



QUARTERLY REPORT OF OPERATIONS

FY 2023-2024, 4th Quarter



**Quarterly Report of Operations
LAVWMA Pumping and Conveyance System**

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Current Quarter Metrics

Monthly export flow decreased each month from Apr-Jun, which is typical for this time of the year due to DERWA recycled water demands increasing (Figure 1). Calculated flows for Dublin San Ramon (DSR) were zero for Jun-2024 (Figure 1, left plot). Pump efficiency remained consistent each month at about 73-74%.

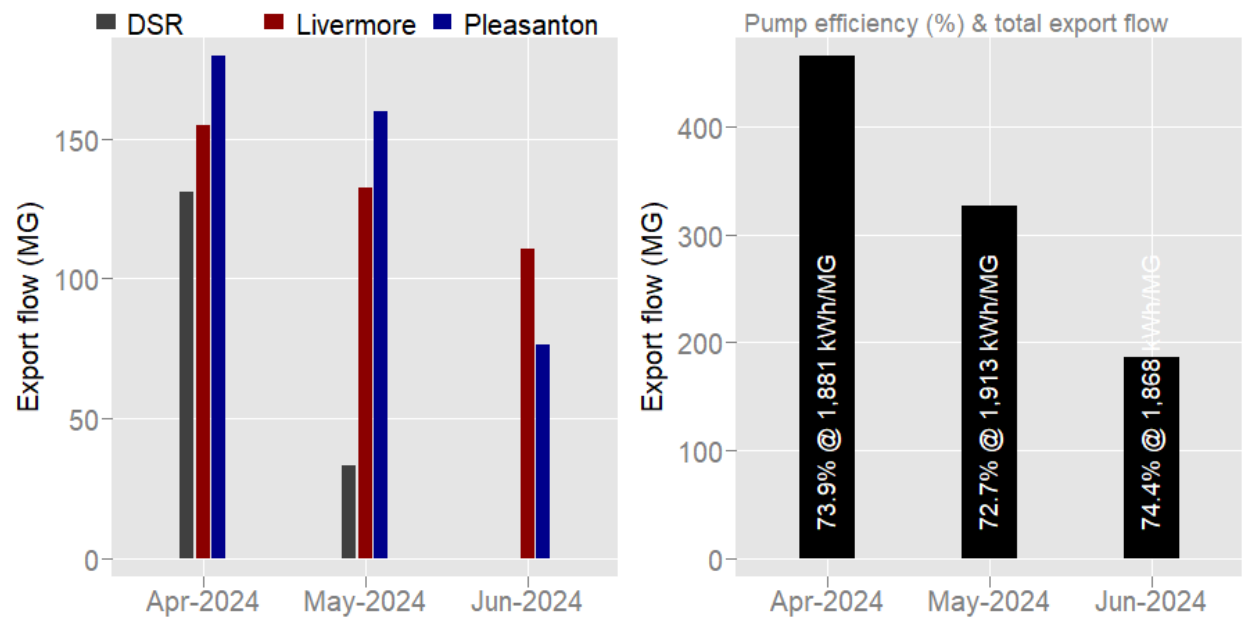


Figure 1 - LAVWMA Quarter 4 FYE 2024 export flows for Apr-2024, May-2024, & Jun-2024; monthly flows shown by source (left plot) and as total (right plot) with pump efficiency (%) at noted kilowatt hour (kWh) per million gallons (MG)

Most usage for either feeder (service) was done during off-peak or super off-peak hours (Figure 2). Feeder A had no usage during the Jun-2024 billing cycle (14-May – 11-Jun; Figure 2; Table 2). Feeder B provides power to the building, so there will always be minor charges for building equipment during peak and (if applicable) partial peak periods.

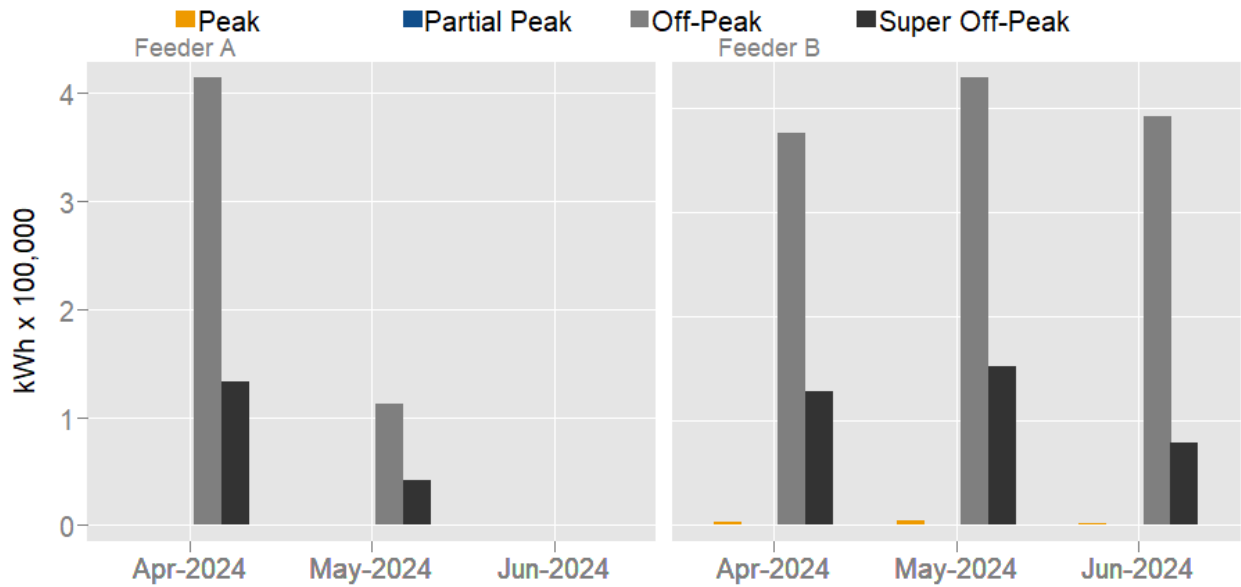


Figure 2 - LAVWMA Quarter 4 FYE 2024 electric usage as kilowatt hour (kWh) for Apr-2024, May-2024, & Jun-2024; monthly usage displayed separately for feeder A (left) & feeder B (right) by time of use: peak, partial peak, off-peak; & super off-peak

Labor and utilities covered the largest fraction of overall cost in Q4 FYE 2024 (Figure 3, 3 left-most plots). There were no expenses for non-routine work this quarter.

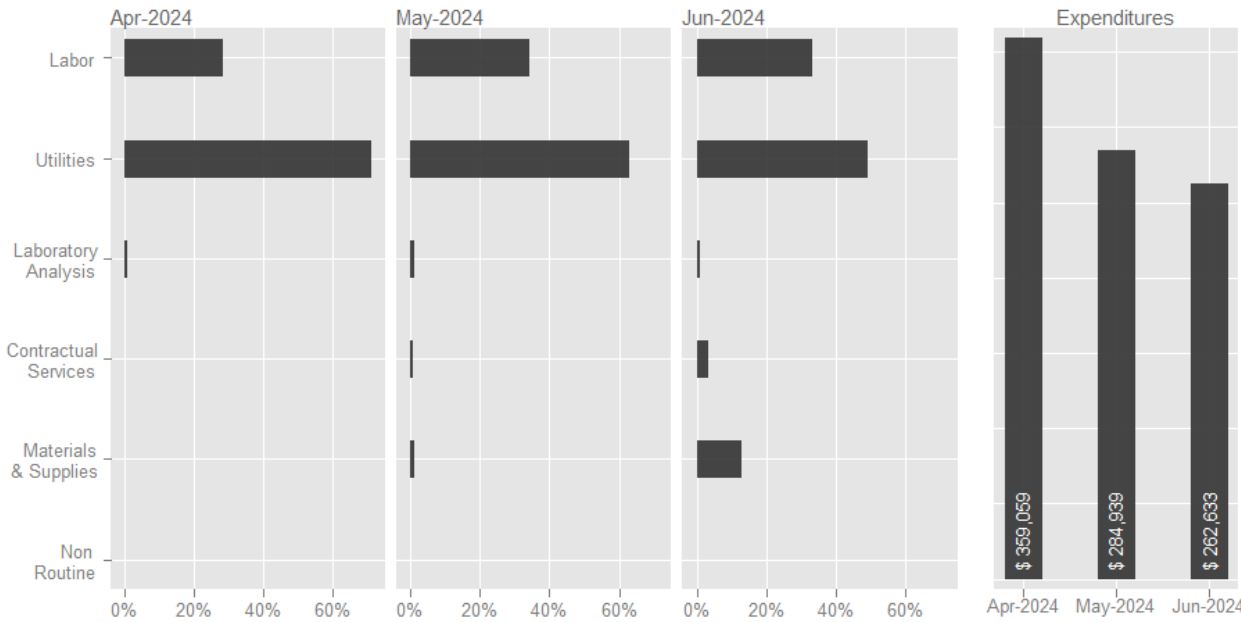


Figure 3 - LAVWMA Quarter 4 FYE 2024 expenditures for Apr-2024, May-2024, & Jun-2024 as percent of total cost by type (labor, utilizes, laboratory analysis, contractual services, materials & supplies, & non routine; left plot) and as monthly total (right plot)

There were no major equipment failures in Q4 FYE 2024, the pipeline and pumping plant ran without issue. Preventative maintenance (PM) work orders exceeded corrective maintenance (CM) work orders each month during Q4 FYE 2024 (Figure 4, right plot).

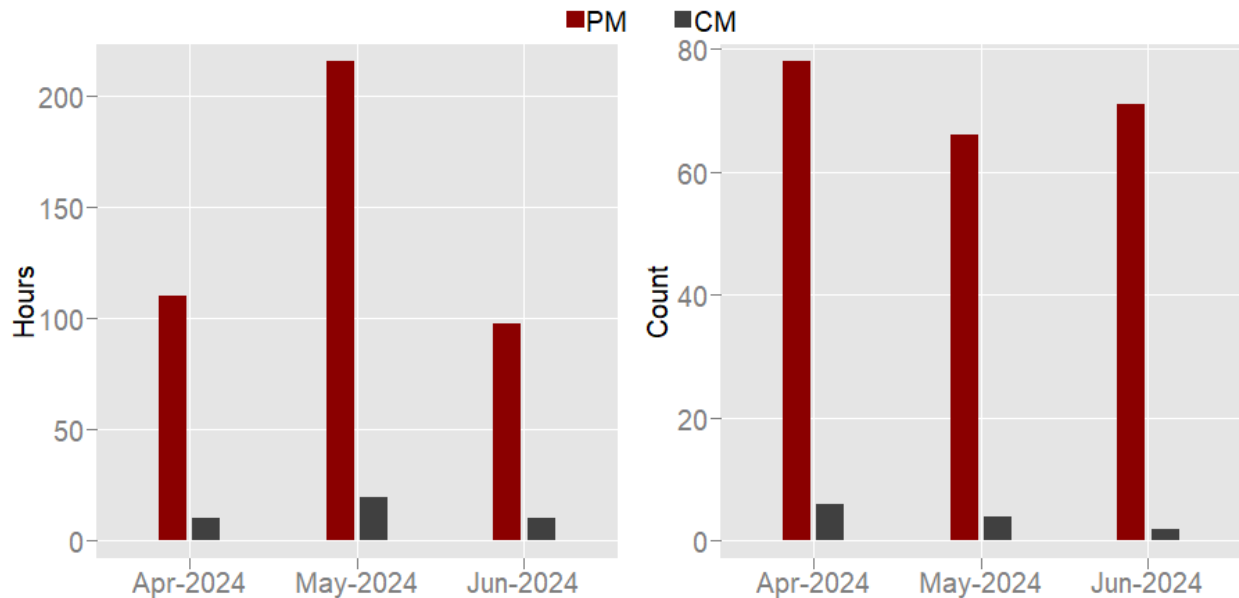


Figure 4 - LAVWMA Quarter 4 FYE 2024 preventative maintenance (PM) & corrective maintenance (CM) work order hours (left plot) and count (right plot) for Apr-2024, May-2024, & Jun-2024

Executive Summary

For the fourth quarter, the Livermore-Amador Valley Water Management Agency (LAVWMA) pumping and effluent conveyance system functioned efficiently with all systems working within their designed parameters. The pumps maintained consistent flow rates and pressure, ensuring LAVWMA treated effluent discharge moved without major interruptions. Just over 977 million gallons (MG) of fully treated secondary effluent were pumped to San Francisco Bay via the East Bay Dischargers Authority (EBDA) outfall diffuser and San Leandro Sample Station (SLSS; Table 6 or section Export Flow for more details). The overall efficiency of the pumping system averaged 73.2%, with an average electrical cost of \$478 per MG, or \$156 per acre-foot (AF; Table 1 or section Electrical Usage, Efficiency, & Cost for more details).

Operations

Of the 977 MG of effluent conveyed through the LAVWMA system during the fourth quarter, approximately 118 MG came from Dublin San Ramon (DSR), 398 MG from the City of Livermore, and 462 from the City of Pleasanton. Refer to section Export Flow for more details.

PG&E's current rate plan has four time-of-use (TOU) periods (in order of decreasing rates): peak (year-round), partial peak (June-September), off-peak (year-round), and super off-peak (March-May).

Whenever possible, staff implement an efficient pumping plan to avoid pumping during higher rate periods (i.e., peak and partial peak).

Over the past quarter, DSRSD staff strategically managed LAVWMA's holding basins to minimize the number of pumps running during a given billing cycle. Such an approach was based on anticipated flows from the City of Livermore and DSRSD's wastewater treatment facilities. Refer to section Electrical Usage, Efficiency, & Cost for more information about energy use.

Maintenance

During the quarter, staff logged 422.6 hours completing 215 preventative maintenance (PM) work orders and 39.5 hours completing 12 corrective maintenance (CM) work orders on LAVWMA equipment and systems. Refer to Figure 4 for monthly breakdown (work order data updated 31-Jul-2024).

Since pumps 1, 3, and 5 have been installed, we have maximized their operation to see if there will be any deficiencies within the warranty period. So far, the pumps have operated without any major issue and next we will inspect export pump number 2.

The following are some additional noteworthy maintenance activities during the quarter:

Electrical

- Responded to minor PG&E outages affecting both utility main breakers.
- Repaired 3-way lighting switches in Pump Station office.

Instrument & Controls

- Modified Resistance Temperature Detector (RTD) alarm setpoints for Pump Station Pump #7.
- Replaced chlorine and pH analyzer for the DSRSD side of Junction Structure.
- Repaired the flow meter controlling the sample water for all chlorine analyzer locations at Pump Station and Junction Structure.

Operations

- Brief power outage 5/11/2024 @ 20:30 that momentarily shutdown all exports pumps online; no negative impact occurred due to this incident.
- Seasonal TOU (Time of Use) change in effect 6/1/2024. Ops adjusted pumping schedule to avoid pumping during peak hours.
- All export pumping offline 6/8/2024 from 06:45-09:40 due to power failure. No impact to operation.
- DSRSD did not discharge any effluent into LAVWMA 6/19/2024, which helped to reduce export pumping that day.

Mechanical

- Replaced a damaged air valve vault lid with a temporary; a replacement is on order.

Electrical Usage, Efficiency, & Cost

Monthly pump efficiency (O_e) was estimated as the fraction of a calculated kWh/MG given full efficiency (i.e., 100%) to the actual kWh/MG (see equations below).

$$O_e = \frac{\text{full efficiency kWh}}{\text{actual kWh}} \times 100$$

$$\text{Full Efficiency kWh} = \frac{\overline{GPM} \times TDH}{3960} \times 0.746 \times d \times 24h$$

where

- $\overline{GPM} = \frac{Export\ Flow\ (MG) \times 10^6}{d \times 1440\ min/d}$
- TDH (total dynamic head) = 442.8 ft (static lift = 408.8 ft, piping losses = 34 ft)
- 3960 = units conversion constant for water between 40° F and 220° F
- 0.746 = horsepower to kW conversion constant (0.746 hp / kW)
- d = number of days
- h = indicates hour (as 24 hours/day)

Table 1 - LAVWMA FYE 2024 quarterly kWh usage, export flow, pump efficiency, & cost for PG&E-based billing cycle; current quarter & year-to-date (YTD) summaries provided below monthly values

	Billing Days	kWh	Flow (MG)	kWh/MG	Pump Efficiency	Cost (\$)	\$/kWh	\$/MG	\$/AF
Q1									
Jul-2023	31	364,203	181	2,017.73	68.9%	\$98,646	\$0.27	\$547	\$178
Aug-2023	31	289,123	155	1,867.71	74.4%	\$73,439	\$0.25	\$474	\$155
Sep-2023	30	375,670	201	1,869.34	74.4%	\$99,961	\$0.27	\$497	\$162
Q2									
Oct-2023	30	464,989	251	1,853.43	75.0%	\$113,596	\$0.24	\$453	\$148
Nov-2023	31	632,068	335	1,886.26	73.7%	\$149,155	\$0.24	\$445	\$145
Dec-2023	30	822,696	434	1,894.06	73.4%	\$178,247	\$0.22	\$410	\$134
Q3									
Jan-2024	30	959,509	505	1,900.74	73.1%	\$218,755	\$0.23	\$433	\$141
Feb-2024	32	1,224,205	646	1,894.16	73.4%	\$298,944	\$0.24	\$463	\$151
Mar-2024	30	1,169,625	625	1,870.18	74.3%	\$274,588	\$0.23	\$439	\$143
Q4									
Apr-2024	32	1,052,855	564	1,866.81	74.5%	\$254,279	\$0.24	\$451	\$147
May-2024	29	738,276	389	1,900.19	73.2%	\$177,996	\$0.24	\$458	\$149
Jun-2024	29	473,282	245	1,928.55	72.1%	\$128,540	\$0.27	\$524	\$171
Q4									
Average		754,804	399	1,899	73.2%	\$186,939	\$0.25	\$478	\$156
Total	90	2,264,412	1,198	5,696		\$560,816			
Minimum		473,282	245	1,867	72.1%	\$128,540	\$0.24	\$451	\$147
Maximum		1,052,855	564	1,929	74.5%	\$254,279	\$0.27	\$524	\$171
YTD									
Average		713,875	378	1,896	73.4%	\$172,179	\$0.25	\$466	\$152
Total	365	8,566,501	4,531	22,749		\$2,066,147			
Minimum		289,123	155	1,853	68.9%	\$73,439	\$0.22	\$410	\$134
Maximum		1,224,205	646	2,018	75.0%	\$298,944	\$0.27	\$547	\$178

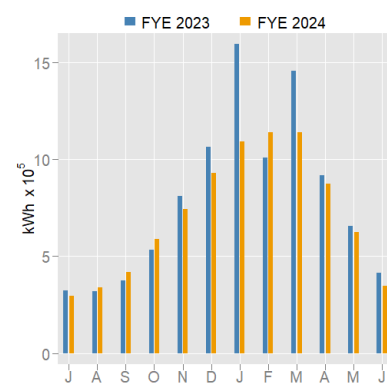


Figure 5 - LAVWMA monthly kWh usage FYE 2023 & FYE 2024 through Jun-2024

Table 2 - LAVWMA FYE 2024 quarterly kWh usage and cost for PG&E-based billing cycle separately for Service A & Service B

Service A					Service B					
Peak (kWh)	Partial Peak (kWh)	Off-Peak (kWh)	Super Off- Peak (kWh)	Cost (\$)	Peak (kWh)	Partial Peak (kWh)	Off-Peak (kWh)	Super Off- Peak (kWh)	Cost (\$)	
Q1										
Jul-2023	0	0	0	0	\$1,995	2,155	1,941	360,107	0	\$96,651
Aug-2023	0	0	276,136	0	\$64,834	2,471	2,123	8,393	0	\$8,605
Sep-2023	0	6	361,638	0	\$89,817	2,735	2,225	9,066	0	\$10,145
Q2										
Oct-2023	0	0	451,960	0	\$105,228	2,486	1,264	9,279	0	\$8,368
Nov-2023	240	0	183,254	0	\$49,078	3,335	0	445,239	0	\$100,076
Dec-2023	0	0	367,106	0	\$78,679	3,117	0	452,473	0	\$99,568
Q3										
Jan-2024	0	0	514,206	0	\$116,728	3,348	0	441,955	0	\$102,027
Feb-2024	44,071	0	615,830	0	\$152,272	3,259	0	561,045	0	\$146,672
Mar-2024	9,037	0	660,297	83,328	\$172,363	2,828	0	361,097	53,038	\$102,226
Q4										
Apr-2024	0	0	414,018	133,035	\$128,630	2,611	0	375,476	127,714	\$125,649
May-2024	0	0	112,635	41,329	\$38,394	4,098	0	428,259	151,955	\$139,602
Jun-2024	0	0	0	0	\$3,301	1,822	628	392,093	78,739	\$125,240
Q4										
Average	0	0	175,551	58,121	\$56,775	2,844	209	398,609	119,469	\$130,164
Total	0	0	526,653	174,364	\$170,324	8,531	628	1,195,828	358,408	\$390,492
Minimum	0	0	0	0	\$3,301	1,822	0	375,476	78,739	\$125,240
Maximum	0	0	414,018	133,035	\$128,630	4,098	628	428,259	151,955	\$139,602
YTD										
Average	4,446	1	329,757	21,474	\$83,443	2,855	682	320,374	34,287	\$88,736
Total	53,348	6	3,957,080	257,692	\$1,001,318	34,265	8,181	3,844,482	411,446	\$1,064,829
Minimum	0	0	0	0	\$1,995	1,822	0	8,393	0	\$8,368
Maximum	44,071	6	660,297	133,035	\$172,363	4,098	2,225	561,045	151,955	\$146,672

Pump Run Time

Monthly pump utilization (U_m) was calculated as the fraction of total pump hours given the total hours possible if nine¹ pumps ran continuously (i.e., 24 hours per day; equation below, where h = total hours, m = given month, d = days in month). Pump utilization decreased each monthly in Q4 (Table 4).

$$U_m = \frac{h_m}{9 \times 24 \times d_m} \times 100$$

Table 3 - LAVWMA FYE 2024 monthly pump hours by pump and total; quarterly and YTD summaries provided below monthly values

Hours	Pump 1	Pump 2	Pump 3	Pump 4	Pump 5	Pump 6	Pump 7	Pump 8	Pump 9	Pump 10	Total
Q1											
Jul-2023	0	103	30	88	179	5	0	47	104	149	706
Aug-2023	0	0	17	0	387	113	0	97	0	262	875
Sep-2023	0	0	41	0	340	352	0	79	0	279	1,091
Q2											
Oct-2023	111	128	41	273	230	289	5	176	171	5	1,429
Nov-2023	485	9	0	498	0	283	0	11	483	0	1,769
Dec-2023	517	1	0	513	0	433	136	150	364	138	2,251
Q3											
Jan-2024	571	2	0	528	0	285	252	567	288	261	2,755
Feb-2024	528	140	146	482	132	270	189	254	185	498	2,826
Mar-2024	508	0	498	504	504	0	73	0	526	227	2,840
Q4											
Apr-2024	433	273	215	154	249	0	313	0	468	0	2,104
May-2024	171	0	0	431	0	0	408	0	406	0	1,416
Jun-2024	52	0	96	263	16	1	114	0	265	0	807
	Pump 1	Pump 2	Pump 3	Pump 4	Pump 5	Pump 6	Pump 7	Pump 8	Pump 9	Pump 10	Total
Q1											
Average Hours	0	34	29	29	302	156	0	74	35	230	890
Std Dev Hours	0.0	59.7	12.4	50.8	108.7	177.4	0.0	25.0	60.2	70.9	192.6
Hours	0	103	88	88	906	469	0	222	104	690	2,671
Min Hours	0	0	17	0	179	5	0	47	0	149	706
Max Hours	0	103	41	88	387	352	0	97	104	279	1,091
Q2											
Average Hours	371	46	14	428	77	335	47	112	339	47	1,816
Std Dev Hours	225.5	71.0	23.9	134.2	133.0	84.9	76.9	88.8	157.7	78.4	413.1
Hours	1,113	137	41	1,284	230	1,004	141	337	1,018	142	5,449
Min Hours	111	1	0	273	0	283	0	11	171	0	1,429
Max Hours	517	128	41	513	230	433	136	176	483	138	2,251
Q3											
Average Hours	536	47	215	505	212	185	171	274	333	329	2,807
Std Dev Hours	32.2	80.6	256.2	23.1	261.5	160.2	91.1	284.1	174.6	147.8	45.3
Hours	1,608	142	644	1,514	637	554	514	821	1,000	986	8,421
Min Hours	508	0	0	482	0	0	73	0	185	227	2,755
Max Hours	571	140	498	528	504	285	252	567	526	498	2,840
Q4											
Average Hours	219	91	104	283	88	0	278	0	380	0	1,442
Std Dev Hours	195.0	157.5	107.6	139.4	139.1	0.4	149.7	0.1	104.0	0.1	648.9
Hours	656	273	311	848	265	1	835	0	1,139	0	4,327
Min Hours	52	0	0	154	0	0	114	0	265	0	807
Max Hours	433	273	215	431	249	1	408	0	468	0	2,104
Total Average Hours	281	55	90	311	170	169	124	115	272	152	1,739
Total Std Dev Hours	242.6	88.1	145.1	207.8	175.4	164.5	139.9	164.8	182.9	159.6	804.8
Total Hours	3,377	656	1,085	3,734	2,038	2,029	1,489	1,381	3,260	1,819	20,868
Total Min Hours	0	0	0	0	0	0	0	0	0	0	706
Total Max Hours	571	273	498	528	504	433	408	567	526	498	2,840

Table 4 - LAVWMA FYE 2024 monthly percent pump utilization; quarterly and YTD summaries provided below monthly values

	Pump Utilization
Q1	
Jul-2023	10.5%
Aug-2023	13.1%
Sep-2023	16.8%
Q2	
Oct-2023	21.3%
Nov-2023	27.3%
Dec-2023	33.6%
Q3	
Jan-2024	41.1%
Feb-2024	45.1%
Mar-2024	42.4%
Q4	
Apr-2024	32.5%
May-2024	21.1%
Jun-2024	12.5%
Q1	
Average Pump Utilization	13.5%
Min Pump Utilization	10.5%
Max Pump Utilization	16.8%
Q2	
Average Pump Utilization	27.4%
Min Pump Utilization	21.3%
Max Pump Utilization	33.6%
Q3	
Average Pump Utilization	42.9%
Min Pump Utilization	41.1%
Max Pump Utilization	45.1%
Q4	
Average Pump Utilization	22.0%
Min Pump Utilization	12.5%
Max Pump Utilization	32.5%
Total Average Pump Utilization	26.5%
Total Min Pump Utilization	10.5%
Total Max Pump Utilization	45.1%

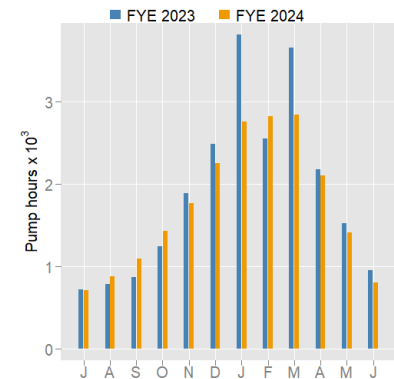


Figure 6- LAVWMA FYE 2023 & FYE 2024 monthly pump hours through Jun-2024

¹ Ten pumps total, but one in reserve as a back-up to the other nine

Basin Levels

Table 5 - LAVWMA FYE 2024 monthly average levels (ft) by basin and overall (total); current quarter and YTD summaries provided below monthly values

Average	Basin 1	Basin 2	Basin 3	Total
Q1				
Jul-2023	3.08	0.08	1.83	1.66
Aug-2023	3.38	1.36	3.47	2.74
Sep-2023	2.63	0.10	2.72	1.82
Q2				
Oct-2023	3.15	0.10	3.18	2.14
Nov-2023	3.19	0.10	3.82	2.37
Dec-2023	3.84	0.12	3.45	2.47
Q3				
Jan-2024	4.18	0.12	5.26	3.19
Feb-2024	4.65	0.11	6.52	3.76
Mar-2024	4.07	0.10	4.46	2.88
Q4				
Apr-2024	3.33	0.07	3.84	2.41
May-2024	1.39	0.07	3.35	1.60
Jun-2024	1.96	0.07	2.04	1.36
Q4				
Average	2.23	0.07	3.08	1.79
Minimum	1.39	0.07	2.04	1.36
Maximum	3.33	0.07	3.84	2.41
YTD				
Average	3.24	0.20	3.66	2.37
Minimum	1.39	0.07	1.83	1.36
Maximum	4.65	1.36	6.52	3.76

Export Flow

Combined export flow includes Dublin San Ramon, the City of Livermore, and the City of Pleasanton. Monthly totals do not include flows diverted for recycling use by DERWA and Pleasanton. Budgeted FYE 2024 flow is 3,374 MG at an estimated cost of \$1,084 / MG.

Table 6 - LAVWMA FYE 2024 monthly export flows in million gallons (MG) for Dublin San Ramon, Livermore, & Pleasanton; current quarter and YTD summaries provided below monthly values; note totals (quarterly & YTD) provided in with monthly summary

	Dublin San Ramon (MG)	Livermore (MG)	Pleasanton (MG)	Combined Export (MG)
Q1	0.00	327.72	228.90	556.61
Jul-2023	0.00	104.32	46.25	150.57
Aug-2023	0.00	109.72	69.73	179.45
Sep-2023	0.00	113.68	112.92	226.60
Q2	289.72	438.35	468.04	1,196.10
Oct-2023	41.42	132.86	138.10	312.38
Nov-2023	97.00	143.96	153.21	394.16
Dec-2023	151.29	161.53	176.74	489.56
Q3	593.25	546.75	651.05	1,791.05
Jan-2024	191.65	180.43	204.95	577.03
Feb-2024	208.49	177.84	218.60	604.94
Mar-2024	193.11	188.48	227.50	609.09
Q4	117.81	397.86	462.06	977.72
Apr-2024	130.87	154.67	179.58	465.11
May-2024	33.22	132.56	159.96	325.74
Jun-2024	0.00	110.63	76.24	186.86
Total	881.20	1,710.67	1,929.62	4,521.49
Q4				
Average	54.70	132.62	138.59	325.91
Minimum	0.00	110.63	76.24	186.86
Maximum	130.87	154.67	179.58	465.11
YTD				
Average	87.25	142.56	146.98	376.79
Minimum	0.00	104.32	46.25	150.57
Maximum	208.49	188.48	227.50	609.09

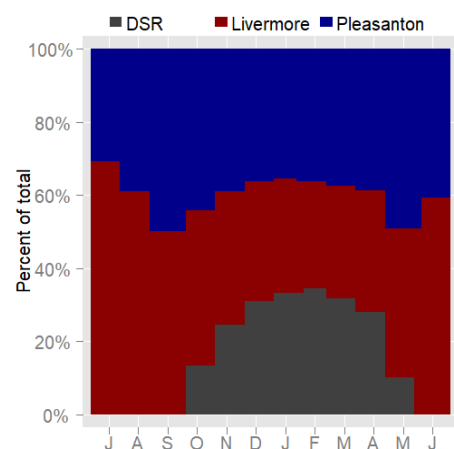


Figure 7- LAVWMA FYE 2024 through Jun-2024 monthly export flows by region as a percent of total; DSR = Dublin San Ramon

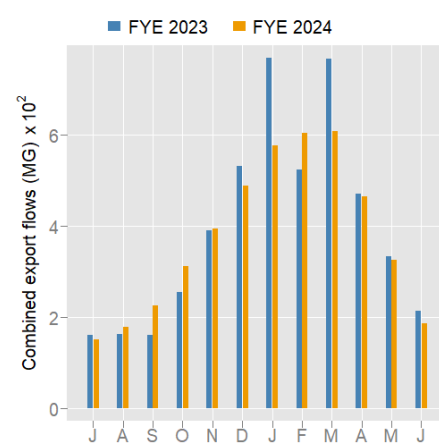


Figure 8 - LAVWMA FYE 2023 & FYE 2024 through Jun-2024 monthly combined export flows (MG)

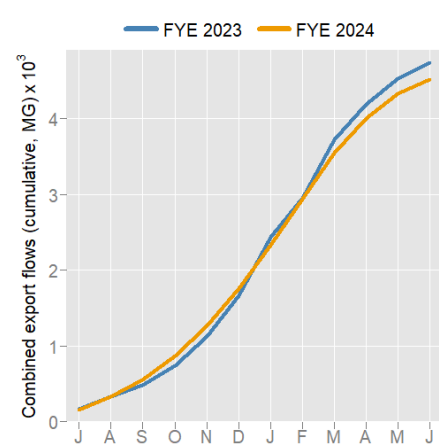


Figure 9 - LAVWMA FYE 2023 & FYE 2024 through Jun-2024 monthly cumulative combined export flows (MG)

Expenditures & Budget Utilization: Labor & O&M

May 2024 expenses included smart cover batteries, and June 2024 expenses included manhole cover replacement and ARV valves. Overall O&M expenses decreased slightly in quarter 4 compared to the previous quarter.

Table 7 - LAVWMA FYE 2024 monthly expenditure for labor, accounts payable (A/P), and overall (O&M); cost per export flow (MG and acre-foot [AF]) provided for reference; quarterly and YTD summaries provided below monthly values; note totals (quarterly & YTD) provided in with monthly summary

	Labor Expenses	A/P Expenses	O&M Expenses	\$/MG	\$/AF
Q1	\$227,228	\$311,909	\$539,137	\$969	\$316
Jul-2023	\$91,832	\$121,163	\$212,995	\$1,415	\$461
Aug-2023	\$77,175	\$84,902	\$162,077	\$903	\$294
Sep-2023	\$58,221	\$105,844	\$164,065	\$724	\$236
Q2	\$216,483	\$503,613	\$720,095	\$602	\$196
Oct-2023	\$69,729	\$143,058	\$212,786	\$681	\$222
Nov-2023	\$62,952	\$127,632	\$190,584	\$484	\$158
Dec-2023	\$83,802	\$232,923	\$316,725	\$647	\$211
Q3	\$254,355	\$821,655	\$1,076,010	\$601	\$196
Jan-2024	\$71,255	\$226,024	\$297,280	\$515	\$168
Feb-2024	\$77,251	\$311,390	\$388,642	\$642	\$209
Mar-2024	\$105,848	\$284,241	\$390,089	\$640	\$209
Q4	\$285,957	\$620,675	\$906,631	\$927	\$302
Apr-2024	\$101,259	\$257,801	\$359,059	\$772	\$252
May-2024	\$97,619	\$187,320	\$284,939	\$875	\$285
Jun-2024	\$87,079	\$175,554	\$262,633	\$1,405	\$458
Total	\$984,022	\$2,257,852	\$3,241,874	\$717	\$234
Q4					
Average	\$95,319	\$206,892	\$302,210	\$1,017	\$332
Minimum	\$87,079	\$175,554	\$262,633	\$772	\$252
Maximum	\$101,259	\$257,801	\$359,059	\$1,405	\$458
YTD					
Average	\$82,002	\$188,154	\$270,156	\$809	\$263
Minimum	\$58,221	\$84,902	\$162,077	\$484	\$158
Maximum	\$105,848	\$311,390	\$390,089	\$1,415	\$461

Table 8 - LAVWMA FYE 2024 YTD expenditures (O&M & labor) with percent budget utilized and budget remaining

	O&M YTD Expenses	O&M Budget Utilization	O&M Budget Remaining	Labor YTD Expenses	Labor Budget Utilization	Labor Budget Remaining
Q1						
Jul-2023	\$212,995	5.8%	\$3,443,889	\$91,832	7.8%	\$1,091,652
Aug-2023	\$375,072	10.3%	\$3,281,812	\$169,007	14.3%	\$1,014,477
Sep-2023	\$539,137	14.7%	\$3,117,747	\$227,228	19.2%	\$956,256
Q2						
Oct-2023	\$751,923	20.6%	\$2,904,961	\$296,956	25.1%	\$886,528
Nov-2023	\$942,507	25.8%	\$2,714,377	\$359,908	30.4%	\$823,576
Dec-2023	\$1,259,232	34.4%	\$2,397,652	\$443,710	37.5%	\$739,774
Q3						
Jan-2024	\$1,556,512	42.6%	\$2,100,372	\$514,966	43.5%	\$668,518
Feb-2024	\$1,945,153	53.2%	\$1,711,731	\$592,217	50.0%	\$591,267
Mar-2024	\$2,335,242	63.9%	\$1,321,642	\$698,065	59.0%	\$485,419
Q4						
Apr-2024	\$2,694,302	73.7%	\$962,582	\$799,324	67.5%	\$384,160
May-2024	\$2,979,241	81.5%	\$677,643	\$896,943	75.8%	\$286,541
Jun-2024	\$3,241,874	88.7%	\$415,010	\$984,022	83.1%	\$199,462

Table 9 - LAVWMA Quarter 1 (Q1) & Quarter 2 (Q2) & Quarter 3 (Q3) FYE 2024 billed labor hours and full-time employment equivalent; quarterly and YTD summaries provided below monthly values; note billed labor hour totals (quarterly & YTD) provided with monthly summary

	Billed Labor Hours	FTE Equivalent
Q1	1,099.0	
Jul-2023	440.0	2.5
Aug-2023	370.0	2.1
Sep-2023	289.0	1.7
Q2	1,043.8	
Oct-2023	378.3	2.2
Nov-2023	287.0	1.7
Dec-2023	378.5	2.2
Q3	1,173.0	
Jan-2024	323.5	1.9
Feb-2024	363.5	2.1
Mar-2024	486.0	2.8
Q4	1,302.0	
Apr-2024	468.5	2.7
May-2024	439.0	2.5
Jun-2024	394.5	2.3
Total	4,617.8	
Q4		
Average	434.0	2.5
Minimum	394.5	2.3
Maximum	468.5	2.7
YTD		
Average	384.8	2.2
Minimum	287.0	1.7
Maximum	486.0	2.8

Expenditures: Livermore Sole Use Facilities

Table 10 - LAVWMA FYE 2024 expenditures (labor & accounts payable [A/P]) for Livermore sole use facilities; quarterly and YTD (Total) summaries provided below monthly values

Expenses	Labor	A/P	Total
Q1			
Jul-2023	\$588	\$608	\$1,196
Aug-2023	\$0	\$1,801	\$1,801
Sep-2023	\$4,042	\$665	\$4,707
Q2			
Oct-2023	\$0	\$220	\$220
Nov-2023	\$0	\$661	\$661
Dec-2023	\$0	\$726	\$726
Q3			
Jan-2024	\$0	\$628	\$628
Feb-2024	\$0	\$803	\$803
Mar-2024	\$2,004	\$821	\$2,826
	Labor	A/P	Total
Q1			
Total	\$4,629	\$3,074	\$7,703
Average	\$1,543	\$1,025	\$2,568
Minimum	\$0	\$608	\$1,196
Maximum	\$4,042	\$1,801	\$4,707
Q2			
Total	\$0	\$1,606	\$1,606
Average	\$0	\$535	\$535
Minimum	\$0	\$220	\$220
Maximum	\$0	\$726	\$726
Q3			
Total	\$2,004	\$2,252	\$4,256
Average	\$668	\$751	\$1,419
Minimum	\$0	\$628	\$628
Maximum	\$2,004	\$821	\$2,826
Total Total	\$6,634	\$6,931	\$13,565
Total Average	\$737	\$770	\$1,507
Total Minimum	\$0	\$220	\$220
Total Maximum	\$4,042	\$1,801	\$4,707

Note: due to an inadvertent typo, Nov-2023 A/P expense was \$100,737 in Q2's report. That value (now \$661) and corresponding descriptive statistics have been corrected (see table above).

Detailed YTD O&M Budget Comparison to Actual Expenses

LAVWMA

BUDGET COMPARISON TO ACTUAL EXPENSES: GOODS & SERVICES

Current FY Period: 12

ACTUAL EXPENSES BILLED TO LAVWMA FOR REGULAR O&M															
	Budget	July	August	September	October	November	December	January	February	March	April	May	June	YTD	YTD
	FY 2023-2024	2023	2023	2023	2023	2023	2023	2024	2024	2024	2024	2024	2024	TOTAL	Budget
Project Total:	Labor														
lavcost	Staff	\$1,183,484	\$91,832	\$77,175	\$58,221	\$69,729	\$62,952	\$83,802	\$71,255	\$77,251	\$105,848	\$101,259	\$97,619	\$87,079	\$1,183,484
LAVWMA	Subtotal	\$1,183,484	\$91,832	\$77,175	\$58,221	\$69,729	\$62,952	\$83,802	\$71,255	\$77,251	\$105,848	\$101,259	\$97,619	\$87,079	\$1,183,484
Phase Total:	Materials & Supplies														
supply	Operations Supplies	\$19,100	17	\$85	\$1,625	\$16,213	\$143	\$153	\$142	\$161	\$17	\$229	\$36	\$17,948	\$19,100
	Mechanical Supplies	\$31,900	\$765	\$1,214	\$138	\$462	\$2,158	\$1,269	\$138	\$7,359	\$129	\$138	\$3,002	\$14,959	\$31,900
	Electrical Supplies	\$38,900	\$9,515	\$4,167	\$0	\$12	\$5,949	\$468	\$1,034	\$0	\$1,296	\$69	\$0	\$1,026	\$38,900
	Subtotal	\$89,900	\$10,297	\$5,466	\$1,763	\$16,687	\$8,249	\$1,890	\$1,313	\$7,520	\$1,441	\$437	\$3,038	\$33,933	\$89,900
Analysis	Laboratory Analysis														
Biochemical Oxy	Compliance Testing	\$11,300	\$896	\$1,120	\$896	\$1,120	\$896	\$896	\$1,120	\$896	\$896	\$896	\$1,120	\$896	\$11,300
Demand & Total	Operational Support Testing	\$4,900	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$414	\$4,900
Langelier Index	Special Sampling	\$29,400	\$1,344	\$1,477	\$1,460	\$580	\$1,460	\$1,460	\$1,825	\$1,460	\$1,460	\$1,576	\$1,460	\$1,702	\$29,400
	Subtotal	\$45,600	\$2,654	\$3,011	\$2,770	\$2,114	\$2,770	\$2,770	\$3,359	\$2,770	\$2,770	\$2,886	\$2,994	\$2,770	\$45,600
Phase Total:	Contractual Services														
cservi	Sub-surface Repairs	\$15,750												\$0	\$15,750
	Street Sweeping	\$5,000												\$0	\$5,000
	Cathodic Protection Survey & Repairs	\$47,250												\$0	\$47,250
	Underground Service Alert	\$4,800	\$402											\$402	\$4,800
	SCADA software maintenance contract	\$14,600												\$0	\$14,600
	Remote monitoring annual service for PS and Re	\$1,950					\$110							\$110	\$1,950
	Med-voltage switchgear 3-yr PM (FY22, \$18k)	\$0												\$0	\$0
	HVAC Maintenance/Repairs	\$800												\$0	\$800
	Termite/Pest Control	\$950												\$0	\$950
	Landscape/weed maintenance	\$11,200				\$3,758							\$6,941	\$10,698	\$11,200
	Smartmeter Covers	\$1,800								\$2,058				\$1,800	\$1,800
	Janitorial Service	\$10,000	\$104.76	\$975		\$975	\$1,950		\$975	\$975	\$2,058		\$1,950	\$10,725	\$10,000
	Fire Extinguisher Maintenance	\$200								\$975				\$0	\$200
	Postage/Shipping Charges	\$0												\$0	\$0
	Misc Professional/Contractual Services	\$31,500	\$5,365	\$1,339	\$0	\$9,178	\$9,059	\$0	\$452	\$0	\$866	\$46	\$0	\$317	\$31,500
	Subtotal	\$145,800	\$8,872	\$2,314	\$0	\$10,153	\$14,877	\$0	\$1,427	\$975	\$3,899	\$46	\$1,950	\$9,207	\$145,800
Phase Total:	Utilities														
utilit	Electricity (PG&E)	\$2,188,700	\$99,254	\$74,026	\$100,626	\$113,816	\$100,737	\$228,051	\$219,383	\$299,746	\$275,410	\$254,286	\$178,749	\$129,299	\$2,188,700
	Water & Sewer (Pleasanton)	\$1,100			\$334		\$566		\$396		\$336		\$210	\$199	\$1,100
	Water (EBMUD)	\$1,300			\$233		\$282			\$233	\$240		\$233		\$1,300
	Telephone/communications	\$1,000	\$86	\$85	\$118	\$288	\$150	\$213	\$146	\$146	\$146	\$146	\$146	\$146	\$1,000
	WW Treatment (DSRSD)	\$0												\$0	\$0
	Subtotal	\$2,192,100	\$99,340	\$74,111	\$101,311	\$114,104	\$101,736	\$228,264	\$219,925	\$300,125	\$276,131	\$254,432	\$179,338	\$129,644	\$2,192,100
Phase Total:	Non-Routine														
nonrou		\$0												\$0	\$0
	Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Monthly Total		\$212,995	\$162,077	\$164,065	\$212,786	\$190,584	\$316,725	\$297,280	\$388,642	\$390,089	\$359,059	\$284,939	\$262,633	\$3,241,874	\$3,656,884
YTD Total		\$3,656,884	\$212,995	\$375,072	\$539,137	\$751,923	\$942,507	\$1,259,232	\$1,556,512	\$1,945,153	\$2,335,242	\$2,694,302	\$2,979,241	\$3,241,874	
Combined Export Flow, mg		3374	151	179	227	312	394	490	577	605	609	465	248	322	4,579
Pumping Efficiency															
Monthly Cost, \$/mg			\$1,415	\$903	\$724		\$484	\$647	\$515	\$642	\$640	\$772	\$1,148	\$816	
YTD Running Cost, \$/mg		\$1,084	\$1,415	\$1,137	\$969	\$866	\$746	\$719	\$668	\$663	\$659	\$672	\$700	\$708	\$708

Q1 Notes:

Landscaping: July was paid in Aug and Sep expenditure includes both Aug and Sep invoices

LAVWMA																
BUDGET COMPARISON TO ACTUAL EXPENSES: LABOR																
														Current FY Period:		12
ACTUAL EXPENSES BILLED TO LAVWMA FOR REGULAR O&M																
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	YTD	YTD	
	FY 2023-2024	2023	2023	2023	2023	2023	2023	2024	2024	2024	2024	2024	2024	TOTAL	Budget	
Estimated Personnel Hours																
Division 51 - FOD	50	-	-	-	-	-	13.00	-	-	-	30.00	14.00	-	57.00	50.00	
Water/Wastewater Sys Lead Op	0										10.00			10.00	-	
Water/Wastewater Sys OP IV-On Call	0						13.00					2.00		15.00	-	
Water/Wastewater Sys OP IV														-	-	
Water/Wastewater Sys OP III	0													-	-	
Water/Wastewater Sys OP I/II	43										20.00	12.00		32.00	43.00	
Maintenance Worker	0													-	-	
Supervisor	7													-	7.00	
Division 52 - WWTP	2,832	185.50	175.00	127.50	111.75	125.00	137.00	94.50	140.50	218.00	179.50	162.50	159.00	1,815.75	2,832.00	
Process Lead Operator IV/V	289		16.00	3.00	6.00	15.00	29.00		16.00	17.00	16.00	12.00	7.00	137.00	289.00	
Senior WWTP Operator III	1,013	37.00	40.00	21.50	35.75	43.50	36.00	22.50	25.50	41.50	42.00	31.50	41.00	417.75	1,013.00	
Operator In Training	0	22.50	39.50	20.00										82.00	-	
Operator II	1,431	126.00	79.50	83.00	70.00	63.00	72.00	72.00	99.00	159.50	121.50	119.00	111.00	1,175.50	1,431.00	
Operator II (SLSS)	0													-	-	
Operations Superintendent	99													-	99.00	
Ops Director						3.5								-	-	
Division 53 - MECH	1,107	145.00	121.00	92.50	141.00	113.00	174.00	126.00	167.00	195.00	201.50	227.50	209.00	1,912.50	1,107.00	
Senior Mechanic-Crane Cert	54	37.00	46.50	30.00	39.50	27.00	70.00	55.00	29.50	40.00	58.00	90.00	78.00	600.50	54.00	
Senior Mechanic - USA	72			12.00	11.50	32.00	6.00		18.00	23.00	29.00	11.00	15.00	157.50	72.00	
Maintenance Worker	54						9.00							9.00	54.00	
Mechanic I/II	882	36.00	28.00	22.50	35.00	25.00	45.00	71.00	93.50	79.50	93.00	102.50	89.00	720.00	882.00	
Mechanic II-Crane Cert	0	25.00	7.00	0.50	21.00	2.50	11.00					4.00		71.00	-	
Mechanic I/II - USA	0	47.00	39.50	27.00	30.00	24.00	33.00		26.00	52.50	21.50	20.00	27.00	347.50	-	
Mechanic II-Crane Cert - USA	0			0.50		2.50								3.00	-	
Supervisor	45				4.00									4.00	45.00	
Division 54 - ELEC	1,080	88.00	71.00	67.50	121.50	48.00	47.50	98.00	49.50	65.00	52.50	29.00	23.50	761.00	1,080.00	
Senior Instrument/Controls Tech	45			1.00			3.00	9.00	6.50	6.50	6.00	14.50	10.50	57.00	45.00	
Instrumentation & Controls Tech I/II	504	50.00	71.00	39.50	32.50	19.00	24.50	50.50	30.00	50.50	21.50	10.50	13.00	412.50	504.00	
Ice Supervisor					1.00		1.00	2.50		3.00	2.00	3.00		12.50	-	
Senior Electrician	45			6.00	11.00	9.00	6.00	25.00	4.00		4.00			65.00	45.00	
Electrician I/II	441	33.00		20.00	77.00	20	12.00	8.00	8.00		17.00			195.00	441.00	
Principal Eletrical Engineer	45	5.00		1.00			1.00	3.00	1.00	5.00	2.00	1.00		19.00	45.00	
Division 55 - Laboratory	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
EC Inspector II-Pretreatment	0													-	-	
Laboratory Technician	0													-	-	
Supervisor	0													-	-	
Division 26 - SAFETY	54	-	-	-	-	-	-	-	-	-	-	-	-	-	54.00	
Safety Officer	54	-	-	-	-	-	-	-	-	-	-	-	-	-	54.00	
Division 40 - ENG	288	21.50	3.00	1.50	4.00	1.00	7.00	5.00	6.50	8.00	5.00	6.00	3.00	71.50	252.00	
Senior Civil Engineer-SME	36	3.00	1.00											-	-	
Associate Engineer	108	17.00	2.00	1.50	4.00		7.00	5.00	6.50	8.00	5.00	6.00	3.00	65.00	108.00	
Construction Inspector I/II	72	1.50												1.50	72.00	
Engineering Technician II	36					1.00								1.00	36.00	
GIS Analyst	36													-	36.00	
Total Estimated Personnel Hours	5,411															
FTE	2.6															
Total Monthly Hours		440.00	370.00	289.00	378.25	287.00	378.50	323.50	363.50	486.00	468.50	439.00	394.50	4,617.75	5,375.00	

EBDA Monthly Reports

[illegible]

Parameter	Flow	CBOD Qual	CBOD	TSS Qual	TSS	pH	pH	Total Residual Chlorine	Total Residual Chlorine	Fecal Qual	Fecal Coliforms	Entero Qual	Enterococci
Units	MGD		mg/L		mg/L	SU	SU	mg/L	mg/L		MPN/100mL		MPN/100mL
Test Method	Daily Average (Mean)		SM 5210 B-2011		SM 2540 D-2011	Instant Min	Instant Max	Daily Average (Mean)	Daily Average (Mean)		SM 9221 C,E-2006		Enterolert
MDL			2.0		1.2								
RL			2.0		4.5						2		10
Location	LAVWMA-EXP		LAVWMA-EXP		LAVWMA-EXP	LAVWMA-EXP	LAVWMA-EXP	LAVWMA-EXP	SLSS		SLSS		SLSS
5/1/2024	7.62		3.6		7.0	7.01	7.25	2.13					
5/2/2024	10.28					6.99	7.22	2.47					
5/3/2024	7.83					7.08	7.36	2.61					
5/4/2024	9.67					7.14	7.42	2.81					
5/5/2024	13.21					6.79	7.19	2.60					
5/6/2024	13.06					7.06	7.27	2.67					
5/7/2024	13.16					7.03	7.25	2.65		<	2		10
5/8/2024	7.05		6.0		7.0	6.53	7.38	3.85					
5/9/2024	11.10					7.04	7.33	2.66					
5/10/2024	7.94					7.01	7.28	4.46					
5/11/2024	12.06					6.81	7.30	3.45					
5/12/2024	7.64					7.03	7.75	2.04					
5/13/2024	8.12					7.01	7.60	1.78					
5/14/2024	8.12					7.00	7.60	1.88			2		20
5/15/2024	6.00		7.4		9.0	7.14	7.52	1.65					
5/16/2024	7.81					7.06	7.52	1.42					
5/17/2024	6.83					7.17	7.63	1.41					
5/18/2024	8.06					7.15	7.49	1.44					
5/19/2024	6.53					7.06	7.42	2.00					
5/20/2024	7.62					7.04	7.44	1.95					
5/21/2024	7.15					6.93	7.24	1.56			2	<	10
5/22/2024	5.05		5.7		8.0	6.87	7.18	1.26					
5/23/2024	5.17					6.89	7.22	1.37					
5/24/2024	6.04					7.16	7.55	1.63					
5/25/2024	8.73					6.96	7.18	1.34					
5/26/2024	7.69					6.91	7.14	1.57					
5/27/2024	6.90					6.89	7.13	1.29					
5/28/2024	7.39					6.96	7.10	1.09			4		10
5/29/2024	4.40		7.4		6.2	6.71	7.00	1.19					
5/30/2024	6.18					6.74	7.00	1.06					
5/31/2024	4.80					6.69	7.17	1.27					
Note:													
Column G - pH Minimum; online													
Column H - pH Maximum; online													

Parameter	Flow	CBOD Qual	CBOD	TSS Qual	TSS	pH	pH	Total Residual Chlorine	Total Residual Chlorine	Fecal Qual	Fecal Coliforms	Entero Qual	Enterococci
Units	MGD		mg/L		mg/L	SU	SU	mg/L	mg/L		MPN/100mL		MPN/100mL
Test Method	Daily Average (Mean)		SM 5210 B-2011		SM 2540 D-2011	Instant Min	Instant Max	Daily Average (Mean)	Daily Average (Mean)		SM 9221 C,E-2006		Enterolert
MDL			2.0		1.2								
RL			2.0		4.5						2		10
Location	LAVWMA-EXP		LAVWMA-EXP		LAVWMA-EXP	LAVWMA-EXP	LAVWMA-EXP	LAVWMA-EXP	SLSS		SLSS		SLSS
6/1/2024	4.54					6.91	7.28	1.14					
6/2/2024	6.96					6.80	7.10	1.60					
6/3/2024	3.72					6.80	7.03	1.33					
6/4/2024	5.73					6.77	7.03	1.14			13		10
6/5/2024	2.84		4.5		12.0	6.87	7.23	1.11					
6/6/2024	5.15					6.96	7.30	0.69					
6/7/2024	3.60					7.17	7.56	1.34					
6/8/2024	4.40					6.07	7.46	0.83					
6/9/2024	7.41					6.96	7.16	2.05					
6/10/2024	6.65					6.91	7.27	1.54					
6/11/2024	6.75					6.94	7.22	1.35			17	<	10
6/12/2024	5.29		5.7		10.0	6.72	7.17	1.05					
6/13/2024	2.39					6.93	8.09	0.64					
6/14/2024	2.69					6.93	7.22	0.74					
6/15/2024	4.31					6.87	7.04	1.35					
6/16/2024	4.35					6.85	7.04	1.81					
6/17/2024	4.14					6.91	7.03	1.63					
6/18/2024	3.63					6.85	7.14	1.23			17		10
6/19/2024	2.38		4.7		5.4	7.09	7.30	1.01					
6/20/2024	2.70					7.10	7.52	0.59					
6/21/2024	4.29					6.90	7.19	0.64					
6/22/2024	5.74					6.78	7.19	1.22					
6/23/2024	6.20					6.91	7.12	1.51					
6/24/2024	3.23					6.96	7.41	1.37					
6/25/2024	2.72					6.66	7.61	0.50			70	<	10
6/26/2024	2.72		4.8		9.2	6.99	7.70	0.34					
6/27/2024	2.56					7.04	7.52	0.25					
6/28/2024	2.52					7.01	7.22	0.52					
6/29/2024	4.10					6.93	7.12	1.26					
6/30/2024	3.46					6.84	7.04	1.81					
Note:													
Column G - pH Minimum; online													
Column H - pH Maximum; online													

Langelier Saturation Index Report (Livermore, DSRSD, LAVWMA)

The Langelier Saturation index is used to predict corrosion potential on the export pipeline. Keeping a Langelier index between -0.5 – 0.5 is a good target.

CITY OF LIVERMORE LIVERMORE WATER RECLAMATION PLANT							
Livermore - 2nd Quarter 2024 Langelier pH Saturation Index							
Collection DATE	TDS (mg/L)	Temp (°C)	Ca Hardness (mg/L CaCO ₃)	Alkalinity (mg/L CaCO ₃)	pH (Actual)	pH Saturation	Langlier Index
04/03/24	677	21.0	83	343	7.7	7.5	0.1
May	no data available						
06/05/24	548	26.0	65	306	7.5	7.6	-0.1
MAXIMUM	677	26.0	83	343	7.7	7.6	0.1
MINIMUM	548	21.0	65	306	7.5	7.5	-0.1
AVERAGE	613	23.5	74	325	7.6	7.6	0.0
DUBLIN SAN RAMON SERVICES DISTRICT WASTEWATER TREATMENT FACILITY							
DSRSD -2nd Quarter 2024 Langelier pH Saturation Index							
Collection DATE	TDS (mg/L)	Temp (°C)	Ca Hardness (mg/L CaCO ₃)	Alkalinity (mg/L CaCO ₃)	pH (Actual)	pH Saturation	Langlier Index
04/09/24	728	20.7	130	324	7.5	7.3	0.2
05/07/24	658	22.0	115	282	7.4	7.3	0.1
06/24/24	1726	22.8	91	868	7.7	7.1	0.6
MAXIMUM	1726	22.8	130	868	7.7	7.3	0.6
MINIMUM	658	20.7	91	282	7.4	7.1	0.1
AVERAGE	1037	21.8	112	491	7.5	7.2	0.3
Note: On 6/24/2024, elevated alkalinity and TDS suspected to be caused by high brine content of the sample due to low flow at EFF-002F2.							
DUBLIN SAN RAMON SERVICES DISTRICT WASTEWATER TREATMENT FACILITY							
LAVWMA - 2nd Quarter 2024 Langelier pH Saturation Index							
Collection DATE	TDS (mg/L)	Temp (°C)	Ca Hardness (mg/L CaCO ₃)	Alkalinity (mg/L CaCO ₃)	pH (Actual)	pH Saturation	Langlier Index
04/09/24	729	20.5	126	327	7.5	7.3	0.2
05/07/24	652	22.0	109	296	7.3	7.3	0.0
06/24/24	576	24.5	80	320	7.2	7.4	-0.2
MAXIMUM	729	24.5	126	327	7.5	7.4	0.2
MINIMUM	576	20.5	80	296	7.2	7.3	-0.2
AVERAGE	652	22.3	105	314	7.3	7.3	0.0