
17	13.166	0.076	0.605
18	13.754	0.073	0.587
19	14.324	0.070	0.570
20	14.877	0.067	0.554

All capital costs are rounded to \$1 million, and O&M costs are rounded to \$100,000.

10 mgd AWWP Costs		
<b>Capital Costs</b>		
Raw / Construction Costs	\$	81,000,000
Contingency - Treatment Facility	25% \$	20,000,000
<b>Construction Cost Subtotal</b>	\$	101,000,000
Tax on Materials (applied to half of subtotal)	9% \$	5,000,000
General Contractor Overhead and Profit	15% \$	16,000,000
<b>Estimated Total Construction Cost</b>	\$	122,000,000
Owner's Reserve for Change Orders	15% \$	19,000,000
Environmental Documentation and Permits	0% \$	-
Engineering Services (Design)	15% \$	19,000,000
Construction Management	13% \$	16,000,000
Engineering Services During Construction	12% \$	15,000,000
<b>Total Capital Cost</b>	\$	191,000,000
<b>Annual O&amp;M Costs</b>		
Consumables (Equipment, Mechanical, Electrical, I&C)	\$	1,110,000
Energy/Power	\$	2,250,000
Chemicals	\$	1,200,000
Labor	\$	1,400,000
<b>Total Annual O&amp;M Cost</b>	\$	5,960,000



Client Name: Valley Water  
 Project Name: Palo Alto Source Water Pump Station  
 Project No.:   
 Calculation Title: Operations & Maintenance Cost Estimate  
 Calculation No./File No.:

Prepared By: McKay Breuner  
 Date: Jul 28, 2023  
 Verified By: Dan Lopez  
 Date: Aug 3, 2023  
 Page:  of

<b>O&amp;M Cost Estimate</b>											
<b>Inputs</b>		<b>Recovery</b>									
Plant Rated Capacity	7.10 MGD	93%									
RO Feed Rate	8.35 MGD	85%									
MF Feed Rate	8.98 MGD										
Cost of Electricity, \$/kWh	\$ 0.12										
<b>Energy</b>		TDH, ft	TDH, psi	Flow, MGD	Pump Efficiency	Usage Rate	Total Power, hp	Total Power, kW	Daily Cost, \$/day	Monthly Cost, \$/month	Annual Cost, \$/yr
Palo Alto Source Water Pump Station		61.28	26.53	8.98	70%	100%	155	115.3926525	\$ 332.33	\$ 9,969.93	\$ 121,300.76
<b>Energy Subtotal</b>									\$ 332.33	\$ 9,969.93	\$ 121,300.76
<b>Energy Unit Cost</b>									\$ 0.05	\$ 1.40	\$ 17.08
<b>Motor/VFD Efficiency</b>											
Motor Efficiency	0.9										
VFD Efficiency	0.99										
<b>Relevant Conversions</b>											
Horsepower	Kilowatts	MGD	GPH	Gallons	Pounds						
1	0.7457	1	41,667	1	8.34						
PSI	Feet	Month	Minutes	Gallons	Acre-Feet						
1	2.31	1.0	43,800	1000	0.0030689						

# CONCEPTUAL - NOT FOR DESIGN

## HYDRAULIC PROFILE

Input Cells						
<b>Flow Conditions Considered</b>						
<b>HYDRAULIC COMPONENTS</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Flow Conditions (MGD)</b>		<b>7.10</b>	<b>7.50</b>	<b>8.00</b>	<b>9.00</b>	
<b>Flow Conditions (cfs)</b>		<b>10.98</b>	<b>11.60</b>	<b>12.38</b>	<b>13.92</b>	
<b>DOWNSTREAM CONTROL WATER SURFACE ELEVATION</b>		<b>240.00</b>	<b>240.00</b>	<b>240.00</b>	<b>240.00</b>	<b>240.00</b>
<b>CIRCULAR PIPE HAZEN WILLIAMS (Flowing Full) With K-Values &amp; In increaser/Reducer</b>						
<b>1</b>	<b>Los Gatos Recharge to midpoint (30)</b>	DOWNSTREAM W.S. EL. (FT)	240.00	240.00	240.00	240.00
BASED ON HAZEN-WILLIAMS EQ. FOR HEADLOSS		CHECK FOR PIPE FLOWING FULL by Down WS El > (INV + DIA)				
H <sub>f</sub> (friction) = 4.727*L*(Q/C) <sup>1.85</sup> /d <sup>4.87</sup> INVERT EL. (FT)		20				
H <sub>f</sub> (fittings) = K*V <sup>2</sup> /2g where g = 32.2 ft/sec <sup>2</sup>						
% OF FLOW THROUGH PIPE		100.0	100.0%	100.0%	100.0%	100.0%
Q = FLOW THROUGH PIPE (CFS)		10.98	11.60	12.38	13.92	
d = PIPE DIAM (IN)		20.0				
L = LENGTH OF PIPE (FEET)		60000.0				
C = ROUGHNESS COEFFICIENT		110.0				
<b>FITTINGS</b>		<b>K-value</b>	<b>FITTINGS</b>	<b>K-total</b>		
	90 DEG BEND	0.3	56	16.8		
	45 DEG BEND	0.2	56	11.2		
	TEE, STRAIGHT T	0.2		0.0		
	TEE, BRANCH TO	1.0		0.0		
	TEE, LINE TO BR	1.0		0.0		
	ENTR, INWARD F	0.8		0.0		
	ENTR., SHARP CR	0.5		0.0		
	ENTR. BELL MOU	0.1		0.0		
	GATE VALVE (FU	0.2	10	2.0		
	BUTTERFLY VALV	0.7		0.0		Butterfly Valve "K" Value changes with Pipe Diameter (0.5 or 0.7)
	SWING CHECK V	2.5		0.0		
	PLUG VALVE, EC	1.0		0.0		The increaser/reducer piece uses the Cameron Hydraulic Data
	FLAP GATE	1.5		0.0		Reference to solve for K Values.
	EXIT LOSS	1.0	1	1.0		Theta is Internal Angle in Increaser/Reduce Piece
	OTHER	1.0	14	14.0		NOTE: Increaser should be at the end of the pipe, unless
	SUM OF K-VALUES =			45.0		it is part of a reducer and increaser for flow meters.
					K =	N/A N/A N/A N/A
<b>INCREASER/REDUCER</b>		d <sub>1</sub> = Inlet Diameter, in			Equations for (1) and (2) for Reducer, (3) and (4) for Increaser	
		d <sub>2</sub> = Exit Diameter, in			(1) K=0.8*sin(Theta/2)*(1-d <sub>2</sub> <sup>2</sup> /d <sub>1</sub> <sup>2</sup> )	For Theta < 45 degrees
		L = Increaser Length, in			(2) K=0.5*(1-d <sub>2</sub> <sup>2</sup> /d <sub>1</sub> <sup>2</sup> )*(1-sin(Theta/2))	For Theta > 45 degrees
		Theta =	N/A		(3) K=2.6*sin(Theta/2)*(1-d <sub>1</sub> <sup>2</sup> /d <sub>2</sub> <sup>2</sup> )	For Theta < 45 degrees
		K <sub>INCR/RED</sub>	N/A		(4) K=(1-d <sub>1</sub> <sup>2</sup> /d <sub>2</sub> <sup>2</sup> ) <sup>2</sup>	For Theta > 45 degrees
		<b>VELOCITY THROUGH PIPE (FT/SEC)</b>	5.03	5.32	5.67	6.38
	Minimum acceptable velocity		1 ft/sec			
	Maximum acceptable velocity		8 ft/sec			
	<b>FRICTION LOSS THROUGH PIPE (FT)</b>		331.80	367.29	414.28	514.62
	INCREASER/REDI Uses Velocity from Smaller Diameter Pipe		0.00	0.00	0.00	0.00

V Lookup for Flow - needs to be revised for alternate flows

MGD	TDH
9.00	847.41
7.10	630.87
7.50	672.87
8.00	728.50

Actual

HGL at Los Gatos Recharge Ponds

yes  
no

0.00

4

MINOR LOSS (FT)	Effluent PS (not sure which one..	17.70	19.75	22.50	28.45
<b>TOTAL LOSS IN PIPE (FT)</b>		<b>349.50</b>	<b>387.04</b>	<b>436.78</b>	<b>543.07</b>
<b>WATER ELEVATION (FT)</b>		<b>589.50</b>	<b>627.04</b>	<b>676.78</b>	<b>783.07</b>

**CIRCULAR PIPE HAZEN WILLIAMS (Flowing Full) With K-Values & Increaser/Reducer**

{REF} Midpoint back to purified water pumps

DOWNSTREAM W.S. EL. (FT) 589.50 627.04 676.78 783.07

BASED ON HAZEN-WILLIAMS EQ. FOR HEADLOSS

CHECK FOR PIPE FLOWING FULL by Down WS El > (INV + DIA)

H<sub>f</sub>(friction) = 4.727\*L\*(Q/C)<sup>1.85</sup>/d<sup>4.87</sup> INVERT EL. (FT) 20

H<sub>f</sub>(fittings) = K\*V<sup>2</sup>/2g where g = 32.2 ft/sec<sup>2</sup>

% OF FLOW THROUGH PIPE 100.0

Q = FLOW THROUGH PIPE (CFS) 10.98 11.60 12.38 13.92

d = PIPE DIAM (IN) 30.0

L = LENGTH OF PIPE (FEET) 50000.0

C = ROUGHNESS COEFFICIENT 110.0

9.4697

FITTINGS K-value FITTINGS K-total

90 DEG BEND	0.3	34	10.2
45 DEG BEND	0.2	34	6.8
TEE, STRAIGHT T	0.2		0.0
TEE, BRANCH TO	1.0		0.0
TEE, LINE TO BR	1.0		0.0
ENTR, INWARD F	0.8		0.0
ENTR., SHARP CR	0.5		0.0
ENTR. BELL MOU	0.1		0.0
GATE VALVE (FU)	0.2		0.0
BUTTERFLY VALV	0.7	10	7.0
SWING CHECK V,	2.5	1	2.5
PLUG VALVE, EC	1.0		0.0
FLAP GATE	1.5		0.0
EXIT LOSS	1.0		0.0
OTHER	1.0	12	12.0
SUM OF K-VALUES	=		38.5

Butterfly Valve "K" Value changes with Pipe Diameter (0.5 or 0.7)

The increaser/reducer piece uses the Cameron Hydraulic Data Reference to solve for K Values.

Theta is Internal Angle in Increaser/Reduce Piece

NOTE: Increaser should be at the end of the pipe, unless it is part of a reducer and increaser for flow meters.

K = N/A N/A N/A N/A

Equations for (1) and (2) for Reducer, (3) and (4) for Increaser

(1) K=0.8\*sin(Theta/2)|(1-d<sub>2</sub><sup>2</sup>/d<sub>1</sub><sup>2</sup>) For Theta < 45 degrees

(2) K=0.5\*(1-d<sub>2</sub><sup>2</sup>/d<sub>1</sub><sup>2</sup>)(1-sin(Theta/2)) For Theta > 45 degrees

(3) K=2.6\*sin(Theta/2)|(1-d<sub>1</sub><sup>2</sup>/d<sub>2</sub><sup>2</sup>) For Theta < 45 degrees

(4) K=(1-d<sub>1</sub><sup>2</sup>/d<sub>2</sub><sup>2</sup>)<sup>2</sup> For Theta > 45 degrees

K<sub>INCR/RED</sub> VELOCITY THROUGH PIPE (FT/SEC) 2.24 2.36 2.52 2.84

Minimum acceptable velocity 1 ft/sec

Maximum acceptable velocity 8 ft/sec

FRICTION LOSS THROUGH PIPE (FT) 38.38 42.49 47.92 59.53

INCREASER/REDU Uses Velocity from Smaller Diameter Pipe 0.00 0.00 0.00 0.00

MINOR LOSS (FT) 2.99 3.34 3.80 4.81

<b>TOTAL LOSS IN PIPE (FT)</b>	<b>41.37</b>	<b>45.83</b>	<b>51.73</b>	<b>64.34</b>
<b>WATER ELEVATION (FT)</b>	<b>630.87</b>	<b>672.87</b>	<b>728.50</b>	<b>847.41</b>

20

**PUMPING STATION**

{REF} Purified Water Pump Station

DOWNSTREAM W.S. EL. = 630.87 672.87 728.50 847.41

% OF FLOW THROUGH PUMP 100.00 100.00% 100.00% 100% 100.00%

FLOW THROUGH PUMP, cfs 10.98 11.60 12.38 13.92

MAX WETWEL WATER ELEVATION (FT) 20.0 20.00 20.00 20.00

MIN WETWEL WATER ELEVATION (FT)	0.0	0.00	0.00	0.00	0.00
REQUIRED PUMP LIFT (FT)		630.87	672.87	728.50	847.41
<b>TOTAL LOSS THROUGH PUMP (FT)</b>		-610.87	-652.87	-708.50	-827.41
<b>WATER ELEVATION (FT)</b>		20.00	20.00	20.00	20.00

Reference from this row for TDH

Purified water flow - note future design requires much larger TDH

Cost Item	Takeoff Quantity	Direct Cost Amount	Construction Cost Amount	From Valley Water Asset Useful Life Tables, u.n.o.			Comments
				Percent of Original Construction Cost Applicable for R&R	Asset Category	Asset Useful Life	
<b>0100 Palo Alto RWQCP Pump Station</b>							
<b>4.010 Pump Station Facility</b>							
<b>080.015 Hydraulic Pump Systems - Vertical Turbine Pumps Line Shaft w/Can</b>							
02500.01.31410 24" CS Pipe - Pump Discharge #1	15.00 LF	52,193	129,870	100%	Piping	30 \$	4,329
02500.01.31420 24" CS Pipe - Pump Discharge #2	15.00 LF	52,193	129,870	100%	Piping	30 \$	4,329
02500.01.31430 24" CS Pipe - Pump Discharge #3	15.00 LF	52,193	129,870	100%	Piping	30 \$	4,329
11200.01.31010 RWQCP PS - Pump Equipment	3.00 EA	225,000	425,839	100%	Pump	15 \$	28,389
080.015 Hydraulic Pump Systems - Vertical Turbine Pumps Line Shaft w/Can	15,000,000.00 GPD	381,579	936,899	0%			
<b>100.010 Buildings - CMU - Process</b>							
02300.01.31010 RWQCP PS - Excavation and Backfill	180.00 CY	5,400	11,435	0%			
02465.01.31010 RWQCP PS - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	800.80 VLF	153,889	325,877	0%			
03300.01.31010 RWQCP PS - Structural Concrete	111.00 CY	79,250	167,821	100%	Building	20 \$	8,391
04200.01.31010 RWQCP PS - Masonry Building Shell	1,254.00 sf	181,830	385,047	100%	Building	20 \$	19,252
15500.01.31010 RWQCP PS - Building Mechanical	1,254.00 SF	95,304	201,818	100%	HVAC	10 \$	20,182
100.010 Buildings - CMU - Process	1,254.00 SF	515,673	1,091,998	0%			
<b>4.010 Pump Station Facility</b>							
4.010 Pump Station Facility	1.00 LS	897,252	1,907,447	0%			
<b>4.020 Sodium Hypochlorite Chemical Storage and Feed</b>							
<b>065.010 Chemical Systems - NaOCI (Sodium Hypochlorite)</b>							
065.010.11.01001 Sodium Hypochlorite Chemical Storage and Feed	1.00 LS	400,000	757,048	100%	Chemical Tank	20 \$	37,852
065.010 Chemical Systems - NaOCI (Sodium Hypochlorite)	1.00 LS	400,000	757,048	0%			
<b>115.015 Sodium Hypochlorite Containment Structure</b>							
03300.01.31010 RWQCP PS - Structural Concrete	30.00 CY	18,750	35,487	100%	Concrete Tank	30 \$	1,183
115.015 Sodium Hypochlorite Containment Structure	1.00 ls	18,750	35,487	0%			
4.020 Sodium Hypochlorite Chemical Storage and Feed	1.00 LS	418,750	792,535	0%			
<b>4.030 Sitework</b>							
<b>010.005 Sitewide - Site Demolition</b>							
02210.01.31010 RQCP PS - Site Demolition	1.00 LS	26,743	57,441	0%			
010.005 Sitewide - Site Demolition	1.00 LS	26,743	57,441	0%			
<b>010.015 Sitewide - Site Prep &amp; Clearing</b>							
02230.01.02010 Site Clearing - RWQCP PS Site	0.52 AC	9,056	19,461	0%			
010.015 Sitewide - Site Prep & Clearing	0.52 AC	9,056	19,461	0%			
<b>010.030 Sitewide - Site Earthwork</b>							
02300.01.31110 Site Fill - 3.5 FT of Imported Material	1,130.00 CY	25,542	76,146	0%			
02500.01.31210 Flow Meter Vault	1.00 EA	40,000	84,705	100%	Flow Meter	10 \$	8,471
010.030 Sitewide - Site Earthwork	1,130.00 CY	65,542	160,851	0%			
<b>010.045 Sitewide - Retaining Walls</b>							
02830.01.31010 Retaining Wall at PS	1,200.00 SFCA	26,246	55,578	0%			
010.045 Sitewide - Retaining Walls	1,200.00 SFCA	26,246	55,578	0%			
<b>010.055 Sitewide - Site Finishes - Paving &amp; Surfacing</b>							
02500.01.31310 Site Fencing	360.00 LF	19,800	41,929	100%	Fencing	15 \$	2,795
02710.01.31010 Aggregate Base for Asphalt Paving - 12" - PS Lot	1,120.00 SY	9,038	22,609	0%			
02740.01.31010 Asphalt Paving - 3" - PS Lot	1,120.00 SY	28,420	75,867	100%	Pavement	18 \$	4,215
02740.01.31210 Asphalt Paving Repair - 6" - Entrance Road	225.00 SY	10,125	31,280	100%	Pavement	18 \$	1,738
02740.01.31310 Asphalt Paving Repair - 6" - Embarcadero Road	290.00 SY	13,050	40,316	100%	Pavement	18 \$	2,240
02770.01.01010 Curb & Gutter	80.00 LF	2,395	5,072	0%			
02775.01.31010 Pedestrian Sidewalk	400.00 SF	4,630	9,805	0%			
02840.01.01010 Pipe Bollards	8.00 EA	6,484	19,871	0%			
02900.01.31010 Site Restoration & Landscaping	1.00 LS	35,000	74,117	0%			
010.055 Sitewide - Site Finishes - Paving & Surfacing	2,755.00 SY	128,943	320,865	0%			
4.030 Sitework	1.00 LS	256,529	614,196	0%			
<b>4.040 Yard Piping</b>							
<b>005.100 Buried Utilities - Yard Piping-Pressure Process Mains</b>							
02500.01.31110 36" CS Pipe - BG Pump Station Influent	470.00 LF	386,020	1,080,044	100%	Piping	30 \$	36,001
02500.01.31120 24" CS Pipe - BG Pump Suction #1	15.00 LF	17,592	41,903	100%	Piping	30 \$	1,397
02500.01.31130 24" CS Pipe - BG Pump Suction #2	15.00 LF	17,417	41,439	100%	Piping	30 \$	1,381
02500.01.31140 24" CS Pipe - BG Pump Suction #3	15.00 LF	17,417	41,439	100%	Piping	30 \$	1,381
02500.01.31510 36" CS Pipe - BG Pump Discharge to Street	150.00 LF	110,074	309,565	100%	Piping	30 \$	10,319
005.100 Buried Utilities - Yard Piping-Pressure Process Mains	665.00 LF	548,519	1,514,389	0%			
4.040 Yard Piping	1.00 LS	548,519	1,514,389	0%			
<b>6.010 Electrical</b>							
<b>005.170 Site Electrical, Buried</b>							
16000.01.31110 Electrical Scope Allowance	1.00 ls	100,000	211,762	85%	Electrical	25 \$	7,200

005.170 Site Electrical, Buried	1.00 ls	100,000	211,762	0%			
<b>010.090 Electrical Equipment/Indoor</b>							
16000.01.31110 Electrical Scope Allowance	1.00 ls	405,000	857,636	85%	Electrical	10 \$	72,899
010.090 Electrical Equipment/Indoor	1.00 ls	405,000	857,636	0%			
6.010 Electrical	1.00 LS	505,000	1,069,398	0%			
<b>7.010 I&amp;C</b>							
<b>010.205 Sitewide - SCADA &amp; Master PLC</b>							
17000.01.01110 Instrumentation and Controls Scope Allowance	1.00 ls	202,000	427,759	85%	I/C	10 \$	36,360
010.205 Sitewide - SCADA & Master PLC	1.00 ls	202,000	427,759	0%			
7.010 I&C	1.00 LS	202,000	427,759	0%			
<b>0100 Palo Alto RWQCP Pump Station</b>	1.00 LS	2,828,049	6,325,724	0%			
<b>0200 P3 Advanced Purification Treatment Facility</b>							
<b>5.010 Equalization Basin</b>							
<b>102.010 Structures - CIP Straight Wall Buried Tank</b>							
02250.01.01010 EQ Basin - Sheet Pile for Excavation	12,800.00 SF	640,000	1,211,277	0%			
02300.01.01010 EQ Basin - Excavation	12,600.00 CY	256,492	487,199	0%			
02300.01.01020 EQ Basin - Backfill	3,200.00 CY	72,907	194,115	0%			
02465.01.01010 EQ Basin - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	14,560.00 VLF	2,291,784	4,853,127	0%			
03300.01.01010 EQ Basin - Concrete Structure	4,455.00 CY	5,197,750	11,006,859	100%	Concrete Tank	30 \$	366,895
07100.01.01010 EQ Basin - Waterproofing	12,000.00 SF	240,000	508,229	0%			
102.010 Structures - CIP Straight Wall Buried Tank	2.50 MG	8,698,933	18,260,805	0%			
5.010 Equalization Basin	2.50 MG	8,698,933	18,260,805	0%			
<b>5.020 Ultrafiltration System</b>							
<b>055.010 Water Membrane Systems - Ultrafiltration (UF)</b>							
055.010.11.01001 Ultrafiltration Filter System #1	2.50 MGD	3,750,000	7,097,325	97%			
055.010.11.01002 Ultrafiltration Filter System #2	2.50 MGD	3,750,000	7,097,325	97%	Piping	20 \$	343,666
055.010.11.01003 Ultrafiltration Filter System #3	2.50 MGD	3,750,000	7,097,325	97%	Piping	20 \$	343,666
055.010.11.01004 Ultrafiltration Filter System #4	2.50 MGD	3,750,000	7,097,325	97%	Piping	20 \$	343,666
055.010.11.01005 Ultrafiltration Filter System #5	2.50 MGD	3,750,000	7,097,325	97%	Piping	20 \$	343,666
055.010.11.01006 Ultrafiltration Filter System #6	2.50 MGD	3,750,000	7,097,325	97%	Piping	20 \$	343,666
055.010 Water Membrane Systems - Ultrafiltration (UF)	15.00 MGD	22,500,000	42,583,949	0%			
<b>055.011 Water Membrane Systems - Ultrafiltration (UF) CIP Neutralization</b>							
055.010.11.01101 UF CIP Neutralization System	15.00 MGD	2,400,000	4,542,288	100%	Chemical	10 \$	454,229
055.011 Water Membrane Systems - Ultrafiltration (UF) CIP Neutralization	15.00 MGD	2,400,000	4,542,288	0%			
<b>055.012 UF Filtrate Tanks</b>							
02465.01.02010 UF Filtrate Tank #1 - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	2,184.00 VLF	368,809	780,998	0%			
02465.01.02020 UF Filtrate Tank #2 - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	2,184.00 VLF	368,809	780,998	0%			
03300.01.02010 UF Filtrate Tank #1 - Concrete Tank Pad	252.00 CY	138,600	293,502	0%			
03300.01.02020 UF Filtrate Tank #2 - Concrete Tank Pad	252.00 CY	138,600	293,502	0%			
055.010.11.01201 UF Filtrate Tank #1	150,000.00 GAL	675,000	1,277,518	100%	Concrete Tank	30 \$	42,584
055.010.11.01202 UF Filtrate Tank #2	150,000.00 GAL	675,000	1,277,518	100%	Concrete Tank	30 \$	42,584
055.012 UF Filtrate Tanks	300,000.00 GAL	2,364,818	4,704,037	0%			
<b>080.030 Hydraulic Pump Systems</b>							
080.030.11.02010 Ultrafiltration Filter Pumping Systems	10,417.00 GPM	2,291,740	4,337,393	100%	Pump	15 \$	289,160
080.030 Hydraulic Pump Systems	10,417.00 GPM	2,291,740	4,337,393	0%			
<b>115.125 UF Backwash Pump System Concrete Pad</b>							
02465.01.02310 UF Backwash Pump Pad - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	327.60 VLF	80,363	170,178	0%			
03300.01.02210 UF Backwash Pump System Concrete Pad	1.00 ls	29,250	61,940	0%			
115.125 UF Backwash Pump System Concrete Pad	1.00 ls	109,613	232,119	0%			
5.020 Ultrafiltration System	15.00 MGD	29,666,171	56,399,786	0%			
<b>5.030 UF and Other Waste System</b>							
<b>102.010 Structures - CIP Straight Wall Buried Tank</b>							
02250.01.03010 Waste EQ Wetwell - Sheet Pile for Excavation	3,680.00 SF	184,000	348,242	0%			
02300.01.03010 Waste EQ Wetwell - Excavation & Haul to Pond Fill Area	335.00 CY	5,357	10,281	0%			
02465.01.03010 Waste EQ Wetwell - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	1,237.60 VLF	221,758	469,600	0%			
03300.01.03010 Waste EQ Wetwell - Concrete Structure	263.00 CY	285,750	605,110	100%	Concrete Tank	30 \$	20,170
07100.01.03010 Waste EQ Wetwell - Waterproofing	1,440.00 SF	28,800	60,987	0%			

11200.01.03010 Waste EQ Wetwell - Pump Equipment	3.00 EA	225,000	476,465	100%	Pump	10 \$	47,647
15200.01.03010 Waste EQ Wetwell - Process Piping	1.00 LS	95,000	201,174	100%	Piping	30 \$	6,706
102.010 Structures - CIP Straight Wall Buried Tank	0.10 MG	1,045,665	2,171,859	0%			
5.030 UF and Other Waste System	0.10 MG	1,045,665	2,171,859	0%			
<b>5.040 Reverse Osmosis</b>							
<b>055.020 Water Membrane Systems - Reverse Osmosis (Low)</b>							
055.020.11.01001 3 Stage RO System #1	3.00 MGD	2,880,000	5,450,746	94%			*Using avg life of above ground steel pipe and valves as the asset class. Does not include RO Elements which are covered in OPEX consumables
055.020.11.01002 3 Stage RO System #2	3.00 MGD	2,880,000	5,450,746	94%	Piping	20 \$	256,787
055.020.11.01003 3 Stage RO System #3	3.00 MGD	2,880,000	5,450,746	94%	Piping	20 \$	256,787
055.020.11.01004 3 Stage RO System #4	3.00 MGD	2,880,000	5,450,746	94%	Piping	20 \$	256,787
055.020 Water Membrane Systems - Reverse Osmosis (Low)	12.00 MGD	11,520,000	21,802,982	0%	Piping	20 \$	256,787
<b>055.021 Water Membrane Systems - Reverse Osmosis (Low) CIP Neutralization</b>							
055.021.11.01101 RO CIP Neutralization System	12.00 mgd	1,920,000	3,633,830	100%	Chemical	10 \$	363,383
055.021 Water Membrane Systems - Reverse Osmosis (Low) CIP Neutralization	12.00 mgd	1,920,000	3,633,830	0%			
<b>080.030 Hydraulic Pump Systems</b>							
080.030.11.04010 3 Stage RO Pumping Systems	8,333.00 GPM	1,833,260	3,469,664	100%	Pump	15 \$	231,311
080.030 Hydraulic Pump Systems	8,333.00 GPM	1,833,260	3,469,664	0%			
<b>115.115 RO Feed Pumps &amp; Cartridge System Concrete Pad and Containment</b>							
02465.01.04010 RO Feed Pump Pad - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	3,203.20 VLF	527,172	1,116,349	0%			
03300.01.04010 RO Feed Pumps & Cartridge System Concrete Pad and Containment	1.00 ls	288,300	610,510	0%			
115.115 RO Feed Pumps & Cartridge System Concrete Pad and Containment	1.00 ls	815,472	1,726,859	0%			
5.040 Reverse Osmosis	12.00 MGD	16,088,732	30,633,336	0%			
<b>5.050 Reverse Osmosis Concentrate</b>							
<b>102.010 Structures - CIP Straight Wall Buried Tank</b>							
02250.01.05010 ROC Tank - Sheet Pile for Excavation	2,800.00 SF	140,000	264,967	0%			
02300.01.05010 ROC Tank - Excavation & Backfill	162.00 CY	4,059	7,826	0%			
02465.01.05010 ROC Tank - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	655.20 VLF	131,265	277,970	0%			
03300.01.05010 ROC Tank - Concrete Structure	140.00 CY	152,500	322,937	100%	Concrete Tank	30 \$	10,765
07100.01.05010 ROC Tank - Waterproofing	1,000.00 SF	20,000	42,352	0%			
11200.01.05010 ROC Tank - Pump Equipment	3.00 EA	210,000	444,700	100%	Pump	15 \$	29,647
15200.01.05010 ROC Tank - Process Piping	1.00 LS	95,000	201,174	100%	Piping	30 \$	6,706
102.010 Structures - CIP Straight Wall Buried Tank	0.05 MG	752,824	1,561,926	0%			
5.050 Reverse Osmosis Concentrate	1.00 LS	752,824	1,561,926	0%			
<b>5.060 Decarbonator System</b>							
<b>105.045 Decarbonator Systems</b>							
105.045.11.01001 Decarbonator Tower System #1	15,000.00 SCFM	375,000	709,732	100%	Chemical Tank	20 \$	35,487
105.045.11.01002 Decarbonator Tower System #2	15,000.00 SCFM	375,000	709,733	100%	Chemical Tank	20 \$	35,487
15200.01.06010 Decarbonator Tank - Process Piping	1.00 LS	95,000	179,799	100%	Piping	30 \$	5,993
105.045 Decarbonator Systems	30,000.00 SCFM	845,000	1,599,264	0%			
<b>115.060 Decarbonator System Concrete Pad</b>							
02465.01.06010 Decarbonator Pad - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	2,184.00 VLF	368,809	780,998	0%			
03300.01.06010 Decarbonator System Concrete Pad	1.00 LS	152,850	323,678	0%			
115.060 Decarbonator System Concrete Pad	1.00 LS	521,659	1,104,676	0%			
5.060 Decarbonator System	30,000.00 SCFM	1,366,659	2,703,940	0%			
<b>5.070 UV/AOP System</b>							
<b>060.010 Disinfection - UV (In-Channel)</b>							
060.010.11.01001 UV Reactor System #1	3.00 MGD	1,500,000	2,838,930	87%			
060.010.11.01002 UV Reactor System #2	3.00 MGD	1,500,000	2,838,930	87%	Piping	30 \$	82,548
060.010.11.01003 UV Reactor System #3	3.00 MGD	1,500,000	2,838,930	87%	Piping	30 \$	82,548
060.010.11.01004 UV Reactor System #4	3.00 MGD	1,500,000	2,838,930	87%	Piping	30 \$	82,548
060.010 Disinfection - UV (In-Channel)	12.00 MGD	6,000,000	11,355,720	0%	Piping	30 \$	82,548
<b>080.030 Hydraulic Pump Systems</b>							
080.030.11.06010 UV/AOP Feed Pumping System	10,556.00 GPM	2,322,320	4,395,269	100%	Pump	15 \$	293,018
080.030 Hydraulic Pump Systems	10,556.00 GPM	2,322,320	4,395,269	0%			
5.070 UV/AOP System	12.00 MGD	8,322,320	15,750,989	0%			

<b>5.080 2.3 MG Purified Water Storage Clearwell</b>						
<b>110.040 Storage - Welded Steel Tank</b>						
02465.01.08010 Purified Water Storage - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	7,280.00 VLF	1,160,622	2,457,757		0%	
03300.01.08010 Purified Water Storage - Concrete Tank Pad	840.00 CY	462,000	978,340		0%	
13200.01.08010 Purified Water Storage - 316SS, Welded Tank	2,300,000.00 GAL	8,050,000	17,046,841	100%	Steel Tank	30 \$ 568,228
15200.01.08010 Purified Water Storage - Process Piping	1.00 LS	50,000	105,881	100%	Piping	30 \$ 3,529
<b>110.040 Storage - Welded Steel Tank</b>	<b>2,300,000.00 GAL</b>	<b>9,722,622</b>	<b>20,588,819</b>	<b>0%</b>		
<b>5.080 2.3 MG Purified Water Storage Clearwell</b>	<b>1.00 LS</b>	<b>9,722,622</b>	<b>20,588,819</b>	<b>0%</b>		
<b>5.090 Purified Water Transfer Pump Station</b>						
<b>080.015 Hydraulic Pump Systems - Vertical Turbine Pumps Line Shaft w/Can</b>						
02300.01.09010 PWTPS - Excavation & Backfill	250.00 CY	27,267	51,734		0%	
02465.01.09010 PWTPS - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	1,237.60 VLF	221,758	469,600		0%	
03300.01.09010 PWTPS - Concrete Pad	185.00 CY	126,250	238,943		0%	
11200.01.09010 PWTPS - Pump Equipment	4.00 EA	460,000	870,605	100%	Pump	15 \$ 58,040
15200.01.09010 PWTPS - Process Piping	1.00 LS	175,000	331,209	100%	Piping	30 \$ 11,040
<b>080.015 Hydraulic Pump Systems - Vertical Turbine Pumps Line Shaft w/Can</b>	<b>12,000,000.00 GPD</b>	<b>1,010,275</b>	<b>1,962,091</b>	<b>0%</b>		
<b>5.090 Purified Water Transfer Pump Station</b>	<b>1.00 LS</b>	<b>1,010,275</b>	<b>1,962,091</b>	<b>0%</b>		
<b>5.100 Sodium Hypochlorite Chemical Storage and Feed</b>						
<b>065.010 Chemical Systems - NaOCl (Sodium Hypochlorite)</b>						
065.010.11.01001 Sodium Hypochlorite Chemical Storage and Feed	1.00 LS	942,000	1,782,848	100%	Chemical Tank	20 \$ 89,142
065.010 Chemical Systems - NaOCl (Sodium Hypochlorite)	1.00 LS	942,000	1,782,848		0%	
<b>115.015 Sodium Hypochlorite Containment Structure</b>						
03300.01.10010 Sodium Hypochlorite System Concrete Pad and Containment	1.00 ls	85,500	161,819		0%	
115.015 Sodium Hypochlorite Containment Structure	1.00 ls	85,500	161,819		0%	
<b>5.100 Sodium Hypochlorite Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>1,027,500</b>	<b>1,944,667</b>	<b>0%</b>		
<b>5.110 Sodium Hydroxide Chemical Storage and Feed</b>						
<b>065.015 Chemical Systems - NaOH (Sodium Hydroxide)</b>						
065.015.11.01001 Sodium Hydroxide Chemical Storage and Feed	1.00 LS	1,005,000	1,902,083	100%	Chemical Tank	20 \$ 95,104
065.015 Chemical Systems - NaOH (Sodium Hydroxide)	1.00 LS	1,005,000	1,902,083		0%	
<b>115.020 Sodium Hydroxide Containment Structure</b>						
03300.01.11010 Sodium Hydroxide System - Concrete Pad and Containment	1.00 LS	63,660	120,484		0%	
115.020 Sodium Hydroxide Containment Structure	1.00 LS	63,660	120,484		0%	
<b>5.110 Sodium Hydroxide Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>1,068,660</b>	<b>2,022,567</b>	<b>0%</b>		
<b>5.120 Aqueous Ammonia Chemical Storage and Feed</b>						
<b>065.050 Chemical Systems - NH4OH (Aqua Ammonia)</b>						
065.050.11.01001 Aqueous Ammonia Chemical Storage and Feed	1.00 LS	725,000	1,372,149	100%	Chemical Tank	20 \$ 68,607
065.050 Chemical Systems - NH4OH (Aqua Ammonia)	1.00 LS	725,000	1,372,149		0%	
<b>115.025 Aqueous Ammonia Containment Structure</b>						
03300.01.12010 Aqueous Ammonia - Concrete Pad and Containment	1.00 ls	63,660	120,484		0%	
115.025 Aqueous Ammonia Containment Structure	1.00 ls	63,660	120,484		0%	
<b>5.120 Aqueous Ammonia Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>788,660</b>	<b>1,492,634</b>	<b>0%</b>		
<b>5.130 Sulfuric Acid Chemical Storage and Feed</b>						
<b>065.030 Chemical Systems - H2SO4 (Sulfuric Acid)</b>						
065.030.11.01001 Sulfuric Acid Chemical Storage and Feed	1.00 LS	1,320,000	2,498,258	100%	Chemical Tank	20 \$ 124,913
065.030 Chemical Systems - H2SO4 (Sulfuric Acid)	1.00 LS	1,320,000	2,498,258		0%	
<b>115.030 Sulfuric Acid Containment Structure</b>						
03300.01.13010 Sulfuric Acid - Concrete Pad and Containment	1.00 ls	57,420	108,674		0%	
115.030 Sulfuric Acid Containment Structure	1.00 ls	57,420	108,674		0%	
<b>5.130 Sulfuric Acid Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>1,377,420</b>	<b>2,606,933</b>	<b>0%</b>		
<b>5.140 Antiscalant Chemical Storage and Feed</b>						
<b>065.080 Chemical Systems - Antiscalant</b>						
065.080.11.01001 Antiscalant Chemical Storage and Feed	1.00 LS	196,000	370,954	100%	Chemical Tank	20 \$ 18,548
065.080 Chemical Systems - Antiscalant	1.00 LS	196,000	370,954		0%	
<b>115.031 Antiscalant Containment Structure</b>						
03300.01.14010 Antiscalant - Concrete Pad and Containment	1.00 ls	57,420	108,674		0%	
115.031 Antiscalant Containment Structure	1.00 ls	57,420	108,674		0%	
<b>5.140 Antiscalant Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>253,420</b>	<b>479,628</b>	<b>0%</b>		
<b>5.150 Sodium Bisulfite Chemical Storage and Feed</b>						
<b>065.020 Chemical Systems - NaHSO4 (Sodium Bisulfate)</b>						
065.020.11.01001 Sodium Bisulfite Chemical Storage and Feed	1.00 LS	620,000	1,173,424	100%	Chemical Tank	20 \$ 58,671
065.020 Chemical Systems - NaHSO4 (Sodium Bisulfate)	1.00 LS	620,000	1,173,424		0%	
<b>115.035 Sodium Bisulfite Containment Structure</b>						
03300.01.15010 Sodium Bisulfite - Concrete Pad and Containment	1.00 ls	58,680	111,059		0%	
115.035 Sodium Bisulfite Containment Structure	1.00 ls	58,680	111,059		0%	
<b>5.150 Sodium Bisulfite Chemical Storage and Feed</b>	<b>1.00 LS</b>	<b>678,680</b>	<b>1,284,483</b>	<b>0%</b>		
<b>5.160 Hydrogen Peroxide Chemical Storage and Feed</b>						

065.110 Chemical Systems - H2O2 (Hydrogen Peroxide)								
065.110.11.01001 Hydrogen Peroxide Chemical Storage and Feed	1.00 LS	230,000	435,303	100%	Chemical Tank	20 \$	21,765	
065.110 Chemical Systems - H2O2 (Hydrogen Peroxide)	1.00 LS	230,000	435,303	0%				
115.040 Hydrogen Peroxide Containment Structure								
03300.01.16010 Hydrogen Peroxide - Concrete Structure	1.00 ls	303,270	642,211	0%				
115.040 Hydrogen Peroxide Containment Structure	1.00 ls	303,270	642,211	0%				
5.160 Hydrogen Peroxide Chemical Storage and Feed	1.00 LS	533,270	1,077,513	0%				
5.170 Calcium Chloride Chemical Storage and Feed								
065.100 Chemical Systems - CaCl2 (Calcium Chloride)								
065.100.11.01001 Calcium Chloride Chemical Storage and Feed	1.00 LS	460,000	870,605	100%	Chemical Tank	20 \$	43,530	
065.100 Chemical Systems - CaCl2 (Calcium Chloride)	1.00 LS	460,000	870,605	0%				
115.045 Calcium Chloride Containment Structure								
03300.01.17010 Calcium Chloride - Concrete Pad and Containment	1.00 ls	79,260	150,009	0%				
115.045 Calcium Chloride Containment Structure	1.00 ls	79,260	150,009	0%				
5.170 Calcium Chloride Chemical Storage and Feed	1.00 LS	539,260	1,020,614	0%				
5.180 RO/UF/UV Building								
100.025 Buildings - Pre-Engineered - Process								
02300.01.18010 RO/UF/UV Facility - Excavation and Backfill	3,600.00 CY	108,000	228,703	0%				
02465.01.18010 RO/UF/UV Facility - Auger Cast Piles w/Casing - 18" Dia x 40' Deep	42,224.00 VLF	6,590,197	13,955,533	0%				
03300.01.18010 RO/UF/UV Facility - Structural Concrete	6,985.00 CY	5,851,750	12,391,783	100%	Building	20 \$	619,589	
04200.01.18010 RO/UF/UV Facility - Interior Construction, Masonry Areas	15,280.00 SF	1,680,800	3,559,296	0%				
05500.01.18010 RO/UF/UV Facility - Grating	8,500.00 SF	988,935	2,919,841	0%				
08100.01.18010 RO/UF/UV Facility - Openings	26.00 EA	230,000	487,053	0%				
09900.01.18010 RO/UF/UV Facility - Painting & Coatings	65,000.00 SF	97,500	206,468	0%				
13121.01.18010 RO/UF/UV Facility - Pre-Engineered Metal Building	65,000.00 SF	8,249,952	24,554,298	100%	Building	20 \$	1,227,715	
15500.01.18010 RO/UF/UV Facility - Building Mechanical	65,000.00 SF	2,925,000	6,194,038	100%	HVAC	10 \$	619,404	
100.025 Buildings - Pre-Engineered - Process	65,000.00 SF	26,722,133	64,497,012	0%				
5.180 RO/UF/UV Building	65,000.00 SF	26,722,133	64,497,012	0%				
5.190 Site Earthwork & Remediation								
010.020 Sitewide - Dewatering								
02240.01.19010 Site Dewatering Allowance	1.00 LS	2,500,000	5,294,050	0%				
010.020 Sitewide - Dewatering	1.00 LS	2,500,000	5,294,050	0%				
010.028 Site Remediation								
02100.01.19010 Removal of Contaminated Soils at Ponds	30,000.00 CY	3,000,000	6,352,860	0%				
010.028 Site Remediation	30,000.00 CY	3,000,000	6,352,860	0%				
010.030 Sitewide - Site Earthwork								
02300.01.19010 Soil Cap - 12" Clay Layer at Existing Site	11,000.00 CY	264,901	775,673	0%				
02300.01.19105 Site Pond Fill - Imported Material	30,000.00 CY	753,103	2,180,389	0%				
02300.01.19110 Site Fill - 8 FT of Imported Material (Surcharge Timeframe)	80,000.00 CY	1,868,274	5,517,904	0%				
02300.01.19210 Re-Spread Surcharged Material to Site Fill Locations	14,000.00 CY	48,368	103,665	0%				
02300.01.19510 Earthwork for Bioretention Basin	2,900.00 cy	43,500	92,116	0%				
010.030 Sitewide - Site Earthwork	135,000.00 CY	2,978,146	8,669,748	0%				
5.190 Site Earthwork & Remediation	1.00 LS	8,478,146	20,316,657	0%				
5.200 Civil/Sitework and Yard Piping								
005.100 Buried Utilities - Yard Piping-Pressure Process Mains								
02500.01.01010 36" HDPE Buried Pipe - AWWP Influent - Palo Alto RWQCP to EQ Basin	600.00 LF	489,544	1,433,402	100%	Piping	30 \$	47,780	
02500.01.01110 36" HDPE Buried Pipe - UF Feed Header - EQ Basin to UF	504.00 LF	444,478	1,304,621	100%	Piping	30 \$	43,487	
02500.01.01210 36" HDPE Buried Pipe - RO Feed - UF Filtrate Tanks to RO Transfer Pumps	204.00 LF	301,398	897,275	100%	Piping	30 \$	29,909	
02500.01.01310 14" HDPE Buried Pipe - RO Feed - RO HP Pumps to RO Unit #1	160.00 LF	37,839	101,698	100%	Piping	30 \$	3,390	
02500.01.01320 14" HDPE Buried Pipe - RO Feed - RO HP Pumps to RO Unit #2	160.00 LF	36,856	99,082	100%	Piping	30 \$	3,303	
02500.01.01330 14" HDPE Buried Pipe - RO Feed - RO HP Pumps to RO Unit #3	160.00 LF	36,856	99,082	100%	Piping	30 \$	3,303	
02500.01.01340 14" HDPE Buried Pipe - RO Feed - RO HP Pumps to RO Unit #4	160.00 LF	36,856	99,082	100%	Piping	30 \$	3,303	
02500.01.01410 24" HDPE Buried Pipe - RO Permeate Header - RO to Decarb Towers	190.00 LF	99,837	279,582	100%	Piping	30 \$	9,319	
02500.01.01510 24" HDPE Buried Pipe - UV Feed Header - UV Feed Pumps to UV Lamps	225.00 LF	109,236	306,131	100%	Piping	30 \$	10,204	
02500.01.01610 24" HDPE Buried Pipe - UV Discharge Header - UV to PW Clearwell	250.00 LF	111,459	313,198	100%	Piping	30 \$	10,440	
02500.01.01710 12" HDPE Buried Pipe - ROC - RO to ROC Storage Tank	650.00 LF	68,493	180,270	100%	Piping	30 \$	6,009	
02500.01.01810 18" HDPE Buried Pipe - ROC - ROC Pump Station to Area Boundry	800.00 LF	139,181	380,672	100%	Piping	30 \$	12,689	
02500.01.01910 10" HDPE Buried Pipe - UF Backwash - UF to Waste EQ Tank	450.00 LF	43,684	111,844	100%	Piping	30 \$	3,728	
02500.01.02110 24" HDPE Buried Pipe - Backwash & Waste - Waste Pump EQ PS to Area B	800.00 LF	242,604	680,750	100%	Piping	30 \$	22,692	
02500.01.02210 36" HDPE Buried Pipe - UF Off-Spec - UF Discharge Header to Waste EQ T	504.00 LF	444,478	1,304,621	100%	Piping	30 \$	43,487	
02500.01.02310 12" HDPE Buried Pipe - RO Ind Off-Spec - RO Ind Discharge to Waste EQ T	250.00 LF	37,284	97,238	100%	Piping	30 \$	3,241	
02500.01.02320 12" HDPE Buried Pipe - RO Ind Off-Spec - RO Ind Discharge to Waste EQ T	250.00 LF	37,284	97,238	100%	Piping	30 \$	3,241	
02500.01.02330 12" HDPE Buried Pipe - RO Ind Off-Spec - RO Ind Discharge to Waste EQ T	250.00 LF	37,284	97,238	100%	Piping	30 \$	3,241	
02500.01.02340 12" HDPE Buried Pipe - RO Ind Off-Spec - RO Ind Discharge to Waste EQ T	250.00 LF	37,284	97,238	100%	Piping	30 \$	3,241	
02500.01.02410 24" HDPE Buried Pipe - RO Total Off-Spec - RO D Hdr to Waste EQ Tank	200.00 LF	101,774	285,184	100%	Piping	30 \$	9,506	
02500.01.02510 12" HDPE Buried Pipe - UV Ind Off-Spec - UV Ind DC to Waste EQ Tank #1	200.00 LF	32,535	85,258	100%	Piping	30 \$	2,842	

02500.01.02520 12" HDPE Buried Pipe - UV Ind Off-Spec - UV Ind DC to Waste EQ Tank #2	200.00 LF	32,535	85,258	100%	Piping	30 \$	2,842
02500.01.02530 12" HDPE Buried Pipe - UV Ind Off-Spec - UV Ind DC to Waste EQ Tank #3	200.00 LF	32,535	85,258	100%	Piping	30 \$	2,842
02500.01.02540 12" HDPE Buried Pipe - UV Ind Off-Spec - UV Ind DC to Waste EQ Tank #4	200.00 LF	32,535	85,258	100%	Piping	30 \$	2,842
02500.01.02610 24" HDPE Buried Pipe - UV Total Off-Spec - UV DC Hdr to Waste EQ Tank	300.00 LF	121,144	341,211	100%	Piping	30 \$	11,374
005.100 Buried Utilities - Yard Piping-Pressure Process Mains	8,117.00 LF	3,144,994	8,947,690	0%			
005.115 Buried Utilities - Yard Piping- Potable Water							
02510.01.01010 12" C900 Potable Water	800.00 LF	58,408	161,454	100%	Piping	30 \$	5,382
005.115 Buried Utilities - Yard Piping- Potable Water	800.00 LF	58,408	161,454	0%			
005.120 Buried Utilities - Yard Piping- Gravity Sewer							
02530.01.01010 12" PVC Sanitary Sewer	800.00 LF	66,172	185,519	100%	Piping	30 \$	6,184
005.120 Buried Utilities - Yard Piping- Gravity Sewer	800.00 LF	66,172	185,519	0%			
010.005 Sitewide - Site Demolition							
02210.01.01010 Site Demolition - APTF Site	1.00 LS	683,173	1,450,826	0%			
010.005 Sitewide - Site Demolition	1.00 LS	683,173	1,450,826	0%			
010.015 Sitewide - Site Prep & Clearing							
02230.01.01010 Site Clearing - APTF Site	0.73 AC	17,683	37,991	0%			
010.015 Sitewide - Site Prep & Clearing	0.73 AC	17,683	37,991	0%			
010.045 Sitewide - Retaining Walls							
03300.01.20010 Perimeter Flood Wall	2,600.00 LF	4,732,887	10,023,881	0%			
010.045 Sitewide - Retaining Walls	2,600.00 LF	4,732,887	10,023,881	0%			
010.055 Sitewide - Site Finishes - Paving & Surfacing							
02710.01.01010 Aggregate Base for Asphalt Paving - 12" - PS Lot	7,225.00 SY	58,308	145,859	100%	Pavement	18 \$	8,103
02740.01.01010 Asphalt Paving - 3" - PS Lot	7,225.00 SY	167,681	456,271	100%	Pavement	18 \$	25,348
02740.01.31410 Entranceway Turn Lane Modifications	1.00 LS	50,000	105,881	100%	Pavement	18 \$	5,882
02770.01.01010 Curb & Gutter	60.00 LF	1,796	3,804	0%			
02840.01.01010 Pipe Bollards	20.00 EA	16,210	49,677	0%			
02900.01.20010 Site Restoration & Landscaping	60,000.00 SF	170,000	359,995	0%			
010.055 Sitewide - Site Finishes - Paving & Surfacing	14,450.00 SY	463,996	1,121,487	0%			
5.200 Civil/Sitework and Yard Piping	1.00 LS	9,167,312	21,928,849	0%			
6.000 Electrical							
005.170 Site Electrical, Buried							
16000.01.01110 Electrical Scope Allowance	1.00 Is	550,000	1,164,691	85%	Electrical	25 \$	39,599
16000.01.01210 Site Electrical Equipment Pads and Piles	1.00 Is	1,106,137	2,342,378	0%			
005.170 Site Electrical, Buried	226.00 Is	1,656,137	3,507,069	0%			
010.090 Electrical Equipment/Indoor							
16000.01.01110 Electrical Scope Allowance	1.00 Is	16,050,000	33,987,801	85%	Electrical	10 \$	2,888,963
010.090 Electrical Equipment/Indoor	1.00 Is	16,050,000	33,987,801	0%			
6.000 Electrical	1.00 LS	17,706,137	37,494,870	0%			
7.000 I&C							
010.205 Sitewide - SCADA & Master PLC							
17000.01.01110 Instrumentation and Controls Scope Allowance	1.00 Is	10,700,000	22,658,534	85%	I/C	10 \$	1,925,975
010.205 Sitewide - SCADA & Master PLC	1.00 Is	10,700,000	22,658,534	0%			
7.000 I&C	1.00 LS	10,700,000	22,658,534	0%			
0200 P3 Advanced Purification Treatment Facility	1.00 LS	155,714,800	328,858,511	0%			
Total Construction Cost (OPCC w/o Escalation)	1.00 LS	158,542,849	335,184,235	0%			
Total Asset R&R Cost/Year						\$	11,515,292 *Prorated from 12mgd plant using 5/8s rule
Total PW Cost of Assets for R&R						\$	258,896,109
R&R Asset Cost:Total Construction Cost Ratio							77%

Equipment Lookup Tables				
Table Name: equip_lut	Column Names (used in formulas):			
Generalized Asset Class for R&R Model	Asset Class Code	Asset Description	Lookup_Code	Final Life Cycle
CTL	CTL	CONTROLS - General	CTL	10
CTL	CTL PNL	CONTROL PANEL	CTL PNL	10
CTL	CTL RTU	REMOTE TELEMETRY UNIT	CTL RTU	10
DATA	DAT SCDA	SCADA SYSTEM	DAT SCDA	10
ELE	ELE	ELECTRICAL - General	ELE	10
ELE	ELE BRKR	BREAKER - General (no size information)	ELE BRKR	10
ELE	ELE GEN	GENERATOR	ELE GEN-[UNK]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[100KW]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[500KW]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[1MW]	20
ELE	ELEC LIGHT	ELECTRICAL LIGHTING	ELEC LIGHT	15
ELE	ELE MCC	MOTOR CONTROL CENTER	ELE MCC	20
ELE	ELE MST	MOTOR STARTER	ELE MST	10
ELE	ELE PLC	PROGRAMMABL E LOGIC CONTROLLER	ELE PLC	10
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[UNK]	12
ELE	ELEC SOST	SOFT STARTER	ELE SOST- [<20 HP]	8
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[200 HP]	12
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[600 HP]	15
ELE	ELE SW	SWITCH	ELE SW	15
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[SMALL]	25
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[MED]	25
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[LARGE]	25
ELE	ELE TRNS	TRANSFORMER	ELE TRNS	20
ELE	ELE TSW	AUTO TRANSFER SWTICH	ELE TSW	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[UNK]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD- [<20 HP]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[20-75 HP]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[75-200 HP]	10
GATE	GATE	GATE-General (no size information)	GATE-[UNK]	10
GATE	GATE	GATE-General (no size information)	GATE-Small	10

GATE	GATE	GATE-General (no size information)	GATE-Medium	10
GATE	GATE	GATE-General (no size information)	GATE-Large	10
GATE	GATE ACT	GATE ACTUATOR	GATE ACT	15
GATE	GATE ENT	ENTRANCE GATE	GATE ENT	15
GATE	GATE FLAP	FLAP GATE	GATE FLAP	20
GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-[UNK]	20
GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-Medium	20
GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-Large	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-[UNK]	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Small	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Medium	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Large	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-[UNK]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE- [<24 in]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE- [24-60 in]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-Medium	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE- [>60 in]	20
GATE	GATE WR	WEIR GATE	GATE WR-[UNK]	20
GATE	GATE WR	WEIR GATE	GATE WR-Medium	20
HVAC	HVAC	HVAC - General (All HVAC)	HVAC	10
HVAC	HVAC	HVAC - General (All HVAC)	HVAC- [<20 Tons]	10
HVAC	HVAC HTR	HEATER	HVAC HTR	10
HVAC	HVAC WTHR	WATER HEATER	HVAC WTHR	8
INS	INS	INSTRUMENT	INS-[SMALL]	3
INS	INS	INSTRUMENT	INS-[LARGE][>\$7,000]	7
INS	INS AFM	AIR FLOW METER	INS AFM	7
INS	INS DOM	DISSOLVED OXYGEN METER	INS DOM	7
INS	INS LC	LEVEL CONTROL	INS LC	7
INS	INS LM	LEVEL METER	INS LM	7
INS	INS MM	MAG FLOW METER	INS MM	10
INS	INS MTR	METER	INS MTR	7
INS	INS PROBE	PROBE	INS PROBE	7
INS	INS REC	RECORDER	INS REC	7
INS	INS SMPLR	SAMPLER	INS SMPLR	7
INS	INS TRNMTR	TRANSMITTER	INS TRNMTR	7
INS	INS TUR	TURBIDIMETER	INS TUR	7
INS	INS VIB	VIBRATION MONITOR	INS VIB	7
MEC	MEC	MECHANICAL - General	MEC	10
MEC	MEC AER	AERATOR	MEC AER- [<20 HP]	10
MEC	MEC BLW	BLOWERS	MEC BLW-[UNK]	15
MEC	MEC BLW	BLOWERS	MEC BLW- [<20 HP]	15
MEC	MEC BLW	BLOWERS	MEC BLW- [20-75 HP]	15
MEC	MEC BLW	BLOWERS	MEC BLW- [75-150 HP]	20
MEC	MEC BLW	BLOWERS	MEC BLW- [150-350 HP]	20
MEC	MEC BLW	BLOWERS	MEC BLW- [>350 HP]	20
MEC	MEC BOIL	BOILERS	MEC BOIL	10

MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP-[UNK]	10
MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP- [<6 in]	10
MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP-[6-12 in]	10
MEC	MEC CHEM	CHEMICAL SYSTEMS	MEC CHEM	10
MEC	MECH CHEM INJ	CHEMICAL INJECTOR	MECH CHEM INJ	10
MEC	MEC COMP	COMPRESSOR	MEC COMP	10
MEC	MEC CRANE	CRANE	MEC CRANE	10
MEC	MEC DAMP	DAMPER	MEC DAMP	15
MEC	MEC DRV	DRIVE	MEC DRV	10
MEC	MEC ELEV	ELEVATOR	MEC ELEV	15
MEC	MEC FAN	FAN	MEC FAN-[UNK]	15
MEC	MEC HOIST	HOIST	MEC HOIST	20
MEC	MEC LFT	LIFT	MEC LFT	25
MEC	MEC MIXR	MIXER	MEC MIXR-[UNK]	10
MEC	MEC MIXR	MIXER	MEC MIXR- [<20 HP]	10
MEC	MEC STRN	STRAINER	MEC STRN	10
MEC	MEMC	MEMBRANE CASSETTE	MEMC	5
MEC	MEMT	MEMBRANE TRAIN	MEMT	7
MEC	RO CART	REVERSE OSMOSIS CARTRIDGE	RO CART	5
MEC	ROT	REVERSE OSMOSIS TRAIN	ROT	5
MW	MW	MONITORING WELL	MW	30
MOT	MOT	MOTOR	MOT-[UNK]	10
MOT	MOT	MOTOR	MOT- [<15 HP]	10
MOT	MOT	MOTOR	MOT-[15-20 HP]	10
MOT	MOT	MOTOR	MOT-[20-50 HP]	10
MOT	MOT	MOTOR	MOT-[50-100 HP]	10
MOT	MOT	MOTOR	MOT-[100-200 HP]	10
MOT	MOT	MOTOR	MOT- [>200 HP]	10
PAV	PAV	PAVING	PAV	18
PIP	PIP PR	PIPING PROACTIVE REPAIR	PIP PR	5
PIP	PIP AR	PIPING ANNUAL REPAIR	PIP AR	1
PIP	PIP EXP	ABOVE GROUND GALVANIZED STEEL PIPE	PIP EXP-GSTL	30
PIP	PIP EXP	ABOVE GROUND CAST IRON PIPE	PIP EXP-CIP	30
PIP	PIP EXP	ABOVE GROUND STEEL PIPE	PIP EXP-STL	30
PIP	PIP EXP	ABOVE GROUND DUCTILE IRON PIPE	PIP EXP-DIP	30
PIP	PIP EXP	ABOVE GROUND FIBERGLASS REINFORCED PIPE	PIP EXP-FRP	10

PIP	PIP BURIED	BURIED GALVANIZED STEEL PIPE	PIP BURIED-GSTL	30
PIP	PIP BURIED	BURIED UNLINED CAST IRON PIPE	PIP BURIED-UCIP	30
PIP	PIP BURIED	BURIED LINED CAST IRON PIPE	PIP BURIED-LCIP	30
PIP	PIP BURIED	BURIED UNLINED STEEL PIPE	PIP BURIED-USTL	30
PIP	PIP BURIED	BURIED LINED STEEL PIPE	PIP BURIED-LSTL	30
PIP	PIP BURIED	BURIED DUCTILE IRON PIPE	PIP BURIED-DIP	30
PIP	PIP BURIED	BURIED PVC PIPE	PIP BURIED-PVC	30
PIP	PIP BURIED	BURIED FIBERGLASS REINFORCED PIPE	PIP BURIED-FRP	15
PIP	PIP BURIED	BURIED HIGH DENSITY POLYETHYLENE PIPE	PIP BURIED-HDPE	30
PIP	PIP BURIED	BURIED REINFORCED CONCRETE PIPE	PIP BURIED-RCP	30
PIP	PIP FMAIN	FORCE MAIN PIPE	PIP FMAIN	30
PMP	PMP	PUMP - General (no size information)	PMP-[UNK]	10
PMP	PMP	PUMP - General (no size information)	PMP- [<10 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[10-20 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[20-50 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[50-100 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[100-250 HP]	10
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT- [<10 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[10-20 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[20-50 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[50-100 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[100-250 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT- [>250 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[UNK]	15
PMP	PMP CHEM	CHEMICAL FEED PUMP	PMP CHEM- [<20 HP]	5
PMP	PMP PER	PERISTALTIC PUMP	PMP PER- [<10 HP]	10

PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[UNK]	5
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS- [<10 HP]	5
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[10-20 HP]	10
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[20-50 HP]	10
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[100-250 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[UNK]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB- [<10 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[10-20 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[20-50 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[50-100 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[100-250 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB- [>250 HP]	10
PMP	PMP SUMP	SUMP PUMP	PMP SUMP- [<5 HP]	10
PMP	PMP SUMP	SUMP PUMP	PMP SUMP- [>5 HP]	10
PMP	PMP VERT	VERTICAL TURBINE PUMP	PMP VERT-[50-100 HP]	15
PMP	PMP VERT	VERTICAL TURBINE PUMP	PMP VERT-[100-250 HP]	15
SAF	SAF	SAFETY	SAF	10
STR	STR	STRUCTURE	STR	20
STR	STR AER	AERATOR	STR AER	20
STR	STR BLDG	BUILDING	STR BLDG	20
STR	STR BSN	BASIN	STR BSN	20
STR	STR DRAIN	DRAIN	STR DRAIN	30
STR	STR FENCE	FENCE	STR FENCE	15
STR	STR LIN	LINING-SMALL (VAULT/ VALVE)	STR LIN-SM	15
STR	STR LIN	MEDIUM LINING (SMALL PS WET WELL)	STR LIN-MD	15
STR	STR LIN	LARGE LINING (BIGGER PUMP STATIONS)	STR LIN-LRG	15
STR	STR PIT	DRY PIT	STR PIT	20
STR	STR REP	STRUCTURAL REPAIR	STR REP	25
STR	STR ROOF	ROOF REPAIR	STR ROOFR	1
STR	STR STOR	STORAGE	STR STOR	20
STR	STR WELL	WETWELL	STR WELL	20
TNK	TNK	TANK	TNK	20
TNK	TNK BULK	BULK CHEMICAL STORAGE TANK	TNK BULK	20
TNK	TNK CHEM	CHEMICAL DAY TANK	TNK CHEM	10

TNK	TNK C	CONCRETE TANK	TNK C	30
TNK	TNK MC	MEDIUM CONCRETE TANK	TNK MC	30
TNK	TNK LC	LARGE CONCRETE TANK	TNK LC	30
TNK	TNK STL-B	BOLTED STEEL TANK	TNK STL-B	20
TNK	TNK STL-W	WELDED STEEL TANK	TNK STL-W	30
TNK	TNK PRES	PRESSURIZED TANK	TNK PRES	20
UV	UV	UV	UV	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[UNK]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV- [<6 in]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[6-12 in]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[12-24 in]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV- [>24 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE-[UNK]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE- [<12 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE-[12-24 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE- [>24 in]	10
VLV	VLV ACTH	HYDRAULIC ACTUATOR	VLV-ACTH	20
VLV	VLV ACTP	PNEUMATIC ACTUATOR	VLV-ACTP- [<12 in]	10

VLV	VLV ACTP	PNEUMATIC ACTUATOR	VLV-ACTP-[12-24 in]	10
VLV	VLV ARV	AIR RELEASE VALVE	VLV ARV-[UNK]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY-[6-12 in]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY-[12-24 in]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY-[>24 in]	10
VLV	VLV BLM	MOTORIZED BALL VALVE	VLV BLM-[<6 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[UNK]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[<6 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[6-12 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[12-24 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[>24 in]	10
VLV	VLV CTRL	CONTROL VALVE	VLV CTRL	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[UNK]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[<6 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[6-12 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[12-24 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[>24 in]	10
VLV	VLV GLOBE	GLOBE VALVE	VLV GLOBE-[<6 in]	10
VLV	VLV MUD	MUD VALVE	VLV MUD-[6-12 in]	10
VLV	VLV MUD	MUD VALVE	VLV MUD-[>12 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[UNK]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[<6 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[6-12 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[12-24 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[>24 in]	10
VLV	VLV PLUGM	MOTORIZED PLUG VALVE	VLV PLUGM-[<6 in]	10
VLV	VLV PLUGM	MOTORIZED PLUG VALVE	VLV PLUGM-[6-12 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF-[<6 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF-[6-12 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF-[12-24 in]	10
VLV	VLV SR	SURGE RELEASE VALVE	VLV SR	10
VLV	VLV SWING	SWING CHECK VALVE	VLV SWING-[12-24 in]	10
VLV	VLV SWING	SWING CHECK VALVE	VLV SWING-[>24 in]	10

#	Spreadsheet Level	Takeoff Quantity	Total Amount	Total Construction Amount	From Valley Water Asset Useful Life Tables, u.n.o.			Comments
					Percent of Original Construction Cost Applicable for R&R	Asset Category	Asset Useful Life	
1	<b>010 30" PURIFIED WATER PIPELINE</b>							
2	01590 Safety/Traffic/Pollution Control							
3	01590.76.010 Safety/Traffic/Pollution Control	1,248.00 DY	3,947,749	6,979,652				
4	01590 Safety/Traffic/Pollution Control		3,947,749	6,979,652				
5	02445 Directional Drilling/Bore & Jack/Micro Tunneling							
6	02445.76.0110 Trenchless Pipeline Sta 69-71	200.00 LF	224,876	448,238	100% Piping	60 \$	7,471	VW's Guidance of 30-yr Life is too conservative
7	02445.76.0120 Trenchless Pipeline Sta 131-137	575.00 LF	641,093	1,278,041	100% Piping	60 \$	21,301	VW's Guidance of 30-yr Life is too conservative
8	02445.76.0130 Trenchless Pipeline Sta 242-244	200.00 LF	224,182	446,914	100% Piping	60 \$	7,449	VW's Guidance of 30-yr Life is too conservative
9	02445.76.0140 Trenchless Pipeline Sta 244-249	525.00 LF	587,083	1,170,286	100% Piping	60 \$	19,505	VW's Guidance of 30-yr Life is too conservative
10	02445.76.0150 Trenchless Pipeline Sta 290-297	825.00 LF	920,385	1,834,845	100% Piping	60 \$	30,581	VW's Guidance of 30-yr Life is too conservative
11	02445.76.0160 Trenchless Pipeline Sta 409-410	100.00 LF	112,647	224,535	100% Piping	60 \$	3,742	VW's Guidance of 30-yr Life is too conservative
12	02445.76.0170 Trenchless Pipeline Sta 464-467	325.00 LF	364,478	726,454	100% Piping	60 \$	12,108	VW's Guidance of 30-yr Life is too conservative
13	02445.76.0180 Trenchless Pipeline Sta 492-493	100.00 LF	113,897	227,062	100% Piping	60 \$	3,784	VW's Guidance of 30-yr Life is too conservative
14	02445.76.0190 Trenchless Pipeline Sta 514-518	425.00 LF	476,705	950,208	100% Piping	60 \$	15,837	VW's Guidance of 30-yr Life is too conservative
15	02445.76.0210 Trenchless Pipeline Sta 620-623	300.00 LF	336,273	670,246	100% Piping	60 \$	11,171	VW's Guidance of 30-yr Life is too conservative
16	02445.76.0211 Trenchless Pipeline Sta 667-669	250.00 LF	280,574	559,242	100% Piping	60 \$	9,321	VW's Guidance of 30-yr Life is too conservative
17	02445.76.0212 Trenchless Pipeline Sta 761-767	650.00 LF	728,872	1,452,818	100% Piping	60 \$	24,214	VW's Guidance of 30-yr Life is too conservative
18	02445.76.0213 Trenchless Pipeline Sta 800-804	375.00 LF	421,007	839,205	100% Piping	60 \$	13,987	VW's Guidance of 30-yr Life is too conservative
19	02445.76.0214 Trenchless Pipeline Sta 989-994	525.00 LF	590,104	1,176,209	100% Piping	60 \$	19,603	VW's Guidance of 30-yr Life is too conservative
20	02445.76.0215 Trenchless Pipeline Sta 1010-1013	250.00 LF	280,574	559,242	100% Piping	60 \$	9,321	VW's Guidance of 30-yr Life is too conservative
21	02445.76.0216 Trenchless Pipeline Sta 1044-1047	300.00 LF	336,273	670,246	100% Piping	60 \$	11,171	VW's Guidance of 30-yr Life is too conservative
22	02445 Directional Drilling/Bore & Jack/Micro Tunneling		6,639,024	13,233,791				
23	02511 Pressure Main Appurtenances							
24	02511.01.0010 Blow Off	35.00 EA	183,588	353,106	100% Valves	10 \$	35,311	
25	02511.02.0248 8" CARV	70.00 EA	1,595,843	3,130,754	100% Valves	10 \$	313,075	
26	02511 Pressure Main Appurtenances		1,779,431	3,483,860				
27	02785 Surface Applications							
28	02785.76.010 Sealcoating Pavement Surface	444,013.00 SY	599,418	1,212,077	100% Pavement	18 \$	67,338	
29	02785 Surface Applications		599,418	1,212,077				
30	02950 Site Restoration & Rehabilitation							
31	02950.76.010 Site Restoration & Rehabilitation	88,845.00 SY	5,139,444	19,445,582				
32	02950 Site Restoration & Rehabilitation		5,139,444	19,445,582				
33	03480 Precast Concrete Specialties							
34	03480.76.010 Discharge Structures	3.00 EA	1,089,688	2,118,115	100% Concrete Tank	20 \$	105,906	
35	03480 Precast Concrete Specialties		1,089,688	2,118,115				
36	15112 Butterfly Valves							
37	15112.76.100 30" BFV	100.00 EA	2,558,981	5,068,449	100% Valves	10 \$	506,845	
38	15112 Butterfly Valves		2,558,981	5,068,449				
39	15220 Steel Pipe CMLC							
40	15220.76.010 30" PURIFIED WATER PIPELINE	99,903.00 LF	111,720,939	213,494,017	100% Piping	60 \$	3,558,234	VW's Guidance of 30-yr Life is too conservative
41	15220 Steel Pipe CMLC		111,720,939	213,494,017				
42	<b>010 30" PURIFIED WATER PIPELINE</b>	<b>99,903.00 LF</b>	<b>133,474,672</b>	<b>265,035,543</b>				
43	<b>020 36" EFFLUENT</b>							
44	01590 Safety/Traffic/Pollution Control							
45	01590.76.010 Safety/Traffic/Pollution Control	185.00 DY	641,815	1,145,617				
46	01590 Safety/Traffic/Pollution Control		641,815	1,145,617				
47	02445 Directional Drilling/Bore & Jack/Micro Tunneling							
48	02445.76.2110 Trenchless Pipeline Sta 72-75	250.00 LF	280,234	558,593	100% Piping	60 \$	9,310	VW's Guidance of 30-yr Life is too conservative
49	02445.76.2120 Trenchless Pipeline Sta 111-112	100.00 LF	114,992	229,189	100% Piping	60 \$	3,820	VW's Guidance of 30-yr Life is too conservative

50	02445 Directional Drilling/Bore & Jack/Micro Tunneling		395,227	787,782				
51	02511 Pressure Main Appurtenances							
52	02511.01.0010 Blow Off	5.00 EA	26,227	50,444	100% Valves	10 \$	5,044	
53	02511.02.0248 8" CARV	10.00 EA	227,978	447,251	100% Valves	10 \$	44,725	
54	02511 Pressure Main Appurtenances		254,204	497,694				
55	02785 Surface Applications							
56	02785.76.010 SealcoatingPavement Surface	65,778.00 SY	88,800	179,562	100% Pavement	18 \$	9,976	
57	02785 Surface Applications		88,800	179,562				
58	02950 Site Restoration & Rehabilitation							
59	02950.76.010 Site Restoration & Rehabilitation	13,334.00 SY	771,319	2,918,363				
60	02950 Site Restoration & Rehabilitation		771,319	2,918,363				
61	15112 Butterfly Valves							
62	15112.76.101 30" BFV	15.00 EA	259,177	512,726	100% Valves	10 \$	51,273	
63	15112 Butterfly Valves		259,177	512,726				
64	15241 PVC C900							
65	15241.76.030 PVC C900 36" EFFLUENT PIPELINE	14,800.00 LF	20,013,693	38,284,079	100% Piping	60 \$	638,068	VW's Guidance of 30-yr Life is too conservative
66	15241 PVC C900		20,013,693	38,284,079				
67	020 36" EFFLUENT	14,800.00 LF	22,424,235	44,325,824				
68	030 18"ROC							
69	01590 Safety/Traffic/Pollution Control							
70	01590.76.010 Safety/Traffic/Pollution Control	185.00 DY	641,815	1,145,617				
71	01590 Safety/Traffic/Pollution Control		641,815	1,145,617				
72	02445 Directional Drilling/Bore & Jack/Micro Tunneling							
73	02445.76.2110 Trenchless Pipeline Sta 72-75	250.00 LF	280,234	558,593	100% Piping	60 \$	9,310	VW's Guidance of 30-yr Life is too conservative
74	02445.76.2120 Trenchless Pipeline Sta 111-112	100.00 LF	114,992	229,189	100% Piping	60 \$	3,820	VW's Guidance of 30-yr Life is too conservative
75	02445 Directional Drilling/Bore & Jack/Micro Tunneling		395,227	787,782				
76	02511 Pressure Main Appurtenances							
77	02511.01.0010 Blow Off	5.00 EA	26,227	50,444	100% Valves	10 \$	5,044	
78	02511.02.0248 8" CARV	10.00 EA	227,978	447,251	100% Valves	10 \$	44,725	
79	02511 Pressure Main Appurtenances		254,204	497,694				
80	02785 Surface Applications							
81	02785.76.010 SealcoatingPavement Surface	63,778.00 SY	86,100	174,103	100% Pavement	18 \$	9,672	
82	02785 Surface Applications		86,100	174,103				
83	02950 Site Restoration & Rehabilitation							
84	02950.76.010 Site Restoration & Rehabilitation	13,334.00 SY	771,319	2,918,363				
85	02950 Site Restoration & Rehabilitation		771,319	2,918,363				
86	15112 Butterfly Valves							
87	15112.76.102 30" BFV	14.00 EA	241,898	478,544	100% Valves	10 \$	47,854	
88	15112 Butterfly Valves		241,898	478,544				
89	15241 PVC C900							
90	15241.76.033 PVC C900 18" ROC PIPELINE	14,350.00 LF	10,856,472	20,351,106	100% Piping	60 \$	339,185	VW's Guidance of 30-yr Life is too conservative
91	15241 PVC C900		10,856,472	20,351,106				
92	030 18"ROC	14,350.00 LF	13,247,036	26,353,210				
93	040 12" SEWER							
94	01590 Safety/Traffic/Pollution Control							
95	01590.76.010 Safety/Traffic/Pollution Control	14.00 DY	15,617	28,987				
96	01590 Safety/Traffic/Pollution Control		15,617	28,987				
97	02530 Sanitary Sewerage Manholes							
98	02530.76.010 Manholes	2.00 EA	31,899	61,397	100% Structure	20 \$	3,070	
99	02530 Sanitary Sewerage Manholes		31,899	61,397				
100	02785 Surface Applications							
101	02785.76.010 SealcoatingPavement Surface	4,547.00 SY	6,138	12,413	100% Pavement	18 \$	690	
102	02785 Surface Applications		6,138	12,413				
103	02950 Site Restoration & Rehabilitation							
104	02950.76.010 Site Restoration & Rehabilitation	909.00 SY	53,286	201,516				

105	02950 Site Restoration & Rehabilitation		53,286	201,516				
106	15241 PVC C900							
107	15241.76.036 PVC C900 12" WASTEWATER PIPELINE	1,023.00 LF	733,425	1,357,651	100% Piping	60 \$	22,628	VW's Guidance of 30-yr Life is too conservative
108	15241 PVC C900		733,425	1,357,651				
109	040 12" SEWER	1,023.00 LF	840,365	1,661,963				
110								
111								
	<b>TOTAL</b>			<b>337,376,540</b>				
	<b>Monitoring Wells (Qty: 3)</b>			<b>2,286,000</b>	100% Monitoring Well	30 \$	76,200	
	<b>TOTAL</b>			<b>339,662,540</b>				
					Total Asset R&R Cost/Year	\$	4,755,634	*Prorated from 12mgd flow using 5/8s rule
					Total PW Cost of Assets for R&R	\$	304,878,844	
					R&R Asset Cost:Total Construction Cost Ratio		90%	

Equipment Lookup Tables				
Table Name: equip_lut	Column Names (used in formulas):			
Generalized Asset Class for R&R Model	Asset Class Code	Asset Description	Lookup_Code	Final Life Cycle
CTL	CTL	CONTROLS - General	CTL	10
CTL	CTL PNL	CONTROL PANEL	CTL PNL	10
CTL	CTL RTU	REMOTE TELEMETRY UNIT	CTL RTU	10
DATA	DAT SCDA	SCADA SYSTEM	DAT SCDA	10
ELE	ELE	ELECTRICAL - General	ELE	10
ELE	ELE BRKR	BREAKER - General (no size information)	ELE BRKR	10
ELE	ELE GEN	GENERATOR	ELE GEN-[UNK]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[100KW]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[500KW]	20
ELE	ELE GEN	GENERATOR	ELE GEN-[1MW]	20
ELE	ELEC LIGHT	ELECTRICAL LIGHTING	ELEC LIGHT	15
ELE	ELE MCC	MOTOR CONTROL CENTER	ELE MCC	20
ELE	ELE MST	MOTOR STARTER	ELE MST	10
ELE	ELE PLC	PROGRAMMABLE LOGIC CONTROLLER	ELE PLC	10
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[UNK]	12
ELE	ELEC SOST	SOFT STARTER	ELE SOST- [<20 HP]	8
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[200 HP]	12
ELE	ELEC SOST	SOFT STARTER	ELE SOST-[600 HP]	15
ELE	ELE SW	SWITCH	ELE SW	15
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[SMALL]	25
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[MED]	25
ELE	ELE SWGR	SWITCH GEAR	ELE SWGR-[LARGE]	25
ELE	ELE TRNS	TRANSFORMER	ELE TRNS	20
ELE	ELE TSW	AUTO TRANSFER SWITCH	ELE TSW	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[UNK]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD- [<20 HP]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[20-75 HP]	10
ELE	ELE VFD	VARIABLE FREQUENCY DRIVE	ELE VFD-[75-200 HP]	10
GATE	GATE	GATE-General (no size information)	GATE-[UNK]	10
GATE	GATE	GATE-General (no size information)	GATE-Small	10
GATE	GATE	GATE-General (no size information)	GATE-Medium	10
GATE	GATE	GATE-General (no size information)	GATE-Large	10
GATE	GATE ACT	GATE ACTUATOR	GATE ACT	15
GATE	GATE ENT	GATE ENTRANCE	GATE ENT	15
GATE	GATE FLAP	FLAP GATE	GATE FLAP	20

GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-[UNK]	20
GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-Medium	20
GATE	GATE SHEAR	SHEAR GATE	GATE SHEAR-Large	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-[UNK]	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Small	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Medium	20
GATE	GATE SLIDE	SLIDE GATE	GATE SLIDE-Large	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-[UNK]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-[-<24 in]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-[-24-60 in]	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-Medium	20
GATE	GATE SLUICE	SLUICE GATE	GATE SLUICE-[->60 in]	20
GATE	GATE WR	WEIR GATE	GATE WR-[UNK]	20
GATE	GATE WR	WEIR GATE	GATE WR-Medium	20
HVAC	HVAC	HVAC - General (All HVAC)	HVAC	10
HVAC	HVAC	HVAC - General (All HVAC)	HVAC-[-<20 Tons]	10
HVAC	HVAC HTR	HEATER	HVAC HTR	10
HVAC	HVAC WTHR	WATER HEATER	HVAC WTHR	8
INS	INS	INSTRUMENT	INS-[SMALL]	3
INS	INS	INSTRUMENT	INS-[LARGE][>=\$7,000]	7
INS	INS AFM	AIR FLOW METER	INS AFM	7
INS	INS DOM	DISSOLVED OXYGEN METER	INS DOM	7
INS	INS LC	LEVEL CONTROL	INS LC	7
INS	INS LM	LEVEL METER	INS LM	7
INS	INS MM	MAG FLOW METER	INS MM	10
INS	INS MTR	METER	INS MTR	7
INS	INS PROBE	PROBE	INS PROBE	7
INS	INS REC	RECORDER	INS REC	7
INS	INS SMPLR	SAMPLER	INS SMPLR	7
INS	INS TRNMTR	TRANSMITTER	INS TRNMTR	7
INS	INS TUR	TURBIDIMETER	INS TUR	7
INS	INS VIB	VIBRATION MONITOR	INS VIB	7
MEC	MEC	MECHANICAL - General	MEC	10
MEC	MEC AER	AERATOR	MEC AER-[-<20 HP]	10
MEC	MEC BLW	BLOWERS	MEC BLW-[UNK]	15
MEC	MEC BLW	BLOWERS	MEC BLW-[-<20 HP]	15
MEC	MEC BLW	BLOWERS	MEC BLW-[-20-75 HP]	15
MEC	MEC BLW	BLOWERS	MEC BLW-[-75-150 HP]	20
MEC	MEC BLW	BLOWERS	MEC BLW-[-150-350 HP]	20
MEC	MEC BLW	BLOWERS	MEC BLW-[->350 HP]	20
MEC	MEC BOIL	BOILERS	MEC BOIL	10
MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP-[UNK]	10
MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP-[-<6 in]	10
MEC	MEC BP	BACKFLOW PREVENTOR	MEC BP-[-6-12 in]	10
MEC	MEC CHEM	CHEMICAL SYSTEMS	MEC CHEM	10
MEC	MECH CHEM INJ	CHEMICAL INJECTOR	MECH CHEM INJ	10
MEC	MEC COMP	COMPRESSOR	MEC COMP	10
MEC	MEC CRANE	CRANE	MEC CRANE	10
MEC	MEC DAMP	DAMPER	MEC DAMP	15
MEC	MEC DRV	DRIVE	MEC DRV	10
MEC	MEC ELEV	ELEVATOR	MEC ELEV	15
MEC	MEC FAN	FAN	MEC FAN-[UNK]	15
MEC	MEC HOIST	HOIST	MEC HOIST	20
MEC	MEC LFT	LIFT	MEC LFT	25
MEC	MEC MIXR	MIXER	MEC MIXR-[UNK]	10
MEC	MEC MIXR	MIXER	MEC MIXR-[-<20 HP]	10

MEC	MEC STRN	STRAINER	MEC STRN	10
MEC	MEMC	MEMBRANE CASSETTE	MEMC	5
MEC	MEMT	MEMBRANE TRAIN	MEMT	7
MEC	RO CART	REVERSE OSMOSIS CARTRIDGE	RO CART	5
MEC	ROT	REVERSE OSMOSIS TRAIN	ROT	5
MW	MW	MONITORING WELL	MW	30
MOT	MOT	MOTOR	MOT-[UNK]	10
MOT	MOT	MOTOR	MOT- [<15 HP]	10
MOT	MOT	MOTOR	MOT- [15-20 HP]	10
MOT	MOT	MOTOR	MOT- [20-50 HP]	10
MOT	MOT	MOTOR	MOT- [50-100 HP]	10
MOT	MOT	MOTOR	MOT- [100-200 HP]	10
MOT	MOT	MOTOR	MOT- [>200 HP]	10
PAV	PAV	PAVING	PAV	18
PIP	PIP PR	PIPING PROACTIVE REPAIR	PIP PR	5
PIP	PIP AR	PIPING ANNUAL REPAIR	PIP AR	1
PIP	PIP EXP	ABOVE GROUND GALVANIZED STEEL PIPE	PIP EXP-GSTL	30
PIP	PIP EXP	ABOVE GROUND CAST IRON PIPE	PIP EXP-CIP	30
PIP	PIP EXP	ABOVE GROUND STEEL PIPE	PIP EXP-STL	30
PIP	PIP EXP	ABOVE GROUND DUCTILE IRON PIPE	PIP EXP-DIP	30
PIP	PIP EXP	ABOVE GROUND FIBERGLASS REINFORCED PIPE	PIP EXP-FRP	10
PIP	PIP BURIED	BURIED GALVANIZED STEEL PIPE	PIP BURIED-GSTL	30
PIP	PIP BURIED	BURIED UNLINED CAST IRON PIPE	PIP BURIED-UCIP	30
PIP	PIP BURIED	BURIED LINED CAST IRON PIPE	PIP BURIED-LCIP	30
PIP	PIP BURIED	BURIED UNLINED STEEL PIPE	PIP BURIED-USTL	30
PIP	PIP BURIED	BURIED LINED STEEL PIPE	PIP BURIED-LSTL	30
PIP	PIP BURIED	BURIED DUCTILE IRON PIPE	PIP BURIED-DIP	30
PIP	PIP BURIED	BURIED PVC PIPE	PIP BURIED-PVC	30
PIP	PIP BURIED	BURIED FIBERGLASS REINFORCED PIPE	PIP BURIED-FRP	15
PIP	PIP BURIED	BURIED HIGH DENSITY POLYETHYLENE PIPE	PIP BURIED-HDPE	30
PIP	PIP BURIED	BURIED REINFORCED CONCRETE PIPE	PIP BURIED-RCP	30

PIP	PIP FMAIN	FORCE MAIN PIPE	PIP FMAIN	30
PMP	PMP	PUMP - General (no size information)	PMP-[UNK]	10
PMP	PMP	PUMP - General (no size information)	PMP- [<10 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[10-20 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[20-50 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[50-100 HP]	10
PMP	PMP	PUMP - General (no size information)	PMP-[100-250 HP]	10
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT- [<10 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[10-20 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[20-50 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[50-100 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[100-250 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT- [>250 HP]	15
PMP	PMP CENT	CENTRIFUGAL PUMP	PMP CENT-[UNK]	15
PMP	PMP CHEM	CHEMICAL FEED PUMP	PMP CHEM- [<20 HP]	5
PMP	PMP PER	PERISTALTIC PUMP	PMP PER- [<10 HP]	10
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[UNK]	5
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS- [<10 HP]	5
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[10-20 HP]	10
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[20-50 HP]	10
PMP	PMP POS	POSITIVE DISPLACEMENT PUMP	PMP POS-[100-250 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[UNK]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB- [<10 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[10-20 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[20-50 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[50-100 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB-[100-250 HP]	10
PMP	PMP SUB	SUBMERSIBLE PUMP	PMP SUB- [>250 HP]	10
PMP	PMP SUMP	SUMP PUMP	PMP SUMP- [<5 HP]	10
PMP	PMP SUMP	SUMP PUMP	PMP SUMP- [>5 HP]	10
PMP	PMP VERT	VERTICAL TURBINE PUMP	PMP VERT-[50-100 HP]	15
PMP	PMP VERT	VERTICAL TURBINE PUMP	PMP VERT-[100-250 HP]	15
SAF	SAF	SAFETY	SAF	10
STR	STR	STRUCTURE	STR	20
STR	STR AER	AERATOR	STR AER	20
STR	STR BLDG	BUILDING	STR BLDG	20

STR	STR BSN	BASIN	STR BSN	20
STR	STR DRAIN	DRAIN	STR DRAIN	30
STR	STR FENCE	FENCE REPLACEMENTS (LINEAR FEET)	STR FENCE	15
STR	STR LIN	LINING-SMALL (VAULT/ VALVE)	STR LIN-SM	15
STR	STR LIN	MEDIUM LINING (SMALL PS WET WELL)	STR LIN-MD	15
STR	STR LIN	LARGE LINING (BIGGER PUMP STATIONS)	STR LIN-LRG	15
STR	STR PIT	DRY PIT	STR PIT	20
STR	STR REP	STRUCTURAL REPAIR	STR REP	25
STR	STR ROOF	ROOF REPAIR	STR ROOFR	1
STR	STR STOR	STORAGE	STR STOR	20
STR	STR WELL	WETWELL	STR WELL	20
TNK	TNK	TANK	TNK	20
TNK	TNK BULK	BULK CHEMICAL STORAGE TANK	TNK BULK	20
TNK	TNK CHEM	CHEMICAL DAY TANK	TNK CHEM	10
TNK	TNK C	CONCRETE TANK	TNK C	30
TNK	TNK MC	MEDIUM CONCRETE TANK	TNK MC	30
TNK	TNK LC	LARGE CONCRETE TANK	TNK LC	30
TNK	TNK STL-B	BOLTED STEEL TANK	TNK STL-B	20
TNK	TNK STL-W	WELDED STEEL TANK	TNK STL-W	30
TNK	TNK PRES	PRESSURIZED TANK	TNK PRES	20
UV	UV	UV	UV	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[UNK]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV- [<6 in]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[6-12 in]	10
VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV-[12-24 in]	10

VLV	VLV	VALVE - General (Flapper Gate, Motorized Valve, Pressure Control Valve, Perth Gas Rotator Mech., Solenoid Valve, Thermo Valve)	VLV->24 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE-[UNK]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE- [<12 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE-[12-24 in]	10
VLV	VLV ACTE	ELECTRIC ACTUATOR	VLV-ACTE- [>24 in]	10
VLV	VLV ACTH	HYDRAULIC ACTUATOR	VLV-ACTH	20
VLV	VLV ACTP	PNEUMATIC ACTUATOR	VLV-ACTP- [<12 in]	10
VLV	VLV ACTP	PNEUMATIC ACTUATOR	VLV-ACTP-[12-24 in]	10
VLV	VLV ARV	AIR RELEASE VALVE	VLV ARV-[UNK]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY-[6-12 in]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY-[12-24 in]	10
VLV	VLV BFLY	BUTTERFLY VALVE	VLV BFLY->24 in]	10
VLV	VLV BLM	MOTORIZED BALL VALVE	VLV BLM- [<6 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[UNK]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK- [<6 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[6-12 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK-[12-24 in]	10
VLV	VLV CHECK	CHECK VALVE	VLV CHECK- [>24 in]	10
VLV	VLV CTRL	CONTROL VALVE	VLV CTRL	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[UNK]	10
VLV	VLV GATE	GATE VALVE	VLV GATE- [<6 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[6-12 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE-[12-24 in]	10
VLV	VLV GATE	GATE VALVE	VLV GATE- [>24 in]	10
VLV	VLV GLOBE	GLOBE VALVE	VLV GLOBE- [<6 in]	10
VLV	VLV MUD	MUD VALVE	VLV MUD-[6-12 in]	10
VLV	VLV MUD	MUD VALVE	VLV MUD- [>12 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[UNK]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG- [<6 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[6-12 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG-[12-24 in]	10
VLV	VLV PLUG	PLUG VALVE	VLV PLUG- [>24 in]	10
VLV	VLV PLUGM	MOTORIZED PLUG VALVE	VLV PLUGM- [<6 in]	10
VLV	VLV PLUGM	MOTORIZED PLUG VALVE	VLV PLUGM-[6-12 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF- [<6 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF-[6-12 in]	10
VLV	VLV RLF	VACUUM RELIEF VALVE	VLV RLF-[12-24 in]	10
VLV	VLV SR	SURGE RELEASE VALVE	VLV SR	10
VLV	VLV SWING	SWING CHECK VALVE	VLV SWING-[12-24 in]	10
VLV	VLV SWING	SWING CHECK VALVE	VLV SWING- [>24 in]	10

# **INCOMING BOARD CORRESPONDENCE**

Board Correspondence (open)

Correspond No	Rec'd By District	Rec'd By COB	Letter To	Letter From	Description	Disposition	BAO/ Chief	Staff	Draft Response Due Date	Draft Response Submitted	Writer Ack. Sent	Final Response Due Date
C-24-0184	07/18/24	07/18/24	Hsueh	HANOCH RAVIV	Email from Hanoch Raviv to Chair Hsue inquiring about a letter they received regarding property encroachment.	Refer to Staff	Hakes	Infante Bourgeois	07/26/24	07/23/24	n/a	08/01/24
C-24-0188	07/23/24	07/23/24	All	JIM KUHL	Email from Jim Kuhl to the board (copied to Darin Taylor), dated 07/23/24, with follow-up questions about the Water Affordability Study.	Refer to Staff	Taylor	-	07/31/24	-	n/a	08/06/24

**From:** [Néstor De la O Vargas](#)  
**To:** [Board of Directors](#); [Linh Hoang](#); [Meghan Azralon](#)  
**Cc:** [Aja Yee](#)  
**Subject:** KCCB BioBlitz on 8/25  
**Date:** Wednesday, July 17, 2024 2:51:33 PM  
**Attachments:** [240825-BioBlitz-IG Post.png](#)

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Hello,

Keep Coyote Creek has scheduled a BioBlitz on the 25th of August!

\*\*\*\*\*

**Summer BioBlitz at Hellyer Park**

**Location: 996 Hellyer Ave, Cottonwood Lake - Southwest trail entrance, San Jose, CA 95111**

**Sun Aug 25th**

**9AM-11:30AM**

Join Keep Coyote Creek Beautiful, Bioblitz Club, Santa Clara Valley Audubon Society, and Peninsula Open Space Trust for a BioBlitz!

A BioBlitz is an event that focuses on finding and identifying as many species as possible in a specific area over a short period of time. At a BioBlitz, scientists, families, students, teachers, and other community members work together to get an overall count of the plants, animals, fungi, and other organisms that live in a place.

Join the BioBlitz at Hellyer Park where you and experts come together to explore, document, and catalog all of the living things that reside there.

Docents will guide you and teach you to use the iNaturalist app on your smartphone to record all the living things you encounter. Flowers, trees, butterflies, dragonflies, and beetles, birds, and squirrels. We love them all - now let's go find them!

The best part? All you need to participate is a smart phone with the iNaturalist app!

So bring your family and prepare for an in-depth tour of this great trail.

\*Community service hours available\*

*Hosted by Keep Coyote Creek Beautiful , Bioblitz Club, Santa Clara Valley Audubon Society, and Peninsular Open Space Trust. Registrants will be added to the email contact lists of each organization to receive their monthly e-newsletter*

RSVP: <https://240825-bioblitz.eventbrite.com/?aff=vw>

Sincerely,  
Néstor De la O Vargas  
Event Assistant  
Keep Coyote Creek Beautiful

408.660.3339

[KeepCoyoteCreekBeautiful.org](http://KeepCoyoteCreekBeautiful.org)

# HELLYER PARK

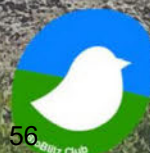
## BIOBLITZ

Become a Community Scientist



**AUGUST 25TH | 9AM-1130AM**

**Join experts to explore nature  
& document what lives in this park!**





# HELLYER PARK BIOBLITZ

AUGUST 25: 9AM-1130AM

**From:** [Dhruv Khanna](#)  
**To:** [Board of Directors](#)  
**Cc:** [Peter Van Dyke](#); [Erin Gil](#); [Tim Chiala](#); [Jess Brown Brown](#)  
**Subject:** Apple's \$50M affordable housing fund  
**Date:** Thursday, July 18, 2024 7:17:25 AM

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\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Please see

**"Apple launches affordable housing fund:** The tech titan has added \$50 million to a program that aims to bolster the development of more homes in the region. The money is a kickoff investment to the Bay Area Housing Innovation Fund that [will finance four projects.](#)"

So here we have Apple's executives/CEO and shareholders feeling so guilty about the mucho dollars they rake in that they are engaged effectively in upping their charitable contributions to fund local causes that need money.

Meanwhile, Valley Water's staff likes to focus on raising water rates, such as agricultural ground water production charges. Gasoline prices, grocery prices, electricity prices, and water prices -- these go to the heart of what low-income folks MUST pay for and are being gouged for in the recent years of raging inflation. If Valley Water wants to continue to pay lip service to DEI, I respectfully request -- consistent with the truth -- that the "E" be eliminated.

Thank you,

Dhruv Khanna

**From:** [Jethroe Moore](#)  
**To:** [Richard Santos](#); [Supervisor Otto Lee](#); [Supervisor Susan Ellenberg](#); [supervisor.simitian@bos.sccgov.org](mailto:supervisor.simitian@bos.sccgov.org); [Supervisor Cindy Chavez](#); [Sandy Perry](#); [lg4rent sc](#); [Rick Callender](#); [Tony Estremera](#); [John Varela](#); [Barbara Keegan](#); [Nai Hsueh](#); [Clerk of the Board](#); [Jim Beall](#); [Rebecca Eisenberg](#); [Sean Allen](#); [James Staten](#); [Lasha Heard](#); [William Armaline](#); [REDACTED]; [Rose Lynn](#); [Mulugeta Habtegabriel](#); [Walter Wilson](#); [Kaloma Smith](#); [Raj Jayadev](#); [sharon jackson](#); [Connie Newman](#)  
**Subject:** Just an FYI, Valley water will only fill court rooms with wasted cases  
**Date:** Wednesday, July 17, 2024 5:22:12 PM

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\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

**All defendants charged with trespass on Valley Water property will raise the defense of necessity. Juries will acquit, judges, DA and public defenders will be pissed that these case will clog up the courts. Back up defense of jury nullification. I'm an expert, or was, on this type of case. The water district will regret the day this law goes into effect.**

**In re Eichorn**

In re Eichorn, 69 Cal.App.4th 382 | Casetext Search + Citator

<https://search.app/nAwmjWufiCELUAYu6>

REV. JETHROE MOORE II

**From:** [Jethroe Moore](#)  
**To:** [Richard Santos](#); [Jim Beall](#); [Tony Estremera](#); [Barbara Keegan](#); [Jim Beall](#); [Nai Hsueh](#); [Clerk of the Board](#); [Rebecca Eisenberg](#); [Rick Callender](#); [Sandy Perry](#); [iq4rent sc](#); [Supervisor Otto Lee](#); [supervisor.simitian@bos.sccgov.org](#); [Supervisor Cindy Chavez](#); [Supervisor Susan Ellenberg](#); [Sean Allen](#); [William Armaline](#); [<abjpd1@gmail.com>](#); [Sylvia Arenas](#); [Raymond Goins](#); [Richard Konda](#)  
**Subject:** Fw: Video: Bodycam video shows moment before officers shoot suspect near RNC | CNN  
**Date:** Thursday, July 18, 2024 5:30:46 AM

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**[Proverbs 29:7](#) <sup>ESV</sup> A righteous man knows the rights of the poor; a wicked man does not understand such knowledge.**

The future for the Homelessness in Santa Clara County, police setup for encounter who will be accountable

<https://www.cnn.com/2024/07/17/us/video/bodycam-video-ohio-police-fatally-shoot-man-rnc-milwaukee-young-digvid>

**From:** [Michele King](#)  
**To:** [Board of Directors](#)  
**Subject:** FW: Placement of Survey Stakes  
**Date:** Thursday, July 18, 2024 11:46:19 AM  
**Attachments:** [image001.png](#)

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Hi Adelina,  
Please assign the below email to Chris Hakes/John Bourgeois & Lisa Bankosh.  
Thank you,  
Michele

**From:** Hanoch Raviv [REDACTED] >  
**Date:** July 18, 2024 at 9:15:06 AM PDT  
**To:** Debra Dake <[DDake@valleywater.org](mailto:DDake@valleywater.org)>, Nai Hsueh <[NHsueh@valleywater.org](mailto:NHsueh@valleywater.org)>  
**Cc:** "Raviv, Batsheva" [REDACTED] <[\[REDACTED\]@valleywater.org](mailto:[REDACTED]@valleywater.org)>  
**Subject:** Re: Placement of Survey Stakes

\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Adding Nai Hsueh, for District5.

Dear Nai Hsueh,

I am writing to express my concern and seek clarification regarding the certified receipt request letter I received from the law firm of "Miller Morton Caillat & Nevis LLP", claiming that my property at 902 E Estates Dr, Cupertino, CA, has an "encroachment" into the Calabasas Creek area. As the property owner, I am alarmed by the vagueness and tone of the letter, which I find insulting.

We have lived in this property for the last 26 years. In 2006, we replaced the fence bordering the water district, and the district partially shared the cost of the new fence. We did not enter the water district property or block any gates installed with the fence. Therefore, I am surprised and concerned that we are suddenly being accused of encroaching on the water district property and threatened with legal litigation.

I have tried to contact the district representative (Debra Dake) but did not receive a response. I hope that you can provide me with the necessary information and clarification to resolve this matter amicably.

Please respond to this letter at your earliest convenience. I appreciate your attention to this matter and look forward to a prompt resolution.

Sincerely,  
Hanoch Raviv

[image.png]

On Tue, Jul 16, 2024 at 11:13 AM Hanoch Raviv

<[REDACTED]> wrote:

Debra

For the record I refer to the attached letter.

[cid:190bcbf698936620efa1]

Hanoch Raviv

On Tue, Jul 16, 2024 at 10:32 AM Hanoch Raviv

<[REDACTED]> wrote:

Debra,

I got a letter from "Miller Morton Caillat & Nevis LLP" that mentioned my property.

Could you describe what the issue is related to?

On Tue, Jul 16, 2024 at 10:03 AM Debra Dake

<[DDake@valleywater.org](mailto:DDake@valleywater.org)<<mailto:DDake@valleywater.org>>> wrote:

Good morning, Ravi. Yes, I did receive your email.

Debra Dake (she her)

CPRU: Water Resources Protection

~~~~~

408.630.2893

408-314-4331 (cell)

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From: Hanoch Raviv [REDACTED]

Sent: Tuesday, July 16, 2024 9:13:18 AM

To: Debra Dake <[DDake@valleywater.org](mailto:DDake@valleywater.org)<<mailto:DDake@valleywater.org>>>; Raviv,

Batsheva <[rbatsheva@gmail.com](mailto:rbatsheva@gmail.com)<<mailto:rbatsheva@gmail.com>>>

Subject: Re: Placement of Survey Stakes

\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Debra,

This is Hanoch Raviv from 902 E Estates dr Cupertino next to the Calabzas creek. This is a test email to make sure you receive my email.

On Thu, Apr 18, 2019 at 9:19 AM Hanoch Raviv

[REDACTED] wrote:  
Resend as I was blacklisted on my previous attempt to send the email.

On Wed, Apr 17, 2019 at 10:12 PM Hanoch Raviv

[REDACTED] wrote:  
Debra

Before I answer your questions let me ask you one my self:

1. Why after so many years you move my fence? I live in this house for 21 years.
2. Is it worth the cost for the water district to move a fence just to make only cosmetic changes to the overall land location?
3. Is the new fence installed will be the similar to the already installed fence?
4. There is a tree outside my yard on the northern point that is on the location of the suggested fence. Are you going to remove the tree just to comply with the new mapping?
5. Few years back when I installed the new fence I got approval from the water district for the fence. The water district even paid its share for the fence. Why no one told me then that the fence is not in the correct location?
6. What about installed irrigation in the piece of land that would be relocated? Are you going to remove it as well?

See my responses to you inquiries below.

On Wed, Apr 17, 2019 at 3:26 PM Debra Dake-Morrell

<[DDake@valleywater.org](mailto:DDake@valleywater.org)<<mailto:DDake@valleywater.org>>> wrote:

Dear Mr. Raviv – We have received your acknowledgment allowing Valley Water to remove any items on our property and replace the fence behind your home. Thank you.

We have a couple of questions regarding the upcoming visit from the survey team:

1. Do you have any pets that will need to be in the house when the survey team arrives?

no

2. Do you have side gates that we can use to enter the property to install the stakes?

yes

3. If so, can you leave those gates unlocked or allow us to call you ahead of time so you can unlock the gate for the team?

all gates are unlocked. There is a blue ribbon on the road side that will assist to open the gate

4. Can you provide us your phone number?

Sure. 4085332709. Please let me know your number as well.

Thank you for your time.

Debra

[cid:ii\_190bc98f2d44cff311]

<<https://url.us.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>>

<<https://url.us.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>>

DEBRA DAKE-MORRELL

Water Resources Protection

Supervising Program Administrator

Community Projects Review

5750 Almaden

Expressway<<https://url.us.m.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>>

San José, CA<<https://url.us.m.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>> 95118-

3686<<https://url.us.m.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>>

Office<<https://url.us.m.mimecastprotect.com/s/P5TwC1wPILfnjNOEHLfBtjW2i9?domain=maps.google.com>>: 408.630.2893

[ddake@valleywater.org](mailto:ddake@valleywater.org)<<mailto:ddake@valleywater.org>>

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Hanoch Raviv

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Hanoch Raviv

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Hanoch Raviv

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Hanoch Raviv

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Hanoch Raviv



**From:** [AqMg Giberson](#)  
**To:** [Todd Sexauer](#); [Board of Directors](#)  
**Subject:** Pacheco Reservoir Expansion, Draft IS/MND; Geotech investigations  
**Date:** Friday, July 19, 2024 1:59:09 PM  
**Attachments:** [Pacheco Geotech ISMND 19July2024 comment letter.pdf](#)

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**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

Dear Mr. Sexauer:

The attached comment letter regarding Pacheco Reservoir Expansion, Draft IS/MND; Geotech investigations is submitted for your and the Valley Water Board's review.

We appreciate the opportunity to comment on the draft IS/MND and geotechnical investigations being considered for the Pacheco Reservoir Expansion project.

Sincerely,

Alan and Meg Giberson

July 19, 2024

Via electronic mail: [tsexauer@valleywater.org](mailto:tsexauer@valleywater.org)

Santa Clara Valley Water District  
Attention: Todd Sexauer  
5750 Almaden Expressway  
San Jose, CA 95118

**RE: Pacheco Reservoir Expansion, Draft IS/MND; Geotech investigations**

Dear Valley Water Directors and Mr. Sexauer:

We appreciate the opportunity to comment on the draft IS/MND and geotechnical investigations being considered for the Pacheco Reservoir Expansion project.

Unfortunately, unreasonable amounts of time and money are being spent on the high-cost, culturally and environmentally destructive proposed Pacheco Reservoir Expansion and dam construction (“Pacheco”). Funding yet more investigations and tests for this unnecessary project is not justifiable. Those funds should instead be spent on projects that promote local sustainable water, as mandated fifteen years ago in the Delta Reform Act—not on new storage for yet more imported Delta water. Other increases in storage (expansion projects at San Luis Reservoir and Los Vaqueros Reservoir, groundwater banking) would be far less expensive and would better serve residents of our county.

Pacheco Reservoir expansion is an extremely costly proposition that is not needed, making further expenditures on preliminary geological testing unwarranted. In 2023, Valley Water determined the Preliminary Lifecycle Storage Capacity Cost of Pacheco to be \$20,149/af, more than one and one-half times the cost of the next-highest calculated water source. (See: Valley Water’s Board of Director’s September 19, 2023, Agenda item 2.1, Attachment 4 PowerPoint, page 22 of 29.) The inexorably rising costs of Pacheco militate against further funding for this project—or its preliminary tests, which could last for two years.

California is looking to efficiency and lowered demand to secure our water future. For instance, State Water Resources Control Board’s (SWRCB) new regulation (approved about two weeks ago) requires suppliers to “adopt standards ... for the efficient use of water and performance measures for commercial, industrial, and institutional (CII) water use.” SWRCB’s regulation would “save approximately 3.9 million acre-feet of water from 2025 to 2050 – savings attributable to the proposed regulation only.”

<https://www.waterboards.ca.gov/conservation/regqs/docs/2024/sria.pdf>

Instead of seeking to expand an unsuitable dam, Valley Water should look to improve efficiency through groundwater recharge, wastewater recycling and reuse, along with stormwater capture and reuse.

In fact, the SWRCB documents declining water use in California. (According to the SWRCB, “[b]etween 2022 and 2050, per capita urban water use is projected to further decrease by 17.9 percent absent the [approved] regulation, and by as much as 21.8 percent under the [approved] regulation.”) Efficient use and other conservation measures will supply adequate water for Santa Clara County and its neighbors. (The SWRCB also estimates \$1.5 billion in savings from the implementation of its new regulation, compared with costs of its implementation.)

Environmental losses from the Pacheco proposal include inundation of over 1,500 acres of sensitive natural communities in a wildland that is home to endangered species and native plants. Geotech investigations would disturb native species with drilling and borehole digging. Irreplaceable cultural tribal resources are at risk; thousand-year-old petroglyphs and sites of traditional tribal observations would be lost.

With water use declining and the exorbitant cost of Pacheco inexorably rising, better options exist. New conservation regulations will continue to drive water use lower. There is no need for incredibly expensive storage options like Pacheco that will only increase costs, decrease water quality and cause irremediable cultural and environmental losses.

Sincerely,

Alan and Meg Giberson

## Adelina Del Real

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**From:** Tiffany Howard [REDACTED]  
**Sent:** Sunday, July 21, 2024 6:46 PM  
**To:** Tiffany Howard  
**Cc:** Board of Directors; jonathan.engleman@sanjoseca.gov; district9@sanjoseca.gov; Jim Beall; mayor@sanjoseca.gov  
**Subject:** Re: A Beatiful old friend died at the hands of the homeless along with our peac of mind last night  
**Attachments:** Video.mov

\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

I know you all don't really care about this and I am shouting into the wind. I did receive some placating responses from some of you when I sent this in January, but nothing has changed. It is so disappointing that we have to live with all of this with no changes.

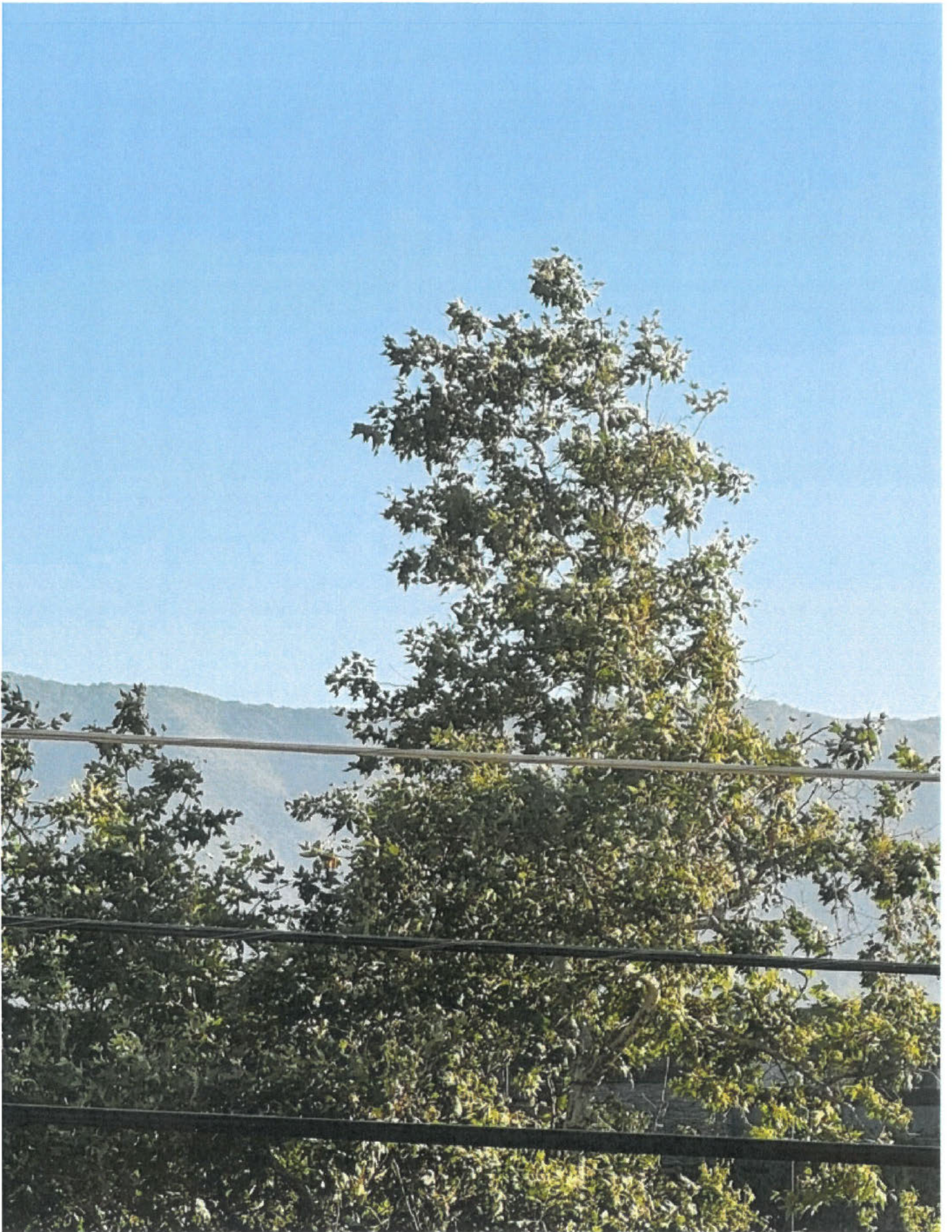
I know efforts are being made but nothing of substance is going to happen for more than a year but I notice Willow Glen has been cleared. Meanwhile those of us living in less affluent boroughs, in less desirable zip codes must continue to witness the death of a once beautiful watershed, listen to the mentally ill and drug addicted fight and scream all night while wait to be torched alive their fires.

This latest message includes the maniac encampment resident beating up a tree and the remnants of another tree that they killed and several others that their nefarious activities are killing.

It is so disappointing and enraging.











Sent from my iPhone

> On Jan 13, 2024, at 11:35 PM, Tiffany Howard <howardtiffanym@gmail.com> wrote:

>

>

> Hello,

> I am a resident of the neighborhood that backs up to the beginning of the Guadalupe River and ever since the City allowed the monstrosity of Almaden Ranch to be built behind our house we have had to endure constant unwanted neighbors behind our home, chipping away at our quality of life and peace of mind that as tax-paying, law-abiding citizens we should have. Instead, this is what we get, constantly. Trash, fighting, profanity, and best of all fires. The constant fires. None of us get really good sleep because we have to listen to them screaming at each other at night, and their dogs barking constantly, My children live under the stress of having to look at this out their windows. We have had rocks thrown at our windows by these people and had to replace two windows. They have shot arrows at our house, they throw rocks in our pool. The list goes on. You have the power to do something about this, DO IT! Get them off this land. Restore our peace of mind and our respect for those in government held positions of leadership in this city. I know you have heard from many of our neighbors and I have been in contact with Valley Water in the past but tonight was the last straw. There are a few beautiful historic trees that were the only thing that made me NOT hate my home from having to look out the window and see the hideous fish on the Bass Pro Building. Tonight there was another fire and as I have been telling people at Valley Water, it is only a matter of time before the homeless destroyed these historic trees. Well, they finally succeeded. It is also only a matter of time before one of our properties is impacted. In 2021 one of their fires came right up to our fence line and you still did nothing about this. Does someone from our neighborhood have to die before you are going to do anything about this? Even that probably would not matter. These people wander our neighborhood, steal things from our garages, and packages off our porches and yards and you do nothing. I am sure if this was your neighborhood, something would change.

>

> I am sending you photos so you can see what we live with. I am sure it won't make a difference because you have continued to allow this to happen. It is so infuriating that our quality of life, property values, and peace of mind mean nothing to those we entrust to lead our city.

>

> I am attaching pictures taken from my daughter's window so you can see what we have to look at and the scene of the fire last night that destroyed these beautiful trees.

>

> Disgusted, dismayed and disappointed,

>

> Tiffany Howard

> <image0 (1).jpeg>

> <image1.jpeg>

> <image0 (2).jpeg>

> <image2.jpeg>

> <image0 (4).jpeg>

**From:** [Wendy](#)  
**To:** [Board of Directors](#); [Mark Bilski](#); [Jim Beall](#)  
**Subject:** Re: Supreme Court decision to overrule Grant Pass vs. Johnson  
**Date:** Tuesday, July 23, 2024 1:13:24 AM  
**Attachments:** [image003.png](#)

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\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Hi Mark and the Board,

Why can't the water district apply pre-existing laws to allow for the sweeps of encampments? This district's job is fundamentally to keep the water ways clean, yet every day I see more trash dumped on the side of the creek banks, creek beds eroded by encampments built along its sides and now that the dry season is here, I have already seen one creek side bush fire and expect more to come. This trash isn't coming from nowhere, there is nothing legally stopping you from fining people for illegal dumping and a person's housed or unhoused status should not allow you from turning a blind eye to the open fires and trash they're pouring into the creeks. I don't understand what difference this ordinance will make when people are already illegally camping on valley water property and illegal dumping and trashing the sites.

Violence towards neighbors and violence towards Valley Water staff should not be excused and ignored just because they live on the creeks. **There is now nothing legally stopping Valley Water from performing sweeps, so what is stopping you from doing your jobs?**

Even the city of San Jose, of which this board has constantly complained about not taking enough action for, is working rapidly with building housing and has a set deadline for creek abatement while also having to deal with far more issues on its hand and limited budget.

I have had to hear Rebecca Eisenberg propose providing storage for the homeless along the creeks so they can keep their belongings safe. I have watched you guys cancel contracts with the city of San Jose for weekly trash clean ups and watched mountains of trash build up and attract vermin to this area that is now only picked up once a month. I've listened to Jim Bealle tell us about how we had to plan ahead in 2023 to make the best use of funding available to Valley Water in January of 2024 and seen nothing happen in the last 6 months from that. All this time, I've had someone knock on my door and threaten to kill themselves, had things stolen from my garage, had someone yell racist slurs at me and just yesterday had to call the police because another tent got pitched on private property in my HOA since it was right next to the creek. None of these experiences are unique and many of our neighbors have similar or worse tales. I have been asking the board if any planned action items are going to move forward for over a year now and seen nothing. **I'm frustrated to say the least, and am wondering when the board plans to focus on its job of keeping the creeks clean and take action.**

Best,  
Wendy

On Mon, Jul 22, 2024 at 2:35 PM Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)> wrote:

**Sent on Behalf of Director Keegan:**

Dear Wendy Li,

Thank you for reaching out to Valley Water regarding the significant ruling in *Grants Pass v. Johnson*. Our staff is closely studying this decision to understand how it may affect Valley Water on an operational level.

Relatedly, on July 9, 2024, the Valley Water Board of Directors considered adoption of a proposed Water Resources Protection Zones Ordinance aimed at reducing unsanctioned encampments and preventing re-encampments on Valley Water property. This ordinance is intended to address our agency's responsibility to protect water quality, fish, and wildlife as well as community concerns and concerns about the workplace safety of Valley Water's field staff.

The Board of Directors sent the ordinance back to the Environmental Creek Cleanup Committee to review, incorporate comments and concerns from the public and board, and provide clarity on the implementation process. The next Environmental Creek Cleanup Committee meeting is scheduled for Monday, July 29 from 9-11am in our boardroom. A planned board meeting to address the impacts of encampments in waterways is scheduled for Oct. 11, 2024. Valley Water hopes to bring together local leaders from Santa Clara County, South Bay cities, businesses, nonprofit groups, and advocacy organizations to discuss addressing unsheltered encampments in waterways, actionable ideas for collaboration, and working together towards real solutions.

Thank you again for your message. Please contact Assistant Operating Officer Mark Bilski at [mbilski@valleywater.org](mailto:mbilski@valleywater.org) with any follow-up information.

Sincerely,



Barbara Keegan

Director, District 2

C-24-0161

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**From:** Wendy <[REDACTED]>  
**Sent:** Monday, July 1, 2024 12:26 PM  
**To:** Jennifer Codianne <[JCodianne@valleywater.org](mailto:JCodianne@valleywater.org)>; Barbara Keegan <[BKeegan@valleywater.org](mailto:BKeegan@valleywater.org)>; Jim Beall <[JBeall@valleywater.org](mailto:JBeall@valleywater.org)>; Rebecca Eisenberg <[Reisenberg@valleywater.org](mailto:Reisenberg@valleywater.org)>; Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)>  
**Subject:** Supreme Court decision to overrule Grant Pass vs. Johnson

\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Hi there,

The supreme court has decided to overrule the Grant Pass vs. Johnson decision over the weekend, and will no longer outlaw the regulation of camping on public property.

The enforcement of generally applicable laws regulating camping on public property does not constitute “cruel and unusual punishment” prohibited by the Eighth Amendment.

In the past, Valley Water has upheld the Grant Pass vs. Johnson decision as a reason for their inaction towards abating encampments damaging the environment along the creek. Now that the court has decided to overrule the decision, **how is Valley water planning to enforce clean water laws and perform their duty of cleaning the creeks?**

We are just entering the dry season and I have already seen a bush fire started on the Guadalupe river. Last year alone, there were at least 3 brush fires in Los Gatos Creek trail encampment. These fires not only endanger people living on the creeks and by it, but destroy the environment engulfed by the flames. The only way to remove inevitable fire danger is to abate encampments in fire prone areas. **What is Valley Water planning to do to ensure the safety of the creeks and the people living by it?**

Thanks,

Wendy

--

Wendy Li

[REDACTED]

--

Wendy Li

[REDACTED]

**From:** [REDACTED]  
**To:** [Board of Directors](#)  
**Cc:** [Darin Taylor](#)  
**Subject:** RE: Questions, Issues and Concerns to be Addressed in Water Affordability Study  
**Date:** Tuesday, July 23, 2024 11:05:33 AM  
**Attachments:** [image003.png](#)

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**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

**Candice,**

Thank you for the reply.

Per your input, I now understand the completion date for the consultant's 'Water Affordability Report' will be June 25, 2025, almost a year later. I apologize for miss-understanding the expected project completion date input I obtained from Darin Taylor.

Without the important information from the 'Water Affordability Report' by Raftelis Financial Consultants, I'm very concerned that Valley Water Board and Staff will continue making major project infrastructure investment direction decisions in developing the 2050 Water Supply Master Plan. As one arguable example, continuation of \$2.7B PERP's planning funding, at a rate of \$80,000,000/year. In my assessment PREP money would be better spent on wastewater to potable water recovery expansion to the maximum available of 44,000 AF/Yr. by 2035 and then desalinization. Perhaps a scoping estimate of San Jose Water Company's residential billing increase for the San Jose metropolitan area could be quickly (i.e., one month) estimated by Raftelis Financial Consultants based on the projected WSMP 2050 Strategy of 'Local Control' for year 2045 using Valley Water's projected Wholesale ground water M&I (Zone W2) charge of \$8,835/ AF in 2023 constant economics.

**Is there any possibility that such a roughcut analysis could be performed and if so when?**

**Best regards,**

*Jim*

**Jim, Kuhl**, Civic Issue Activist and Environmental Advocate

---

**From:** Candice Kwok-Smith <ckwok-smith@valleywater.org> **On Behalf Of** Board of Directors  
**Sent:** Friday, July 19, 2024 10:00 AM  
**To:** [REDACTED]  
**Subject:** Re: Questions, Issues and Concerns to be Addressed in Water Affordability Study

**Sent on Behalf of Chair Hsueh:**

Dear Jim Kuhl,

Thank you for your email in which you expressed your thoughts about what should be addressed in the Water Affordability Study that is being conducted for Valley Water by Raftelis Financial Consultants, Inc. and Hazen and Sawyer. The study has just begun, and the final report is scheduled to be published in June of 2025 as reported by Mr. Darin Taylor at the July 9, 2024 Board meeting, not July 25th as mentioned in your email. Your inputs have been communicated to the consultants and will be addressed to the extent possible. However, it should be noted that the consultants' ability to address some of the questions you raise will likely be impacted by challenges such as: 1) funding limitations, in other words there is only so much money in the consultant contract, which requires careful balancing and prioritization of tasks to get the most out of the effort; 2) time limitations; 3) the availability and reliability of data which includes the willingness of retail partners to participate in the study.

Also, Valley Water's costs are just one component of a retailer's total costs, which means that the other components of the overall water rates charged by a retailer to the end customer as well as the retailer's rate structure itself are out of our control.

Valley Water is a regional wholesale provider, and while San Jose Water Company is significant, they are not the only retailer that we may want to consider to achieve a comprehensive view of affordability.

Finally, your comment that Valley Water must consider the full implications of planned infrastructure programs in the wider context of population growth or lack thereof has been noted, and is most appropriately addressed as part of the Water Supply Master Plan 2050 development.

Thank you for your interest and thoughtful input into this effort.

Sincerely,



Nai Hsueh  
Chair, District 5

C-24-0168

---

**From:** [REDACTED]

**Sent:** Thursday, July 11, 2024 9:06 AM

**To:** Clerk of the Board <[clerkoftheboard@valleywater.org](mailto:clerkoftheboard@valleywater.org)>; Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)>; John Varela <[jvarela@valleywater.org](mailto:jvarela@valleywater.org)>; Barbara Keegan <[BKeegan@valleywater.org](mailto:BKeegan@valleywater.org)>; Richard Santos <[rsantos@valleywater.org](mailto:rsantos@valleywater.org)>; Jim Beall <[JBeall@valleywater.org](mailto:JBeall@valleywater.org)>; Nai Hsueh <[NHsueh@valleywater.org](mailto:NHsueh@valleywater.org)>; Tony Estremera

<[TEstremera@valleywater.org](mailto:TEstremera@valleywater.org)>; Rebecca Eisenberg <[Reisenberg@valleywater.org](mailto:Reisenberg@valleywater.org)>

**Cc:** Rachael Gibson <[rgibson@valleywater.org](mailto:rgibson@valleywater.org)>; Matt Keller <[MKeller@valleywater.org](mailto:MKeller@valleywater.org)>; Michael Potter <[MPotter@valleywater.org](mailto:MPotter@valleywater.org)>; Aaron Baker <[ABaker@valleywater.org](mailto:ABaker@valleywater.org)>; Vincent Gin <[VGin@valleywater.org](mailto:VGin@valleywater.org)>; Kirsten Struve <[KStruve@valleywater.org](mailto:KStruve@valleywater.org)>

**Subject:** Questions, Issues and Concerns to be Addressed in Water Affordability Study

**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

**To: Valley Water Board Members**

**Date: Thursday, July 11, 2024**

**Subject: Questions, Issues and Concerns to be Addressed in Water Affordability Study**

### **San Francisco Public Utilities Commission Water Affordability**

Attached is an 'Opinion' article by Peter Drekmeier, former mayor of Palo Alto and Policy Director for Tuolumne River Trust, published in the "SF Chronicle." You might find it informative. I have highlighted in yellow the common significant concern areas Valley Water (VW) has with San Francisco Public Utility Commission's water supply project investment plans and consequences on water billing rates and water supply demand.

### **Water Affordability in North County**

To answer the question of future water *affordability*, the change in the consumer's retail price must be predicted. San Jose Water Company (SJWC) should be selected as the water retailer to assess the impact of Valley Waters projected wholesale groundwater price increases because they serve over a million consumers and are a price leader.

**The following essential questions need to be addressed in Valley Water's expert water affordability report:**

- 1. How will residents water bills from SJWC be impacted?**
- 2. For 'Essential Workers', what will the projected increase in water cost impact be on multi-unit rental housing and single-family housing with minimal or no landscaping?**
- 3. What will be the impact on affordable housing rentals?**
- 4. What will be the consequences to single-family property home owners with landscaped irrigated yards?**
- 5. What will the consequences to San Jose metropolitan area's economy and cost-of-living?**

**The three items (i.e., A, B, & C) identified below also need to be addressed within the report.**

- A. End Consumer North County Water Cost Projection Encompass Planned plus All Anticipated Projects**

A roughcut water *affordability* analysis projects a 136% increase in San Jose Water Company's

water rates caused by Valley Water’s projected North County M&I (Zone W2) groundwater wholesale price after 2040. **In the *affordability study all anticipated programs fully loaded costs, such as the Delta Tunnel (\$1,800/AF) and the proposed Plan B Water Conservation Program (\$1,338/AF), must be included in order to fully comprehend the potential water affordability impact.*** Major decisional programs, such as PREP and SF Bay Desalinization, must be analyzed in a manner that they can be easily unlayered to identify their specific fiscal impact on San Jose Water Company water billing rates to facilitate future project selection decision making.

## **B. San Jose Water Company Water Conservation Billing Structure Impact on Water Supply Demand**

San Jose Water Company (SJWC) has an aggressive water conservation program built into their current water billing rate structure. The billing rate is designed to economically drive down high household water consumption by significantly charging more per unit of water consumed above a threshold of 85 g/d/p (i.e., 21 Ccf over a two-month billing period for an average household size of 3.1 adults). SJWC’s billing structure goal has been designed to achieve SB1157’s urban water rationing goal of reducing water consumption from the current average usage of 47 to 42 gallons per capita per day (g/p/d) by 2030. For SJWC, this 2030 goal translates to 11 CcF over 2-months applicable for an average household of 3.1 individuals. SJWC’s progressive socioeconomic billing methodology will likely be made more progressive over time. To offset VW’s actual increased groundwater costs burden will most likely be placed on high-end, not low-end water users, to achieve the SB1157 legislated goal.

1. This progressive water conservation billing strategy could have potential significant unintended consequences. 40% to 50% of San Jose Metropolitan Area residential water usage is due to irrigation, a commonly accept number. It is reasonable to assume high water consumptions users are primarily property owners who are irrigating yards. Now assume SJWC’s progressive water conservation billing program is very successful making irrigation of yards so expensive that all landscaping water usage ceases. The impacted set of high consumption water customers generate a higher portion of SJWC’s revenue because of the characteristics of the billing structure. As a logical analytical test, assume this 50% of SJWC’s revenue is lost from those high-end water users. That lost revenue must be recovered by SJWC to remain solvent and profitable. As the revenue ends for these highly profitable customers, SJWC must increase all their customer’s water bills to compensate. This in turn drives down water consumption even more into a ‘death-spiral’. This possible phenomena change will, of course, be gradual in the ‘real-world’ but its specter must be understood and managed long-term by both SJWC and VW. **Preventing the possible ‘death-spiral’ phenomena must be satisfactorily addressed in the affordability study. For financial health of SJWC and VW, overall North County water consumption levels must stay relatively stable in total water volume requirements across the geographic area long-term unless VW’s ability to supply the required amount ceases to be sufficient.**

## **C. San Jose Metropolitan Area Population Growth Uncertainty and Projected Water Supply**

## Requirements

VW and SJWC have been assuming the population they serve will grow 26% between 2020 and 2040 in their Water Management Utility Plans per the Association Of Bay Area Governments (ABAG) planning assumption guidelines. However, San Jose's population declined 4.3% since 2020 according to the US Census Bureau. Independent researcher, Gaeton Lion, predicts it will be flat till 2060 (R7). The California Department Demographic Research Unit (DRU) official population forecast for California is flat after 2036.

The very high cost-of-living has been causing a migration of people out of the Bay Area. San Jose Metropolitan Area population is falling, not rising. All the prior ABAG population and housing growth predictions and planning assumptions are no longer valid. Mayor Matt Mahany calls ABAG's RHNA a fantasy. Valley Water must consider the full implications of their planned infrastructure programs in this wider context of non-population growth. **An initially declining through 2035 and then and flat population growth through 2060 should be assessed as an alternative planning assumption in the water *affordability* study and consequences predicted.**

## Conclusion

Valley Water's water *affordability* report is scheduled to be published on July 25<sup>th</sup> under Darin Taylor's leadership. The report has the potential to provide very significant information. The information yielded will enable VW Board and Staff to make better project selection decision by accurately projecting end consumer water rates and the consequences in the San Jose Metropolitan Area. I hope you find this input on water *affordability* report informational requirements of some value.

**Best regards,**

*Jim*

**Jim Kuhl**, Civic Issue Activist and Environmental Advocate

**From:** [Sally Castro](#)  
**To:** [Candice Kwok-Smith](#); [Adelina Del Real](#)  
**Cc:** [Bhavani Yerrapotu](#); [Kathy Nguyen](#); [Lisa Bose](#)  
**Subject:** FW: Upper Guadalupe Project Delay  
**Date:** Tuesday, July 23, 2024 1:07:42 PM

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**From:** [REDACTED]  
**Date:** July 16, 2024 at 10:56:11 AM CST  
**To:** Jennifer Codianne <[JCodianne@valleywater.org](mailto:JCodianne@valleywater.org)>, Meenakshi Ganjoo <[mganjoo@valleywater.org](mailto:mganjoo@valleywater.org)>  
**Cc:** Bhavani Yerrapotu <[BYerrapotu@valleywater.org](mailto:BYerrapotu@valleywater.org)>, Barbara Keegan <[BKeegan@valleywater.org](mailto:BKeegan@valleywater.org)>, Sali Schille <[sinolean@gmail.com](mailto:sinolean@gmail.com)>, [almosline@comcast.net](mailto:almosline@comcast.net)  
**Subject: Upper Guadalupe Project Delay**

\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\*

Hi Jennifer,

I represent neighbors in San Jose sanjoseneighbors.org that are very concerned about the delay of the Upper Guadalupe Project (UGP). I watched the video from last Tuesday Item 2.1 on holding a Public hearing to allocate of \$45 million funding from UGP to the Llagas Basin project. As you can imagine we are concerned about removing funding from UGP and we have some question. Back in 2019 the neighbors were told that if the approve Hope Village being proposed on the southwest corner of Lelong and Willow that such Village will be there

ONLY until 2021 when the UGP starts. That was the promise being made at the time. Fast forward to today where we are being told that the UFP will be delayed until 2032 due to USACE. Without having to go through a formal Public Records Request I am hope you can answer some questions that I can share with the community.

- How often does Valley Water communicate with the USACE regarding this flood control project?
- Through which channels (meetings, emails, formal reports) are these communications conducted?
- Can you provide records or summaries of the communications between Valley Water and the USACE?
- Are there any formal agreements or memoranda of understanding in place with the USACE for this project?
- What has been the average response time from the USACE to Valley Water's communications?
- Have there been instances where the USACE did not respond within an expected timeframe? If so, how were these handled?
  
- What specific issues or requirements from the USACE are causing the delays in the project?
- Are these delays due to administrative processes, technical evaluations, funding issues, or other factors?
- Which specific milestones in the project have been affected by these delays?
- Can you provide a timeline showing the original vs. revised schedule for these milestones?
- What feedback or requirements has the USACE provided that necessitated changes or caused delays in the project?
- How has Valley Water addressed or is planning to address these requirements?
  
- What is the impact of these delays on the overall timeline and budget of the flood control project?
- How do these delays affect the communities and areas that the project is meant to protect?
- What steps is Valley Water taking to mitigate the impact of these delays?
- Are there any alternative approaches or solutions being considered to expedite the project?
  
- Are there any collaborative efforts or joint task forces between Valley Water and the USACE to streamline the project's progress?
- How can stakeholders and the public support or assist in addressing these delays?
- Has Valley Water escalated the issue within the USACE or sought

intervention from higher authorities to resolve the delays?

- What has been the outcome of these escalation efforts, if any?
- How is Valley Water keeping the public informed about the progress and delays of the flood control project?
- What accountability measures are in place for both Valley Water and the USACE to ensure the project proceeds as efficiently as possible?

Thank you for your time and consideration.

Mansour Nasser



# **OUTGOING BOARD CORRESPONDENCE**

**From:** [Candice Kwok-Smith](#) on behalf of [Board Correspondence](#)  
**To:** [Darin Taylor](#); [Carmen Narayanan](#)  
**Cc:** [Board of Directors](#)  
**Subject:** FW: Questions, Issues and Concerns to be Addressed in Water Affordability Study  
**Date:** Friday, July 19, 2024 10:01:12 AM  
**Attachments:** [image001.png](#)

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Good morning Darin and Carmen,

C-24-0168 has been approved, sent and closed.

Thanks,  
Candice

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**From:** Candice Kwok-Smith **On Behalf Of** Board of Directors  
**Sent:** Friday, July 19, 2024 10:00 AM  
**To** [REDACTED]t  
**Subject:** Re: Questions, Issues and Concerns to be Addressed in Water Affordability Study

**Sent on Behalf of Chair Hsueh:**

Dear Jim Kuhl,

Thank you for your email in which you expressed your thoughts about what should be addressed in the Water Affordability Study that is being conducted for Valley Water by Raffelis Financial Consultants, Inc. and Hazen and Sawyer. The study has just begun, and the final report is scheduled to be published in June of 2025 as reported by Mr. Darin Taylor at the July 9, 2024 Board meeting, not July 25th as mentioned in your email. Your inputs have been communicated to the consultants and will be addressed to the extent possible. However, it should be noted that the consultants' ability to address some of the questions you raise will likely be impacted by challenges such as: 1) funding limitations, in other words there is only so much money in the consultant contract, which requires careful balancing and prioritization of tasks to get the most out of the effort; 2) time limitations; 3) the availability and reliability of data which includes the willingness of retail partners to participate in the study.

Also, Valley Water's costs are just one component of a retailer's total costs, which means that the other components of the overall water rates charged by a retailer to the end customer as well as the retailer's rate structure itself are out of our control.

Valley Water is a regional wholesale provider, and while San Jose Water Company is significant, they are not the only retailer that we may want to consider to achieve a comprehensive view of affordability.

Finally, your comment that Valley Water must consider the full implications of planned infrastructure programs in the wider context of population growth or lack thereof has been noted, and is most appropriately addressed as part of the Water Supply Master Plan 2050 development.

Thank you for your interest and thoughtful input into this effort.

Sincerely,



Nai Hsueh  
Chair, District 5

C-24-0168

**From:** [REDACTED]

**Sent:** Thursday, July 11, 2024 9:06 AM

**To:** Clerk of the Board <[clerkoftheboard@valleywater.org](mailto:clerkoftheboard@valleywater.org)>; Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)>; John Varela <[jvarela@valleywater.org](mailto:jvarela@valleywater.org)>; Barbara Keegan <[BKeegan@valleywater.org](mailto:BKeegan@valleywater.org)>; Richard Santos <[rsantos@valleywater.org](mailto:rsantos@valleywater.org)>; Jim Beall <[JBeall@valleywater.org](mailto:JBeall@valleywater.org)>; Nai Hsueh <[NHsueh@valleywater.org](mailto:NHsueh@valleywater.org)>; Tony Estremera <[TEstremera@valleywater.org](mailto:TEstremera@valleywater.org)>; Rebecca Eisenberg <[Reisenberg@valleywater.org](mailto:Reisenberg@valleywater.org)>  
**Cc:** Rachael Gibson <[rgibson@valleywater.org](mailto:rgibson@valleywater.org)>; Matt Keller <[MKeller@valleywater.org](mailto:MKeller@valleywater.org)>; Michael Potter <[MPotter@valleywater.org](mailto:MPotter@valleywater.org)>; Aaron Baker <[ABaker@valleywater.org](mailto:ABaker@valleywater.org)>; Vincent Gin <[VGin@valleywater.org](mailto:VGin@valleywater.org)>; Kirsten Struve <[KStruve@valleywater.org](mailto:KStruve@valleywater.org)>

**Subject:** Questions, Issues and Concerns to be Addressed in Water Affordability Study

**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

**To: Valley Water Board Members**

**Date: Thursday, July 11, 2024**

**Subject: Questions, Issues and Concerns to be Addressed in Water Affordability Study**

### **San Francisco Public Utilities Commission Water Affordability**

Attached is an 'Opinion' article by Peter Drekmeier, former mayor of Palo Alto and Policy Director for Tuolumne River Trust, published in the "SF Chronicle." You might find it informative. I have highlighted in yellow the common significant concern areas Valley Water (VW) has with San Francisco Public Utility Commission's water supply project investment plans and consequences on water billing rates and water supply demand.

### **Water Affordability in North County**

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impact of Valley Waters projected wholesale groundwater price increases because they serve over a million consumers and are a price leader.

**The following essential questions need to be addressed in Valley Water’s expert water affordability report:**

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- 4. What will be the consequences to single-family property home owners with landscaped irrigated yards?**
- 5. What will the consequences to San Jose metropolitan area’s economy and cost-of-living?**

**The three items (i.e., A, B, & C) identified below also need to be addressed within the report.**

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A roughcut water *affordability* analysis projects a 136% increase in San Jose Water Company’s water rates caused by Valley Water’s projected North County M&I (Zone W2) groundwater wholesale price after 2040. **In the *affordability* study all anticipated programs fully loaded costs, such as the Delta Tunnel (\$1,800/AF) and the proposed Plan B Water Conservation Program (\$1,338/AF), must be included in order to fully comprehend the potential water *affordability* impact.** Major decisional programs, such as PREP and SF Bay Desalinization, must be analyzed in a manner that they can be easily unlayered to identify their specific fiscal impact on San Jose Water Company water billing rates to facilitate future project selection decision making.

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1. This progressive water conservation billing strategy could have potential significant unintended consequences. 40% to 50% of San Jose Metropolitan Area residential water

usage is due to irrigation, a commonly accept number. It is reasonable to assume high water consumptions users are primarily property owners who are irrigating yards. Now assume SJWC's progressive water conservation billing program is very successful making irrigation of yards so expensive that all landscaping water usage ceases. The impacted set of high consumption water customers generate a higher portion of SJWC's revenue because of the characteristics of the billing structure. As a logical analytical test, assume this 50% of SJWC's revenue is lost from those high-end water users. That lost revenue must be recovered by SJWC to remain solvent and profitable. As the revenue ends for these highly profitable customers, SJWC must increase all their customer's water bills to compensate. This in turn drives down water consumption even more into a 'death-spiral'. This possible phenomena change will, of course, be gradual in the 'real-world' but its specter must be understood and managed long-term by both SJWC and VW.

**Preventing the possible 'death-spiral' phenomena must be satisfactorily addressed in the affordability study. For financial health of SJWC and VW, overall North County water consumption levels must stay relatively stable in total water volume requirements across the geographic area long-term unless VW's ability to supply the required amount ceases to be sufficient.**

### C. San Jose Metropolitan Area Population Growth Uncertainty and Projected Water Supply Requirements

VW and SJWC have been assuming the population they serve will grow 26% between 2020 and 2040 in their Water Management Utility Plans per the Association Of Bay Area Governments (ABAG) planning assumption guidelines. However, San Jose's population declined 4.3% since 2020 according to the US Census Bureau. Independent researcher, Gaeton Lion, predicts it will be flat till 2060 (R7). The California Department Demographic Research Unit (DRU) official population forecast for California is flat after 2036.

The very high cost-of-living has been causing a migration of people out of the Bay Area. San Jose Metropolitan Area population is falling, not rising. All the prior ABAG population and housing growth predictions and planning assumptions are no longer valid. Mayor Matt Mahany calls ABAG's RHNA a fantasy. Valley Water must consider the full implications of their planned infrastructure programs in this wider context of non-population growth. **An initially declining through 2035 and then and flat population growth through 2060 should be assessed as an alternative planning assumption in the water *affordability* study and consequences predicted.**

### Conclusion

Valley Water's water *affordability* report is scheduled to be published on July 25<sup>th</sup> under Darin Taylor's leadership. The report has the potential to provide very significant information. The information yielded will enable VW Board and Staff to make better project selection decision by accurately projecting end consumer water rates and the consequences in the San Jose Metropolitan Area. I hope you find this input on water *affordability* report informational requirements of some value.

**Best regards,**

*Jim*

**Jim Kuhl**, Civic Issue Activist and Environmental Advocate

**From:** [Candice Kwok-Smith](#) on behalf of [Board Correspondence](#)  
**To:** [Mark Bilski](#); [Jennifer Codianne](#); [Kathy Nguyen](#); [Cecilia Rocha](#)  
**Cc:** [Board of Directors](#)  
**Subject:** FW: Supreme Court decision to overrule Grant Pass vs. Johnson  
**Date:** Monday, July 22, 2024 2:36:23 PM  
**Attachments:** [image003.png](#)

---

Good afternoon,

C-23-0161 has been approved, sent and closed.

Thanks,  
Candice

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**From:** Candice Kwok-Smith **On Behalf Of** Board of Directors  
**Sent:** Monday, July 22, 2024 2:35 PM  
**To:** [REDACTED]  
**Subject:** Re: Supreme Court decision to overrule Grant Pass vs. Johnson

**Sent on Behalf of Director Keegan:**

Dear Wendy Li,

Thank you for reaching out to Valley Water regarding the significant ruling in *Grants Pass v. Johnson*. Our staff is closely studying this decision to understand how it may affect Valley Water on an operational level.

Relatedly, on July 9, 2024, the Valley Water Board of Directors considered adoption of a proposed Water Resources Protection Zones Ordinance aimed at reducing unsanctioned encampments and preventing re-encampments on Valley Water property. This ordinance is intended to address our agency's responsibility to protect water quality, fish, and wildlife as well as community concerns and concerns about the workplace safety of Valley Water's field staff.

The Board of Directors sent the ordinance back to the Environmental Creek Cleanup Committee to review, incorporate comments and concerns from the public and board, and provide clarity on the implementation process. The next Environmental Creek Cleanup Committee meeting is scheduled for Monday, July 29 from 9-11am in our boardroom. A planned board meeting to address the impacts of encampments in waterways is scheduled for Oct. 11, 2024. Valley Water hopes to bring together local leaders from Santa Clara County, South Bay cities, businesses, nonprofit groups, and advocacy organizations to discuss addressing unsheltered encampments in waterways, actionable ideas for collaboration, and working together towards real solutions.

Thank you again for your message. Please contact Assistant Operating Officer Mark Bilski at [mbilski@valleywater.org](mailto:mbilski@valleywater.org) with any follow-up information.

Sincerely,



Barbara Keegan  
Director, District 2

C-24-0161

---

**From:** Wendy [REDACTED]  
**Sent:** Monday, July 1, 2024 12:26 PM  
**To:** Jennifer Codianne <[JCodianne@valleywater.org](mailto:JCodianne@valleywater.org)>; Barbara Keegan <[BKeegan@valleywater.org](mailto:BKeegan@valleywater.org)>; Jim Beall <[JBeall@valleywater.org](mailto:JBeall@valleywater.org)>; Rebecca Eisenberg <[Reisenberg@valleywater.org](mailto:Reisenberg@valleywater.org)>; Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)>  
**Subject:** Supreme Court decision to overrule Grant Pass vs. Johnson

**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

Hi there,

The supreme court has decided to overrule the Grant Pass vs. Johnson decision over the weekend, and will no longer outlaw the regulation of camping on public property.

**The enforcement of generally applicable laws regulating camping on public property does not constitute “cruel and unusual punishment” prohibited by the Eighth Amendment.**

In the past, Valley Water has upheld the Grant Pass vs. Johnson decision as a reason for their inaction towards abating encampments damaging the environment along the creek. Now that the court has decided to overrule the decision, **how is Valley water planning to enforce clean water laws and perform their duty of cleaning the creeks?**

We are just entering the dry season and I have already seen a bush fire started on the Guadalupe river. Last year alone, there were at least 3 brush fires in Los Gatos Creek trail encampment. These fires not only endanger people living on the creeks and by it, but destroy the environment engulfed by the flames. The only way to remove inevitable fire danger is to abate encampments in fire prone areas. **What is Valley Water planning to do to ensure the safety of the creeks and the people living by it?**

Thanks,  
Wendy

--

Wendy Li



**From:** [Candice Kwok-Smith](#) on behalf of [Board Correspondence](#)  
**To:** [Mark Bilski](#); [Jennifer Codianne](#); [Cecilia Rocha](#); [Kathy Nguyen](#)  
**Cc:** [Board of Directors](#)  
**Subject:** FW: Safety Issue & Re-encampment of fire abated area near Salamoni & Berryessa BART  
**Date:** Tuesday, July 23, 2024 12:04:54 PM  
**Attachments:** [image001.png](#)

---

Good afternoon,

C-24-0178 has been approved, sent and closed.

Thanks,  
Candice

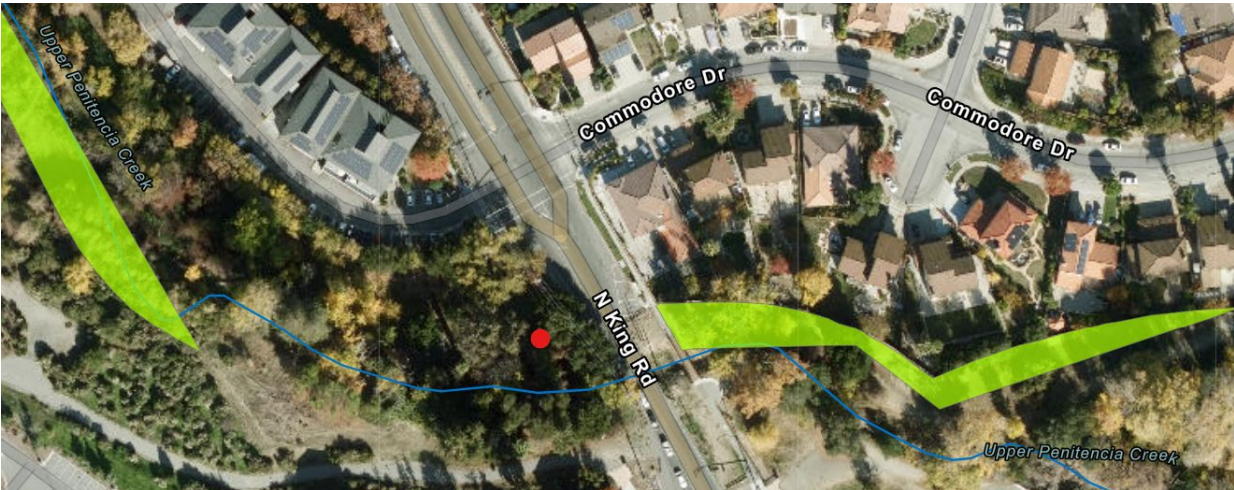
---

**From:** Candice Kwok-Smith **On Behalf Of** Board of Directors  
**Sent:** Tuesday, July 23, 2024 12:04 PM  
**To:** [REDACTED]  
**Subject:** Re: Safety Issue & Re-encampment of fire abated area near Salamoni & Berryessa BART

**Sent on Behalf of Vice Chair Santos:**

Dear Thunder Parley,

Thank you for reaching out to Valley Water and sharing your concerns regarding encampment activity at the coordinates you provided. Please note that Valley Water does not own property rights in the area of Penitencia Creek immediately to the west of N. King Road. We believe this area is owned by the City of San Jose but please contact them to confirm. For reference, this GIS map shows Valley Water-owned lands in green: <https://gis.valleywater.org/FeeEasement/>.



Valley Water owns and manages 295 miles of the more than 800 miles of creeks in Santa Clara County and maintains property where it has built flood protection projects and possesses land rights. The remaining stretches of creeks are owned by Santa Clara County, private entities, cities in which the creeks are located, and other public agencies. The Upper Penitencia Creek Trail is managed by City of San José. Encampment and trail safety issues can be reported on the City's BeautifySJ website: <https://www.sanjoseca.gov/your-government/departments-offices/parks-recreation-neighborhood-services/beautifysj>. Please work with the City of San José to understand other land ownership responsibilities in the area of concern.

Regarding your observation of potentially criminal activities, if you witness illegal activity or a threat to public health and safety, please contact the police and, if possible, file an official report. Concerns relating to unwanted or illegal behaviors are best handled by City resources. Because Valley Water does not possess police powers, we rely on cities and the County to provide law enforcement and public safety services.

Thank you again for your message. You may contact Assistant Operating Officer Mark Bilski at [mbilski@valleywater.org](mailto:mbilski@valleywater.org) with any follow-up information. You can also report concerns to Valley Water via our online system at <https://access.valleywater.org/s/>.

Sincerely,



Richard Santos  
District 3, Vice Chair

C-24-0178

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**From:** Thunder Parley [REDACTED]  
**Sent:** Tuesday, July 16, 2024 2:27 PM  
**To:** District4 <[district4@sanjoseca.gov](mailto:district4@sanjoseca.gov)>; beautifysj <[beautifysj@sanjoseca.gov](mailto:beautifysj@sanjoseca.gov)>; Flores Shelton, Andrea <[Andrea.FloresShelton@sanjoseca.gov](mailto:Andrea.FloresShelton@sanjoseca.gov)>; vtabart@vtabsv.com; Rick Callender <[rcallender@valleywater.org](mailto:rcallender@valleywater.org)>; Michele King <[MKing@valleywater.org](mailto:MKing@valleywater.org)>; Board of Directors <[board@valleywater.org](mailto:board@valleywater.org)>  
**Subject:** Re: Safety Issue & Re-encampment of fire abated area near Salamoni & Berryessa BART

**\*\*\* This email originated from outside of Valley Water. Do not click links or open attachments unless you recognize the sender and know the content is safe. \*\*\***

ESCALATION: My SO was out walking and one of the encampers started circling her on a bike yelling "this is her". She retreated to the BART parking lot at Berryessa and he continued to stalk her onto Salamoni as the other encamper met up with him and they paced her. She smartly kept walking randomly around the area until she could make a clean break to our house out of their sight.

**WHY ARE THESE TRESPASSING ENCAMPERS ALLOWED TO LIVE ABOVE THE LAW AND CONTINUE TO PRESENT A SAFETY ISSUE TO RESIDENTS?**

**This is clearly stalking.** [https://leginfo.legislature.ca.gov/faces/codes\\_displaySection.xhtml?sectionNum=646.9.&lawCode=PEN](https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=646.9.&lawCode=PEN)

On Mon, Jul 15, 2024 at 12:54 PM Thunder Parley [REDACTED] wrote:

Escalating since I am sick of the back and forth over who owns this area (and the non-responsiveness) and keeping the massive fire and safety hazard abated next to the VTA BART trail in what appears to be Valley Water area.

Screenshot of map attached.

Google Maps Link: <https://maps.app.goo.gl/tC44PXJz6qcB2Pr98>

ESCALATE: I just came back from a neighborhood walk. To check on the situation. The 2 individuals started yelling at me from the woods between Penitencia Creek & the trail, while I remained on the trail, I politely told them they are not allowed to be there. it is an abated area and no trespassing. They said well "there's no f-ing signs". I said well I'm sure they'll be back up soon. As I peacefully walked away with my lady I was verbally insulted as well as some other hard to hear threats about if I come back.

My lady is now scared to walk the trail for her daily mental health walk.

I want this gross pollution, fire and safety hazard to be RE-abated today.

We were promised that this would be kept clear as posted (also attached).

I look forward to being able to walk the BART/VTA/SJ/ValleyWater trail without threats and harassment from trespassers.

Permanent signage should be added as well so that SJPD is able to properly respond to trespassing calls.

Thank you!

Thunder Parley

On Mon, Jul 15, 2024 at 10:39 AM Thunder Parley [REDACTED] wrote:

ESCALATE: I am getting reports from females of 2 creepy dudes staring them down from this location. A structure built with screen doors, a flatscreen tv and a propane tank. Given the proximity to the creek and fire hazard to the community, I request this be re-abated as posted immediately.

Thank you!

Thunder

On Tue, Jun 25, 2024 at 10:23 AM Thunder Parley [REDACTED] wrote:

See attached photo. It is a couple years into the woods on the trail side of the creek.

This area near our community was previously abated, there is a new (green) tent, disguised with large palm fronds in this very fire prone area.

Given the recent heat wave, proximity to houses and fire history at this location I would like us to immediately re-abate this as was posted (trespassing).

I would also consider it a security issue for the many local residents and BART passengers that use this trail.

Thank you!

Thunder Parley