

TECHNICAL MEMORANDUM

To: Eagle Bend Metro District (EBMD)-Board of Directors

From: Mitchell Weldon and Justin Korkus, PE

Date: October 5th, 2020

Subject: Final Water Operations Summary for August 2020

CC: Larry Moore-President-EBMD, Denise Denslow-District Manager CliftonLarsonAllen, LLC.

Project No.: 0416019.01

This Technical Memorandum provides a summary of the EBMD water operations for the month of August 2020.

Water Supply Operations

South Well:

- During the month of August, 10,136 kilogallons (kgal) of water were delivered from the South Well to the Heritage Eagle Bend (HEB) golf course irrigation pond.
- The maximum flow rate achieved was 275 gpm, and the minimum flow rate while pumping was 244 gpm.
- During recovery periods in August, the water level in the South Well reached a maximum of 252 feet above transducer. Pumping water level reached a minimum of 122 feet.
- The pump ran for all but 41.5 hours during the month of August.

Figure 1 – South Well Drawdown and Recovery (August 2020)

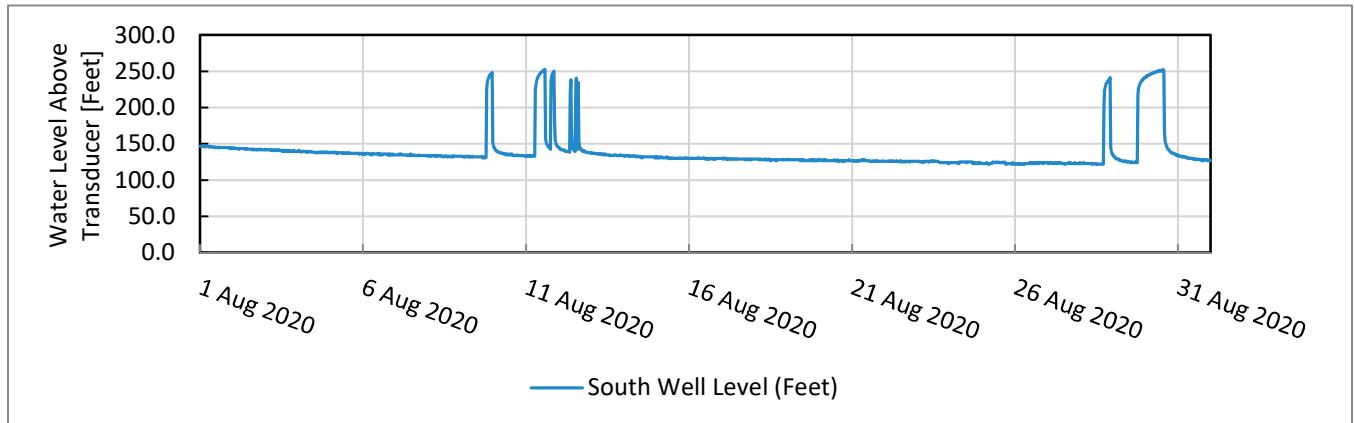
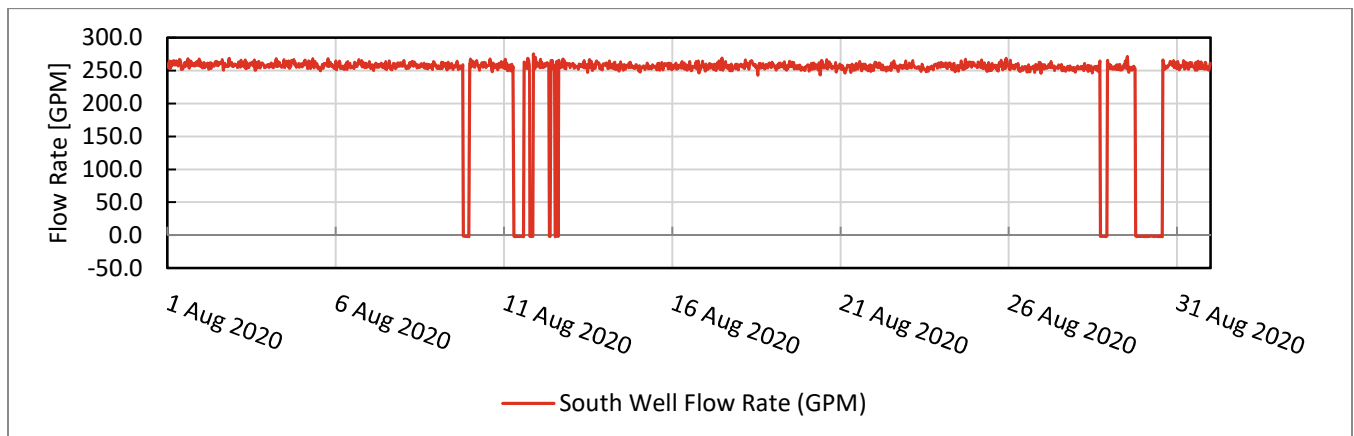


Figure 2 – South Well Production Rate (August 2020)



North Well:

- During the month of August, 2,070 (kgal) of water were delivered to the Heritage Eagle Bend (HEB) golf course irrigation pond.
- The maximum flow rate achieved was 172 gpm, and the minimum flow rate while pumping was 130 gpm.
- During August, the pumping water level reached a minimum of 114 feet. During all recovery periods during the month, the maximum water level reached 262 feet above transducer.
- The incoming power filter and associated equipment to the North Well failed on August 14th. The well and pump contractor, Layne, was authorized by EBMD to diagnose and replace the required equipment to protect the VFD and downhole equipment. Layne replaced the equipment on August 27th. Power was restored on August 27th, but the pump motor failed on August 30th. Layne visited the North Well site on September 1st to further diagnose the failure and was unable to reset the VFD. On September 24th, Layne reset the VFD but was unable to start the downhole motor. Lamp Rynearson has requested a quote for offseason replacement of the downhole pump and motor for consideration by EBMD.

Figure 3 – North Well Drawdown and Recovery (August 2020)

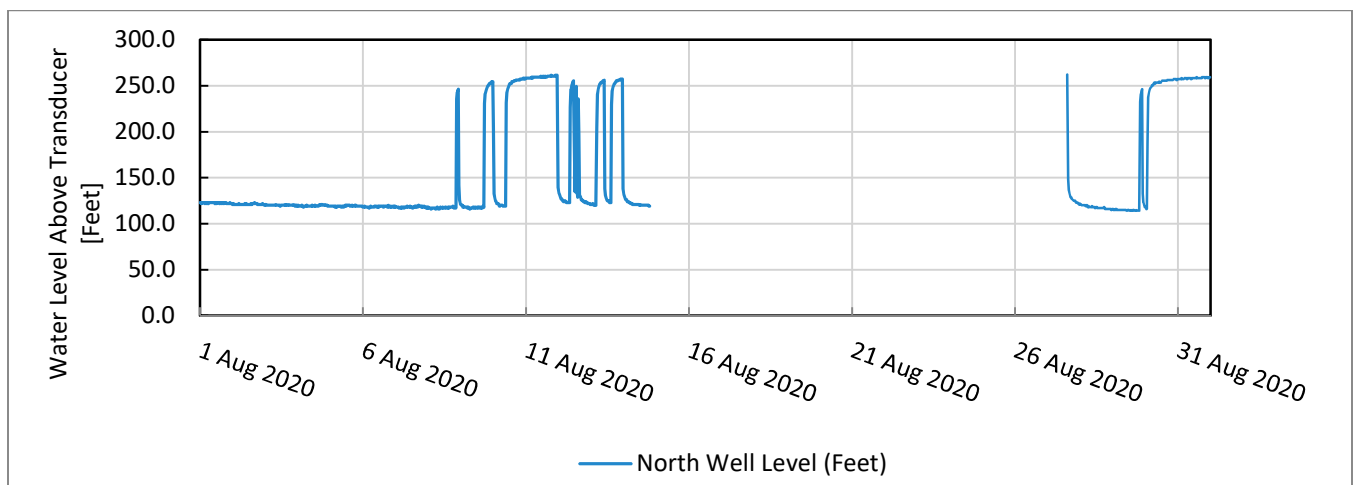
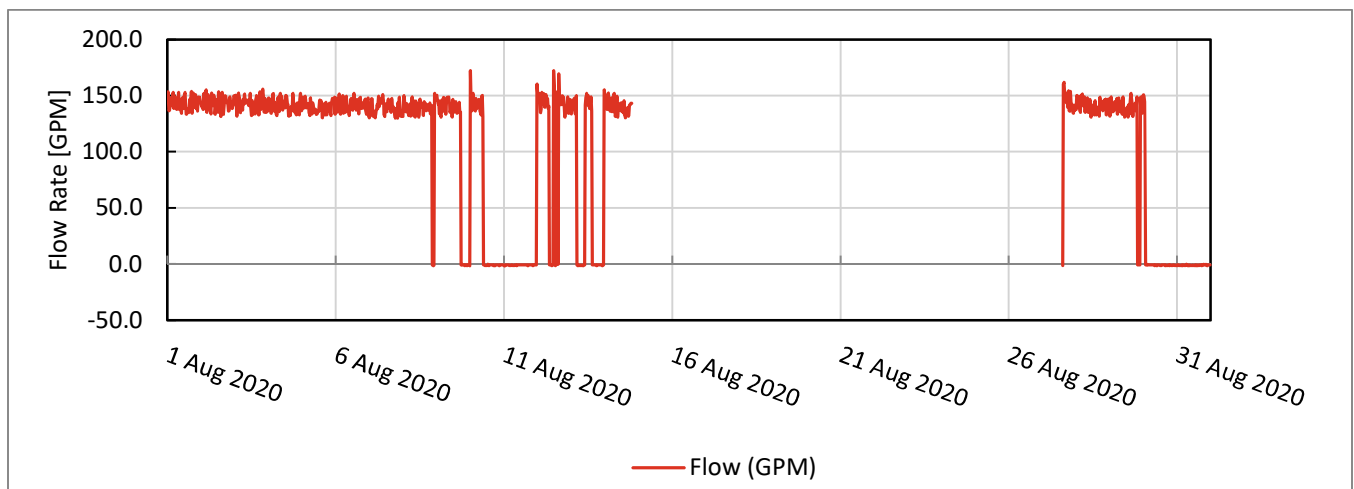


Figure 4 – North Well Production Rate (August 2020)



ECCV/WISE Waterline:

- The ECCV/WISE line was winterized during October 2019 and was not used to supplement the wells for irrigation this month.
- Per our August 17th discussion with Glen Bedell, ECCV Water Operator, water will not be available from the ECCV/WISE line for the rest of the irrigation season.

Buchanan Tap:

- The Buchanan Tap was used for supplemental irrigation water during August between the following dates:
 - August 4th to approximately August 12th – Total volume metered: 4,305 kgal
 - August 20th to approximately August 26th – Total volume metered: 3,279 kgal
 - August 2020 Buchanan Tap total, per Aurora meter: 7,525 kgal
 - Aurora read the Buchanan meter for July billing on August 4th, 2020, overlapping the first period of Buchanan tap usage during August. This explains the discrepancy between the sum of August usage (7,584 kgal) and the total measured per the Aurora meter (7,525 kgal).

Field Operations

- On August 16th, Mitchell Weldon visited the North Well to respond to the loss of power encountered on the night of August 14th. Lamp Rynearson noted that the main disconnect was on but the VFD was not powered. Lamp Rynearson shut off the main and VFD disconnects, and opened the VFD panel for inspection, finding no visible damage.
- On August 17th, Mitchell Weldon joined Mike Schanaman (Layne) at the North Well for diagnosis of the issue. Mike Schanaman found that the input power filter had failed, with evidence of arc-flash within the filter cabinet. The fuses of the main disconnect had also blown out.
- On August 27th, Mitchell Weldon met Mike Schanaman (Layne) at the North Well for the input power filter replacement. Layne replaced the input power filter coils and capacitors as well as the main disconnect fuses. Layne also megged the downhole equipment, finding a resistance of 0 meg-Ohms between the leg and ground, indicating deterioration and potential failure of downhole equipment. Layne restarted the electrical equipment, and the well pump turned on and was verified to be producing water.

Utility Locates

- Lamp Rynearson no longer monitors utility locate requests on behalf of the District for buried utilities owned and operated by the District. Diversified Underground has been authorized by EBMD to respond to all locate requests as of July 2020.

Water Production Summary

Water production data has been updated through August 2020. Monthly numbers for August are updated upon receipt of power and water bills from Xcel Energy and Aurora Water, respectively. EBMD's historical water delivery summary is provided in Table 1 from 2010 through present, and graphically in Figure 5 - Cumulative Annual Water Deliveries by Month, and Figure 6 - Monthly Water Deliveries (2010-2020). For monthly water production and billing for 2020, refer Table 2.

Table 1 – Annual Water Production

Year	North Well		South Well		Buchanan Tap		ECCV Line, Aurora Pkwy Tap		Total
	kgal	%	kgal	%	Kgal	%	Kgal	%	kgal
2010	26,564	33	43,702	54	0	0	10,259	13	80,525
2011	29,408	37	38,888	48	0	0	12,273	15	80,569
2012	25,416	28	55,493	61	0	0	10,368	11	91,277
2013	26,223	38	38,791	55	0	0	4,982	7	69,996
2014	18,472	33	33,808	60	0	0	4,036	7	56,316
2015	20,510	30	37,999	57	0	0	8,650	13	67,159
2016	21,569	25	55,478	63	0	0	10,824	12	87,871
2017	21,277	31	33,884	49	0	0	14,097	20	69,258
2018	22,971	28	50,100	62	5,400	7	2,747	3	81,218
2019	22,265	29	45,311	60	3,654	5	4,449	6	75,679
2020	19,975	25	45,066	57	13,818	17	716	1	79,575
Average (2010-2019)	23,123	31	43,306	57	4,527	1	8,047	11	75,483

Table 2 – Monthly Water Production and Billing for Eagle Bend Metro District (2020)

Eagle Bend Metro District Water and Energy Utilities - through August 2020														
Service Month (nominal)	Initial	January	February	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	YTD
Meter Reads														
North Well (Meter No. 12066794)	52,528	52,528	52,528	52,528	53,419	57,913	65,271	70,433	72,503					
South Well (Meter No. 12269060)	7,443	7,443	7,443	7,448	10,083	19,523	32,630	42,373	52,509					
ECCV (Meter No. 05359993)	17,280	17,280	17,280	17,280	17,280	17,280	17,280	17,280	17,280					
Aurora-Buchanan Way (Meter No. 06170036)	34,351	34,351	34,351	34,351	34,351	34,353	38,114	40,644	48,169					
Aurora-7623 South Aurora Parkway (Meter No. 05150070)	6,509	6,509	6,509	6,509	6,572	6,653	6,929	7,081	7,225					
kgal														
North Well		0	0	0	891	4,494	7,358	5,162	2,070				0	19,975
South Well		0	0	5	2,635	9,440	13,107	9,743	10,136				0	45,066
ECCV		0	0	0	0	0	0	0	0				0	0
Aurora (Buchanan Way)		0	0	0	0	2	3,761	2,530	7,525				0	13,818
Aurora (Aurora Pky)		0	0	0	63	81	276	152	144				0	716
Total - kgal		0	0	5	3,589	14,017	24,502	17,587	19,875					79,575
Total - af		0.0	0.0	0.0	11.0	43.0	75.2	54.0	61.0					244.2
COA Billing* * Late fees not included														
North Well	\$0.00	\$0.00	\$0.00	\$0.00	\$392.04	\$1,977.36	\$3,237.52	\$2,271.28	\$910.80					\$8,789.00
South Well	\$0.00	\$0.00	\$0.00	\$2.20	\$1,159.40	\$4,153.60	\$5,767.08	\$4,286.92	\$4,459.84					\$19,829.04
ECCV	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00					\$0.00
Aurora (Buchanan Way)	\$0.00	\$65.82	\$65.82	\$65.82	\$65.82	\$81.68	\$29,890.55	\$20,128.72	\$59,739.07					\$110,103.30
Aurora (Aurora Pky)	\$0.00	\$17.07	\$17.07	\$17.07	\$471.30	\$601.08	\$2,007.03	\$1,112.99	\$1,055.31					\$5,298.92
Total	\$0.00	\$82.89	\$82.89	\$85.09	\$2,088.56	\$6,813.72	\$40,902.18	\$27,799.91	\$66,165.02					\$144,020.26
Xcel Energy Billing														
North Well	\$0.00	\$391.44	\$391.44	\$407.09	\$426.28	\$4,170.92	\$5,591.30	\$5,327.70	\$3,826.47					\$20,532.64
South Well	\$0.00	\$470.47	\$470.47	\$488.99	\$2,840.56	\$5,883.75	\$7,147.75	\$6,858.18	\$6,691.04					\$30,851.21
Total	\$0.00	\$861.91	\$861.91	\$896.08	\$3,266.84	\$10,054.67	\$12,739.05	\$12,185.88	\$10,517.51					\$51,383.85
Xcel \$/kgal (approx., some time lag)														
North Well	\$0.00	-	-	-	\$0.48	\$0.93	\$0.76	\$1.03	\$1.85					\$1.03
South Well	\$0.00	-	-	\$97.80	\$1.08	\$0.62	\$0.55	\$0.70	\$0.66					\$0.68
Combined	\$0.00	-	-	\$179.22	\$1.08	\$0.62	\$0.62	\$0.82	\$0.86					\$0.79
HOA Billing	\$0.00	\$0.00	\$0.00	\$19,385.95	\$27,596.53	\$50,548.65	\$96,206.76	\$73,285.21	\$106,921.31					\$373,944.41
Net to District	\$0.00	-	-	\$18,404.78	\$22,241.13	\$33,680.26	\$42,565.53	\$33,299.42	\$30,238.78					\$180,429.90
Credit towards ECCV SL	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00					\$0.00

Figure 5 – Cumulative Annual Water Deliveries by Month (2010 – 2020)

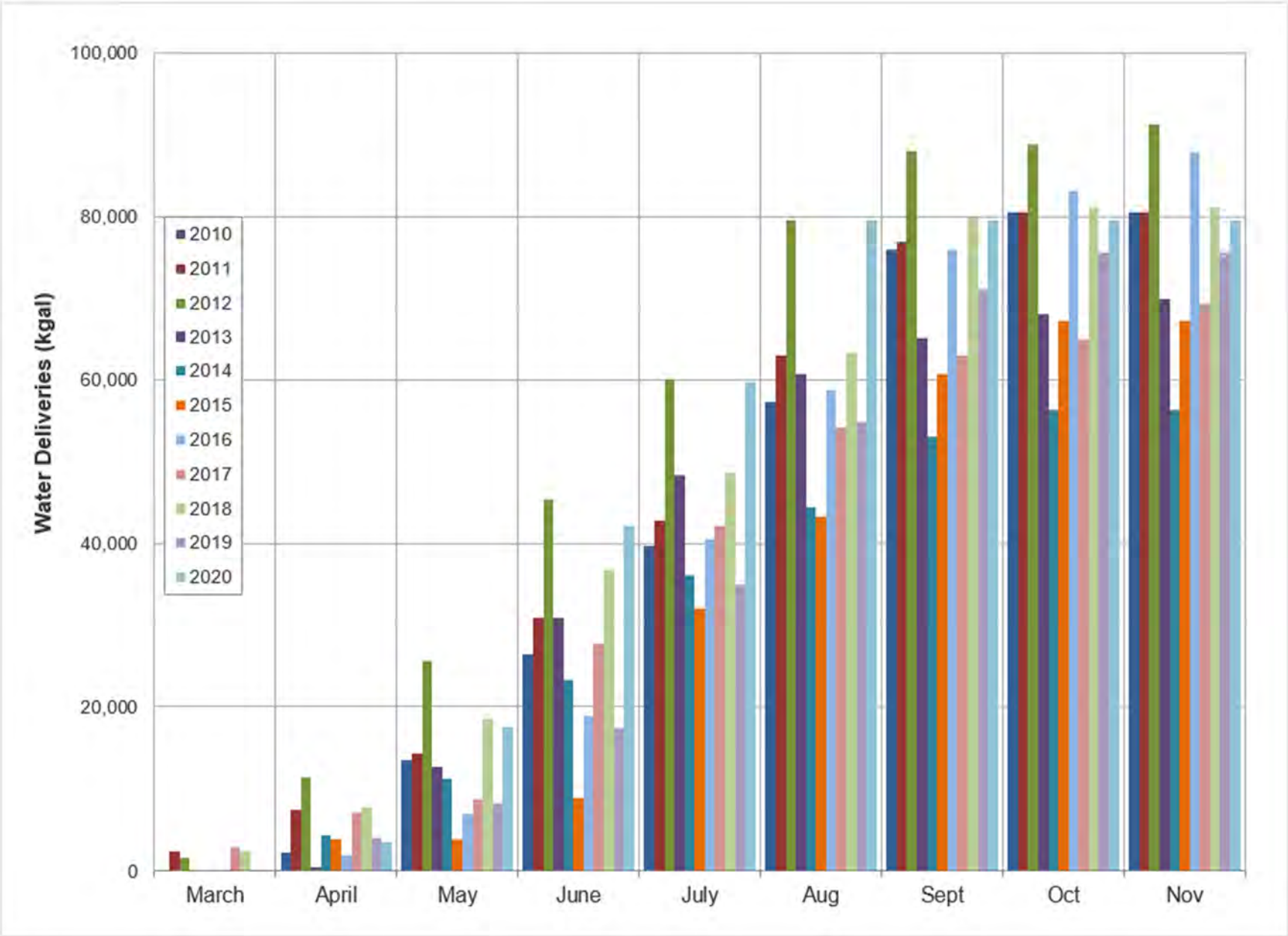


Figure 6 –Historic Monthly Water Deliveries (2010 – 2020)

