2675 Winkler Ave #180
Fort Myers, Florida 33901
www.ghd.com

Our ref: 11225022-06

January 23, 2023

Mr. Bruce Bernard
Manager of Field Operations
Calvin, Giordano & Associates, Inc.
1800 Eller Drive, Suite 600
Fort Lauderdale, FL 33316

Water Quality Monitoring - November 2022 - Esplanade Lakes CDD

Dear Mr. Bernard:

GHD Services Inc. (GHD) is pleased to present the results of our water quality sampling services for Esplanade Lakes CDD.

1. Water Quality Sampling – November 2022

The November 2022 sampling event consisted of the collection of six (6) surface water samples at six (6) sample locations (WQ Location #1 through #6) as identified on **Figure 1**.

All six (6) samples are collected using direct-dip sampling methods at a depth of 18 inches. Samples from locations #1 through #6 were collected using a boat. See **Figure 1** for all sample locations.

Conductivity, dissolved oxygen, pH, and temperature were measured in the field with a calibrated YSI Model 556 multi-parameter water quality meter. Turbidity and total water depth were also measured at each location. Surface Water Field Sheets are attached. Field data is summarized in **Table 1**.

The collected samples are capped, labeled, packed on ice, and transported to Benchmark EnviroAnalytical, Inc., in North Port, Florida. Benchmark EnviroAnalytical, Inc. is certified by the State of Florida and NELAP (National Environmental Laboratory Accreditation Conference). Laboratory analyses are conducted for 5-Day Biochemical Oxygen Demand (BOD5), Total Suspended Solids (TSS), Total Nitrogen, nitrogen speciation (ammonia, TKN, and nitrate + nitrite), Total Phosphorus, Ortho Phosphorus (Lab Filtered) and Chlorophyll-a.

All samples collected during the November 2022 sampling event were prepared and analyzed within the method required holding times. The laboratory data have been reviewed with respect to authenticity, precision, limits of detection, and accuracy of the data. The laboratory analytical results are summarized in the attached **Table 1.** The laboratory report and data compliance memorandum are also attached. Trend graphs have been prepared for each monitor location for laboratory analytical results and select field measurements.

2. Analytical Summary

The November 2022 sampling event represents the fifth sampling event for the select six (6) WQ Locations for Esplanade Lakes. Laboratory results are summarized in the **Laboratory Data Compliance Memo** and are displayed visually in the trend graphs, enclosed.

The following discussion highlights sample locations with notable trend increases in the attached graphs.

The biochemical oxygen demand (BOD) concentration has increased at the WQ Location 5, decreased at WQ Location 4 and remained stable at all other locations since the September sampling event. The BOD concentrations are within typical historic ranges.

The concentration of chlorophyll-α has notably decreased at the WQ Location 1. The prior sample collected at this location was most likely an anomaly and the chlorophyll-α level has decreased to non-detectable levels. All other locations were relatively stable.

Dissolved oxygen has slightly decreased at the WQ Locations 3 and 6 and slightly increased at locations 1, 2, 4 and 5. Oxygen levels at each location remain within historical ranges.

The concentration of total phosphorus significantly decreased at the WQ Locations 1, 2, and 3 while remaining relatively stable at the rest of the WQ Locations.

The concentration of total suspended solids and turbidity has decreased at the WQ Locations 4 and 6, while the remaining locations slightly increased or remained relatively stable. The WQ Location 4 has displayed a slightly decreasing trend over the last three (3) sampling events.

Conductivity at all locations increased during the November 2022 sampling event when compared to the September 2022 event.

All other water quality results remain relatively consistent with the previous sampling event.

A Trophic State Index calculation (defined by FAC 62-303.200 and the Water Quality Assessment for the State of Florida 305(b) Report) was used to help classify the quality of water based on each water body's Chlorophyll-α, Total Phosphorous, and Total Nitrogen concentration. A ratio of Total Nitrogen to Total Phosphorus was calculated for each water body to determine general conditions. For this sample event, the breakdown of the sample locations is:

- Nutrient Balanced (10<TN/TP<30) – none
- Phosphorus Limited (TN/TP<10) – Location 1, 2, 3, 4, 5, and 6
- Nitrogen Limited (TN/TP>30) – none

A TSI value was calculated based on the TN/TP ratio for each location. A TSI of 0-59 is "good", a value of 60-69 is "fair", and a value of 70+ is "poor". Based on the results of this sampling event, each sampling location's calculated TSI value is:

Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
27.3	49.5	55.0	51.7	52.2	49.8

3. Conclusions and Recommendations

All Water Quality Locations appear to be in a phosphorous limited condition and all sampling locations resulted in a "good" TSI value. There do not appear to be any water quality concerns at this time.

The next tri-annual sampling event is planned for March 2022. Please call if you have questions or need additional information.

Sincerely,

GHD

Connor Haydon, E.I.
Engineer Intern
Connor.Haydon@ghd.com

Lori Coolidge, P.G.
Geologist
Lori.Coolidge@ghd.com

Encl: Table

Figure

Trend Graphs

Laboratory Analytical Report

Surface Water Field Sheets

Laboratory Data Compliance Memo

Attachment 1

Table 1

Table 1

Analytical Results Summary
Surface Water Quality Monitoring
Esplanade Lakes, Fort Myers, Florida
November 2022

Sample Location/Sample ID:		WQ Location #1						WQ Location #2						WQ Location #3				
Sample Date:		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**
Field Parameters	**Units**																	
Total Water Depth	Feet	NM	27.0	27.5	31.5	NM		NM	27.0	27.5	28.7	NM		NM	18.0	18.5	19.9	NM
Sample Depth	Feet	1.5	1.5	1.5	1.5	1.5		6.5	13	13.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	434	289	332	291.5	546		434	291	331	291.0	548		452	292	334	291.5	549
Dissolved oxygen (DO), field	mg/L	7.47	6.29	8.85	6.41	7.96		7.06	5.86	9.35	6.27	8.06		7.24	5.12	9.26	6.11	5.73
Dissolved oxygen (DO), field	%	94.1	82.8	86.2	86.3	94.6		89	76.9	100.7	82.6	95.9		89.3	67.3	92.9	82.2	64.4
pH, field	s.u.	8.75	8.54	8.33	8.33	8.19		8.75	8.50	8.19	8.47	8.07		8.62	8.46	8.27	8.35	8.14
Temperature, field	Deg C	26.5	29.9	19.0	29.8	24.1		26.4	29.9	19.0	29.8	34.2		26.0	29.9	18.9	29.7	24.2
Turbidity, field	NTU	5.58	3.64	4.05	3.94	2.7		5.09	4.48	3.74	3.98	2.62		17.7	4.48	4.77	4.15	2.59
Secchi Disk	Feet	6.20	5.0	6.75	2.7	NM		6.20	5.0	6.75	3.6	NM		3.0	5.5	5.0	3.3	NM
Wet Parameters	**Units**																	
Ammonia-N	mg/L	0.013 I	0.009 I	0.122	0.008 U	0.008 U		0.008 U	0.015 I	0.008 U	0.008 U	0.008 U		0.008 U	0.014 I	0.008 U	0.008 U	0.008 U
Total kjeldahl nitrogen (TKN)	mg/L	0.482	0.927	0.687	0.619	0.889		0.451	0.973	0.542	0.746	0.765		0.552	1.51	0.521	0.652	1.29
Total nitrogen	mg/L	0.482	0.936	0.687	0.629	0.897		0.451	0.973	0.542	0.756	0.772		0.552	1.51	0.521	0.662	1.30
Nitrite/Nitrate	mg/L	0.006 U	0.009 I	0.006 U	0.010 I	0.008 I		0.006 U	0.006 U	0.006 U	0.010 I	0.007 I		0.006 U	0.006 U	0.006 U	0.010 I	0.009 I
Ortho phosphorus (Field Filtered)	mg/L	0.029	0.007 I	0.010	0.014	0.003 I		0.019	0.008	0.010	0.009	0.005 I		0.034	0.011	0.009	0.012	0.002 U
Total phosphorus	mg/L	0.037	0.008 U	0.074	0.669	0.008 U		0.023 I	0.009 I	0.076	0.455	0.008 U		0.049	0.014 I	0.077	0.253	0.008 U
Chlorophyll	mg/m3	4.53	9.43	3.95	24.4	0.25 U		4.39	8.45	3.89	7.93	7.33		7.37	7.13	4.61	8.40	7.21
Total suspended solids (TSS)	mg/L	3.39	1.60 I	3.00	3.00	3.60		1.91 I	0.667 I	4.25	4.00	4.80		2.40	1.33 I	5.00	3.33	4.00
Biochemical oxygen demand (total BOD5)	mg/L	1 U	1.22 I	1.0 U	1.02 I	1.03 I		1 U	1 U	1.0 U	1 U	1 U		1.16 I	1 U	1.0 U	1 U	1 U

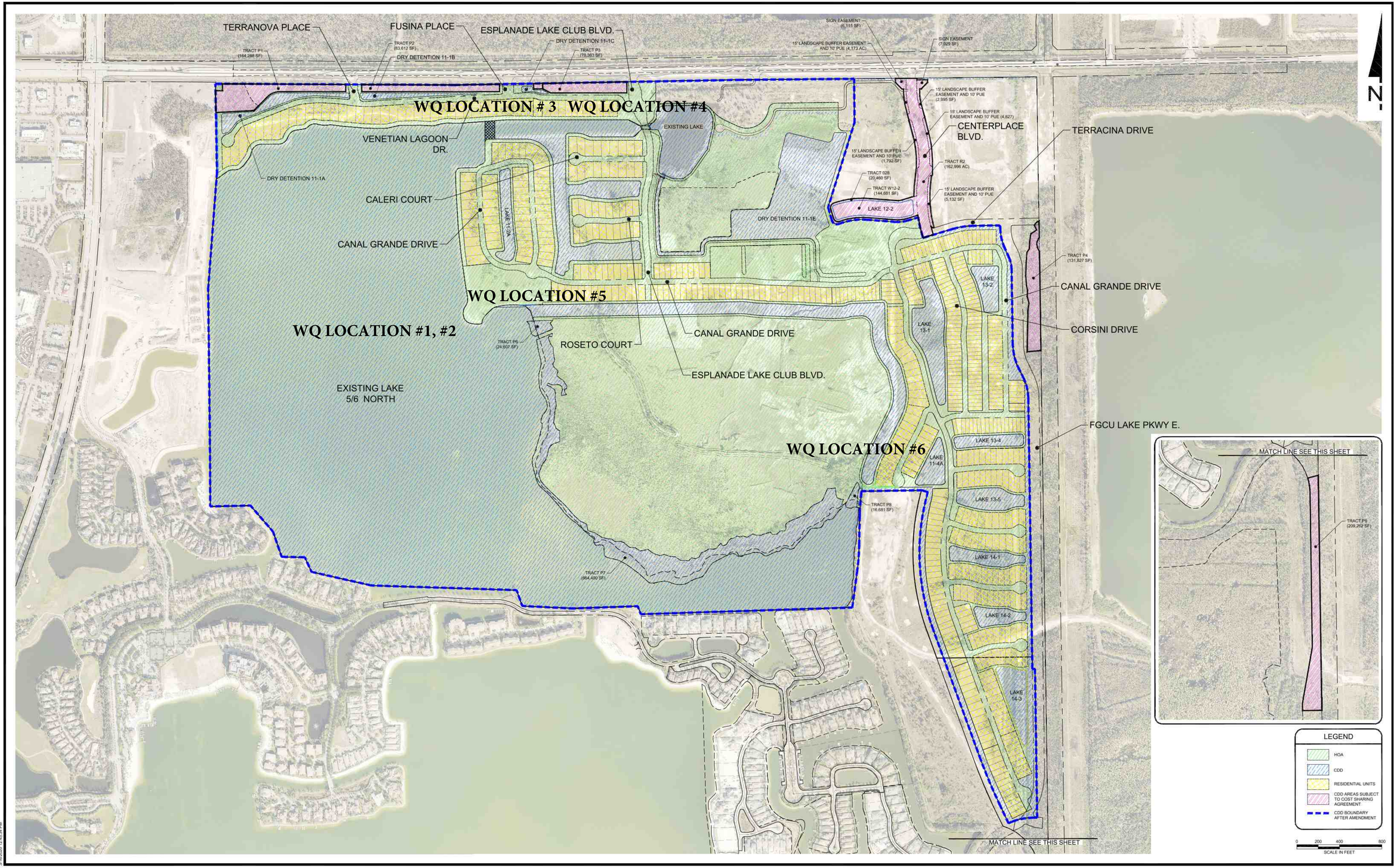
Sample Location/Sample ID:		WQ Location #4						WQ Location #5						WQ Location #6				
Sample Date:		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**
Field Parameters	**Units**																	
Total Water Depth	Feet	NM	7.0	7.0	7.7	NM		NM	10.0	10.0	8.7	NM		NM	8.0	4.0	10.6	NM
Sample Depth	Feet	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	465	297	342	292.2	637		451	287	331	292.3	610		495	295	362	276.7	761
Dissolved oxygen (DO), field	mg/L	6.78	5.43	9.32	5.93	7.69		7.33	5.59	9.33	6.06	6.90		4.07	6.61	9.38	6.30	5.98
Dissolved oxygen (DO), field	%	83.6	72.6	100.8	79.4	88.4		81.4	73.4	100.2	79.6	78.5		50.6	84.6	100.7	82.7	71.7
pH, field	s.u.	8.56	8.22	8.31	8.13	7.47		8.40	8.53	8.39	8.39	8.08		8.05	8.23	8.08	8.2	7.62
Temperature, field	Deg C	25.9	29.2	19.1	29.6	24.2		26.6	29.7	19.0	29.7	24.5		26.4	29.4	19.9	28.8	24.8
Turbidity, field	NTU	23.60	16.37	6.56	9.05	11.14		8.76	2.58	3.36	4.42	2.42		11.55	15.64	3.44	15.82	2.93
Secchi Disk	Feet	2.0	2.5	4.5	2.7	NM		3.4	7.0	5.75	2.6	NM		2.5	3.0	3.5	2.2	NM
Wet Parameters	**Units**																	
Ammonia-N	mg/L	0.008 U	0.019 I	0.030 I	0.008 U	0.008 U		0.012 I	0.019 I	0.008 U	0.008 U	0.008 U		0.022 I	0.023 I	0.008 U	0.047	0.008 U
Total kjeldahl nitrogen (TKN)	mg/L	0.639	2.31	0.645	1.28	0.938		0.494	3.44	0.489	0.358	1.01		0.459	0.285	0.745	0.328	0.693
Total nitrogen	mg/L	0.639	2.31	0.645	1.29	0.946		0.494	3.44	0.489	0.368	1.02		0.459	0.285	0.745	0.338	0.702
Nitrite/Nitrate	mg/L	0.006 U	0.006 U	0.006 U	0.009 I	0.008 I		0.006 U	0.006 U	0.006 U	0.010 I	0.008 I		0.006 U	0.006 U	0.006 U	0.010 I	0.009 I
Ortho phosphorus (Field Filtered)	mg/L	0.024	0.021	0.011	0.013	0.018		0.039	0.014	0.010	0.010	0.004 I		0.054	0.009	0.009	0.019	0.014
Total phosphorus	mg/L	0.049	0.022 I	0.080	0.017 I	0.045		0.040	0.008 U	0.078	0.054	0.008 U		0.096	0.011 I	0.080	0.043	0.008 U
Chlorophyll	mg/m3	10.1	8.01	5.08	8.65	7.42		6.89	6.47	3.92	8.70	7.08		8.54	4.76	4.56	8.03	8.82
Total suspended solids (TSS)	mg/L	7.60	5.67	8.00	5.33	4.80		6.80	1.67 I	4.50	2.67	4.80		0.570 U	4.33	4.75	10.0	6.40
Biochemical oxygen demand (total BOD5)	mg/L	1.18 I	1 U	1.0 U	1.20 I	1 U		1.07 I	1 U	1.0 U	1 U	1.02 I		1 U	1 U	1.0 U	1.17 I	1.18 I

Notes:

U - Not detected at the associated reporting limit
I - Reported value is between method detection limit and the practical quantitation limit
NM - Not measured during noted event
* DO values at or above 100% are possible super-saturation conditions due to high water temperatures and/or high volume of algae.

Attachment 2

Figure 1



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3/9/2020 2:43:34 PM

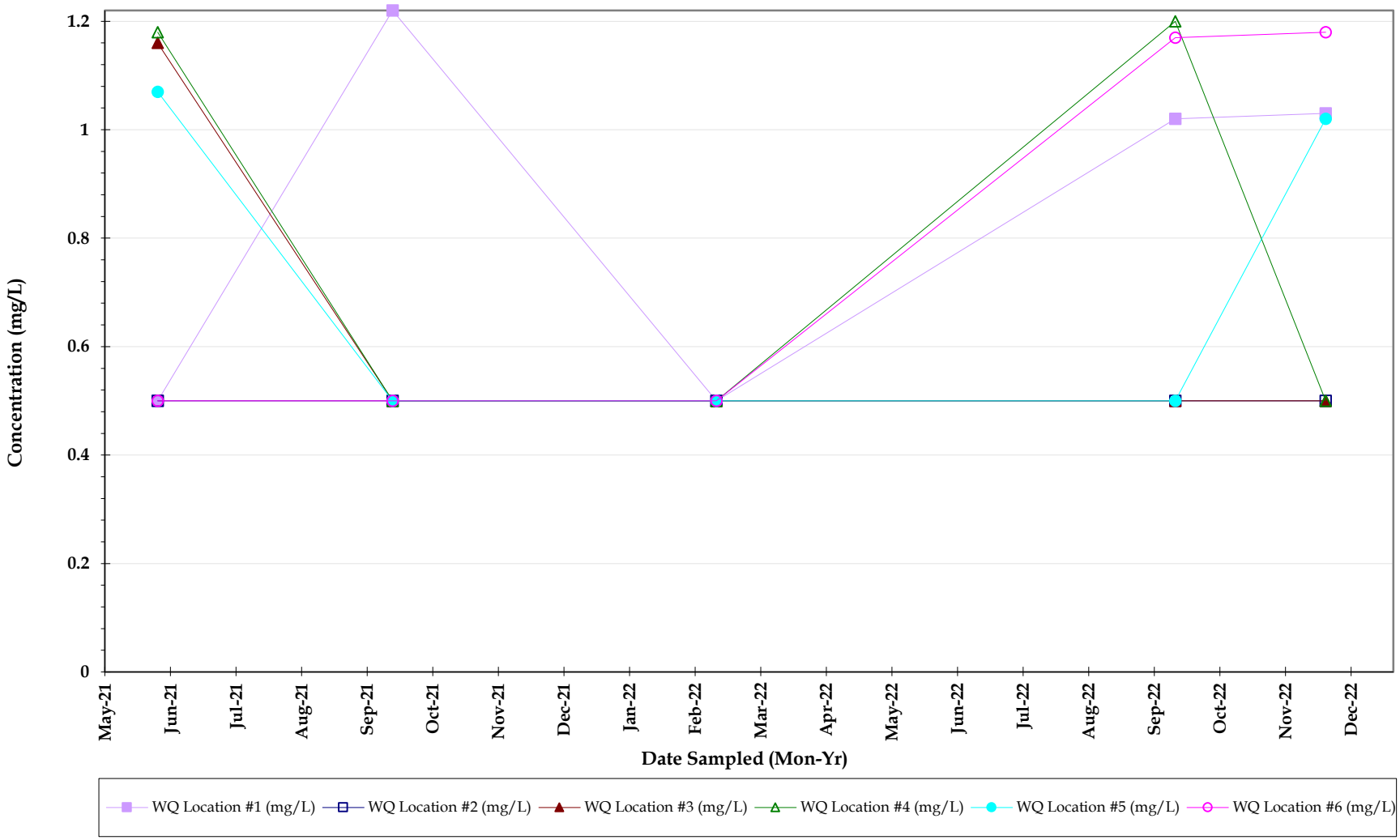
WALDROP ENGINEERING
FL CA 8636, LC26000385
www.waldropengineering.com

ESPLANADE LAKE CLUB
MAINTENANCE EXHIBIT

16 March 2020

Attachment 3

Trend Graphs

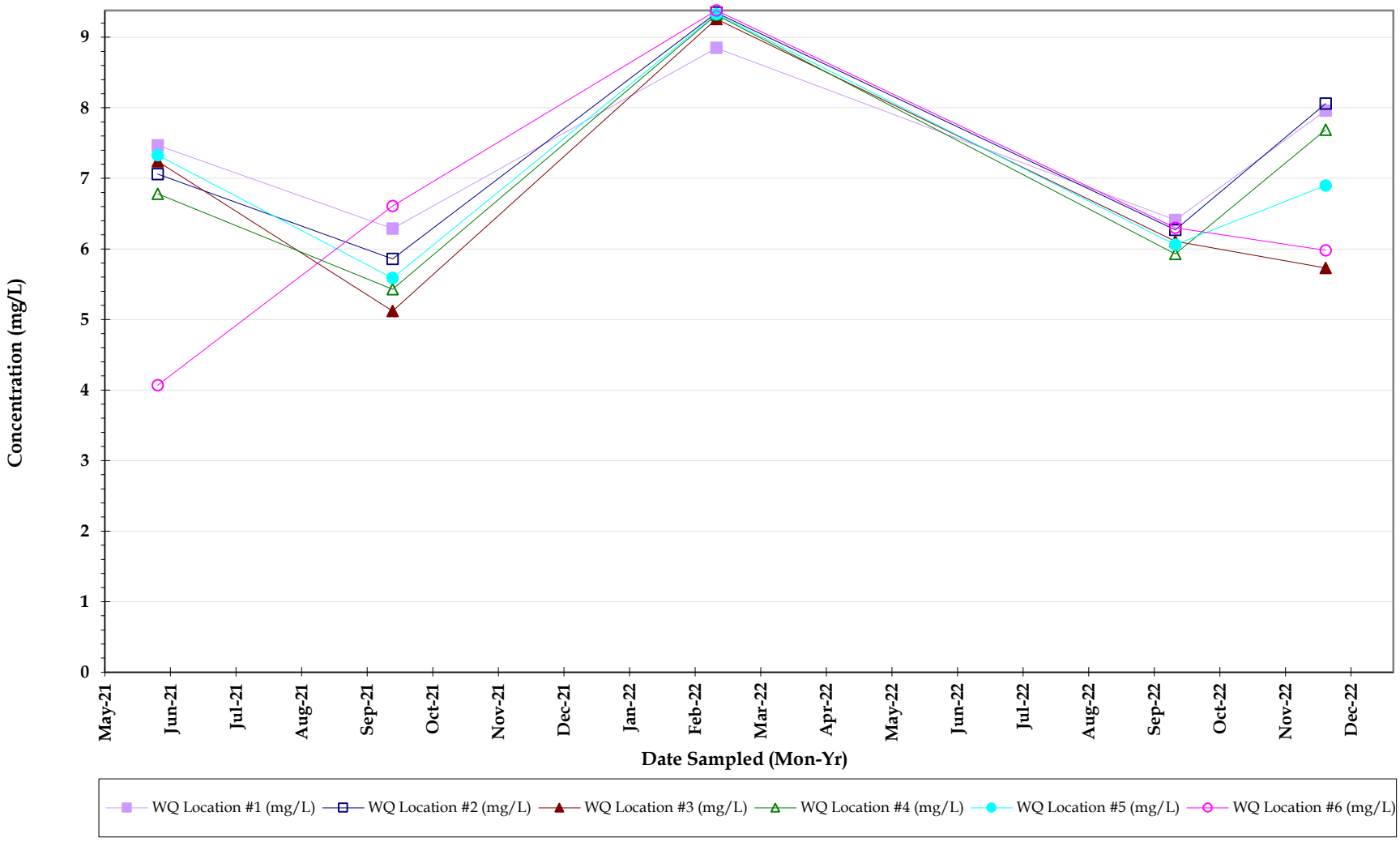


Biochemical Oxygen Demand

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

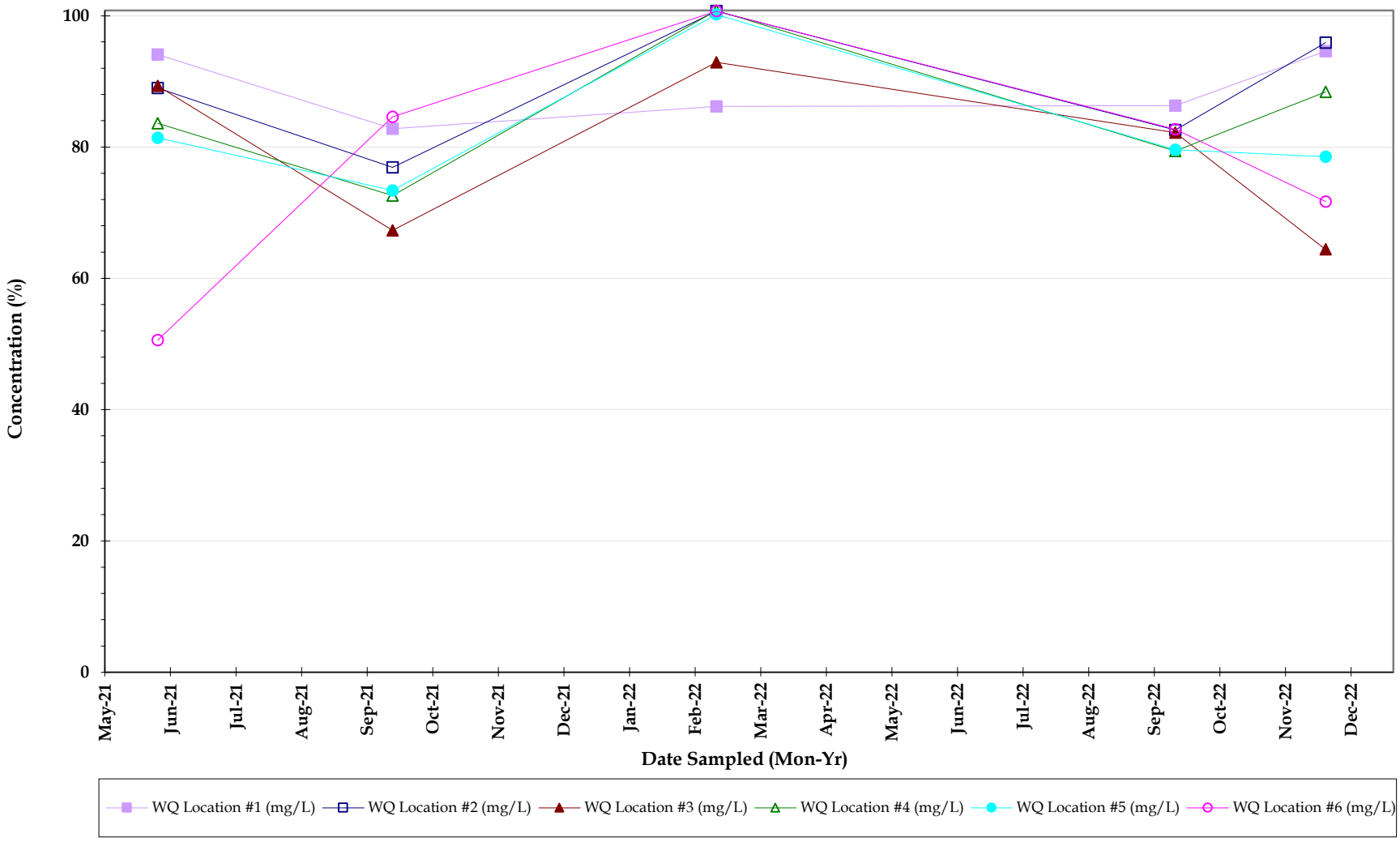


Dissolved Oxygen (mg/L)

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

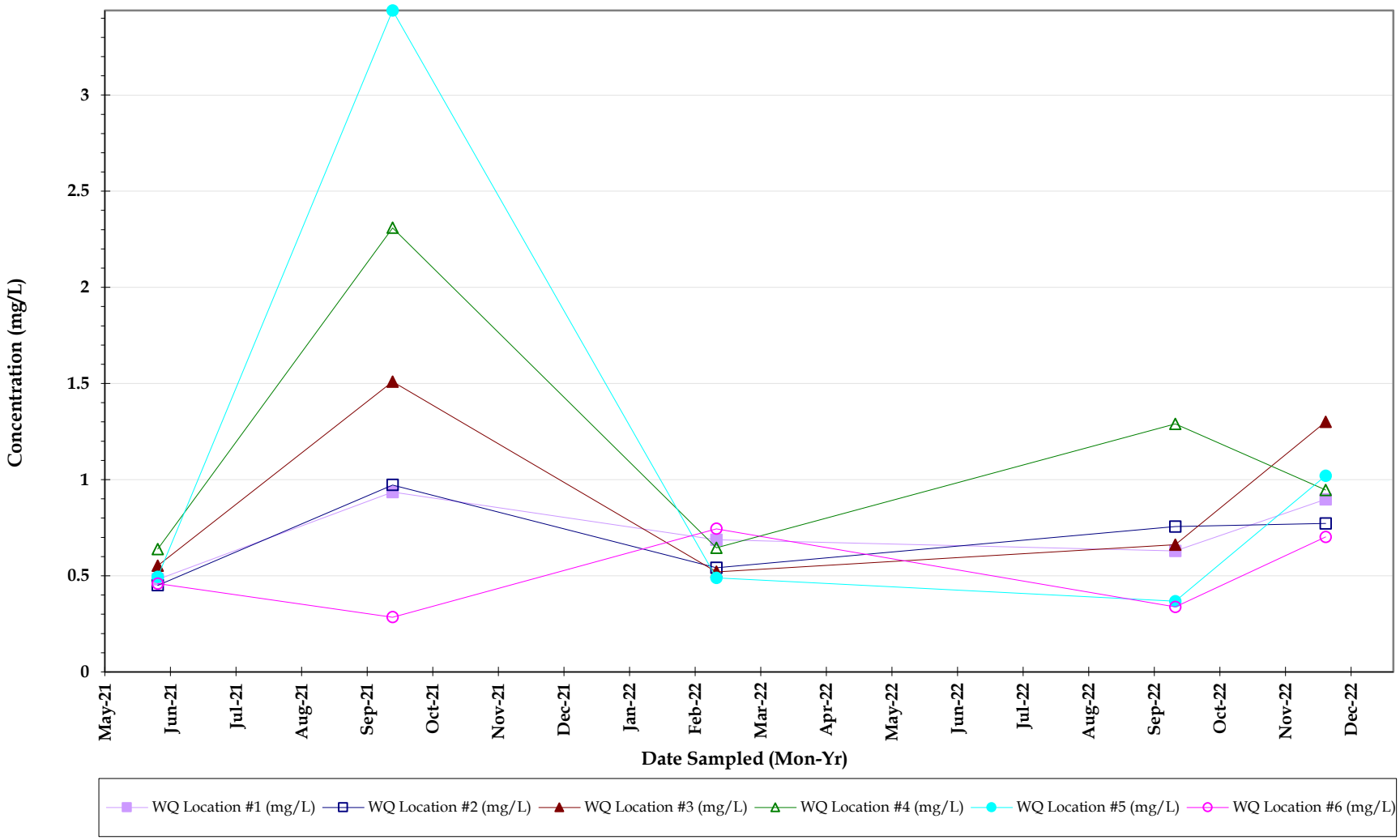


Dissolved Oxygen (%)

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

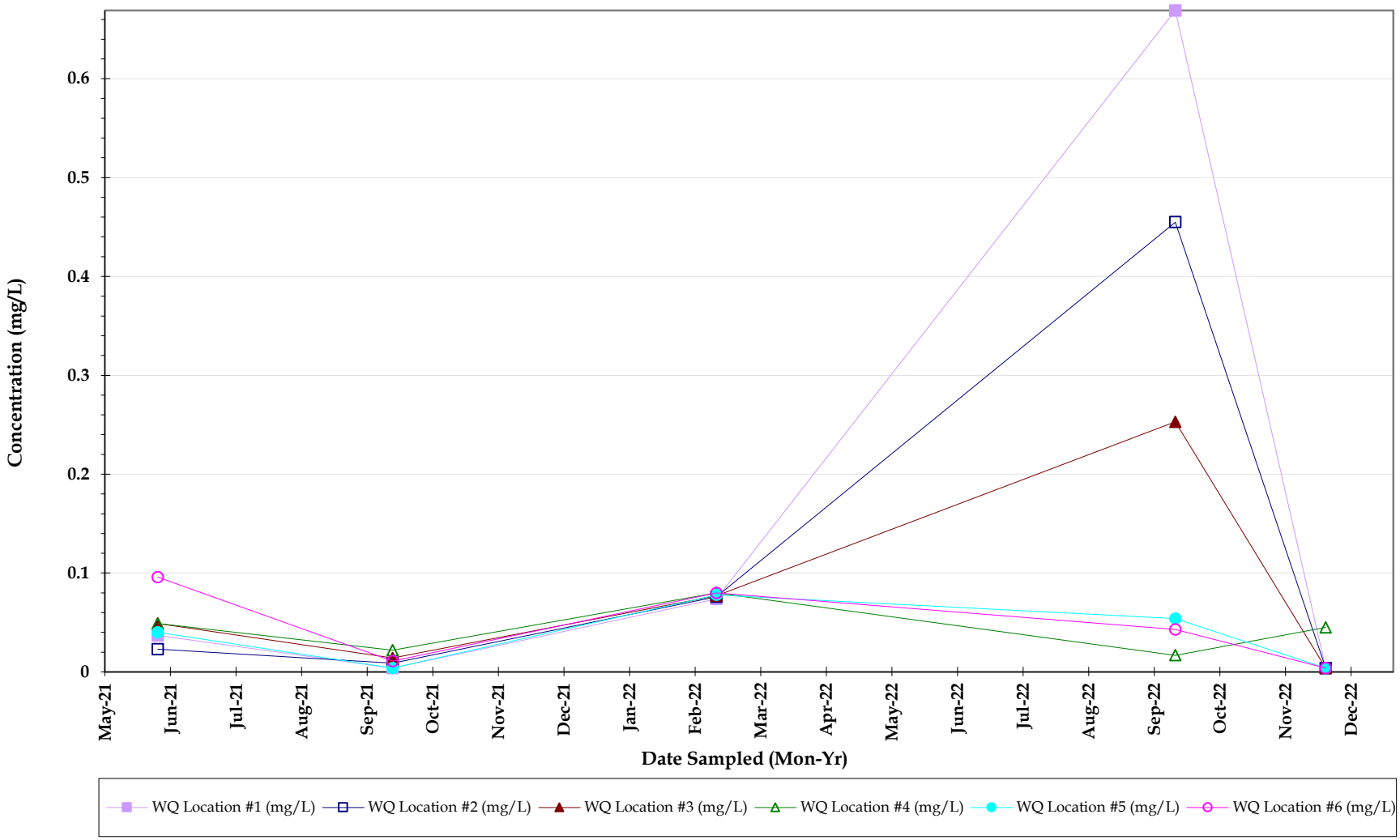


Total Nitrogen

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

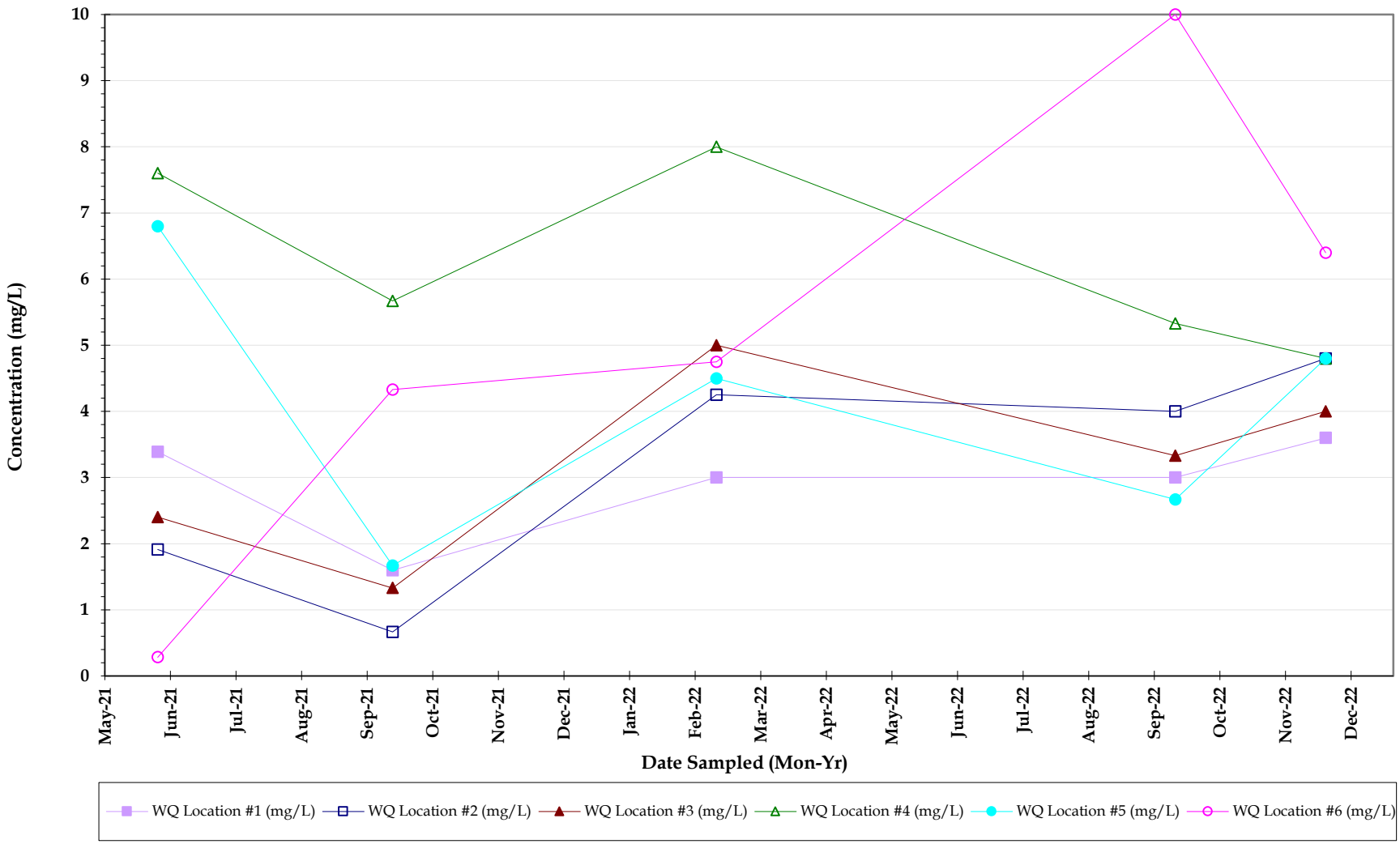


Total Phosphorus

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

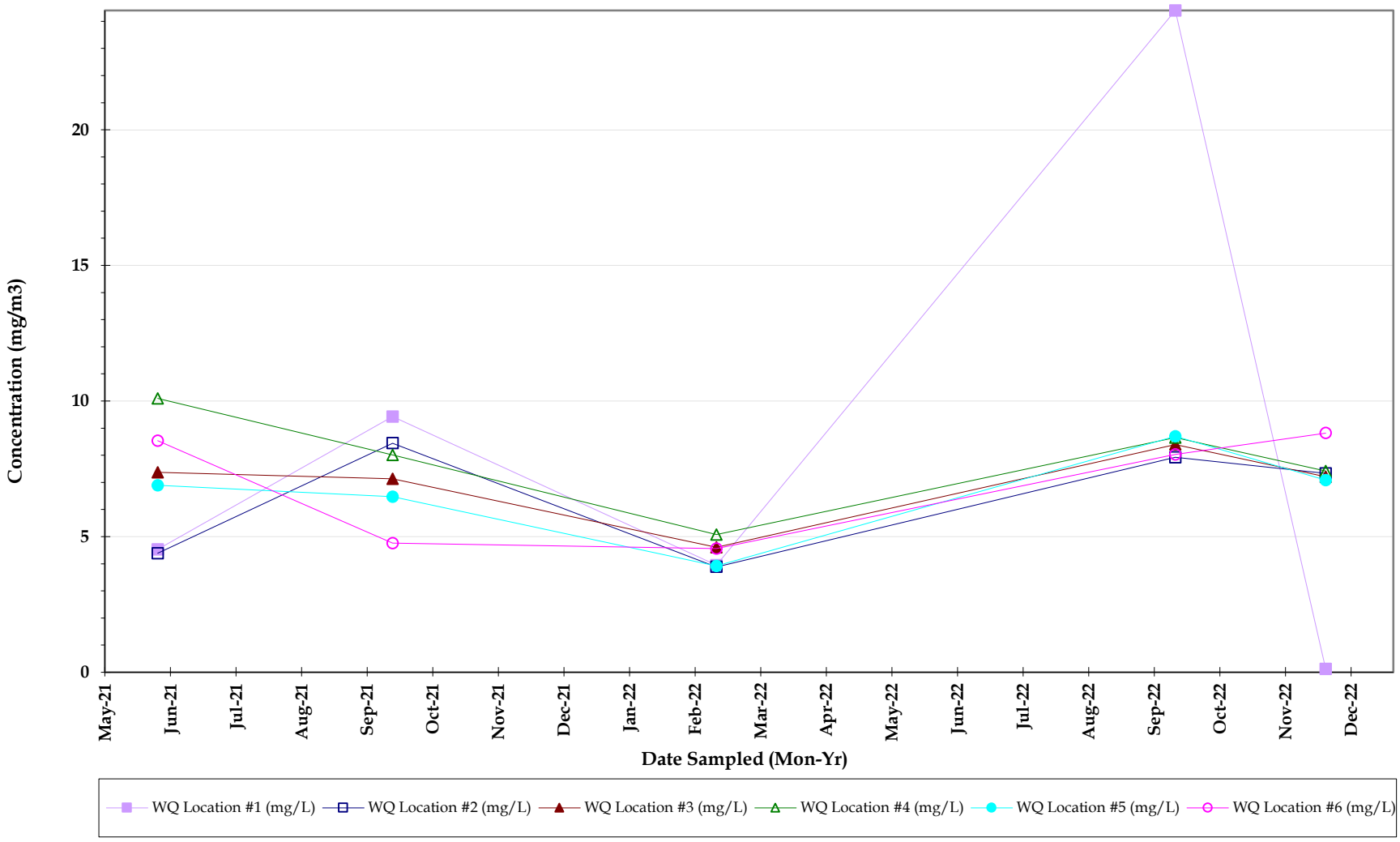


Total Suspended Solids

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

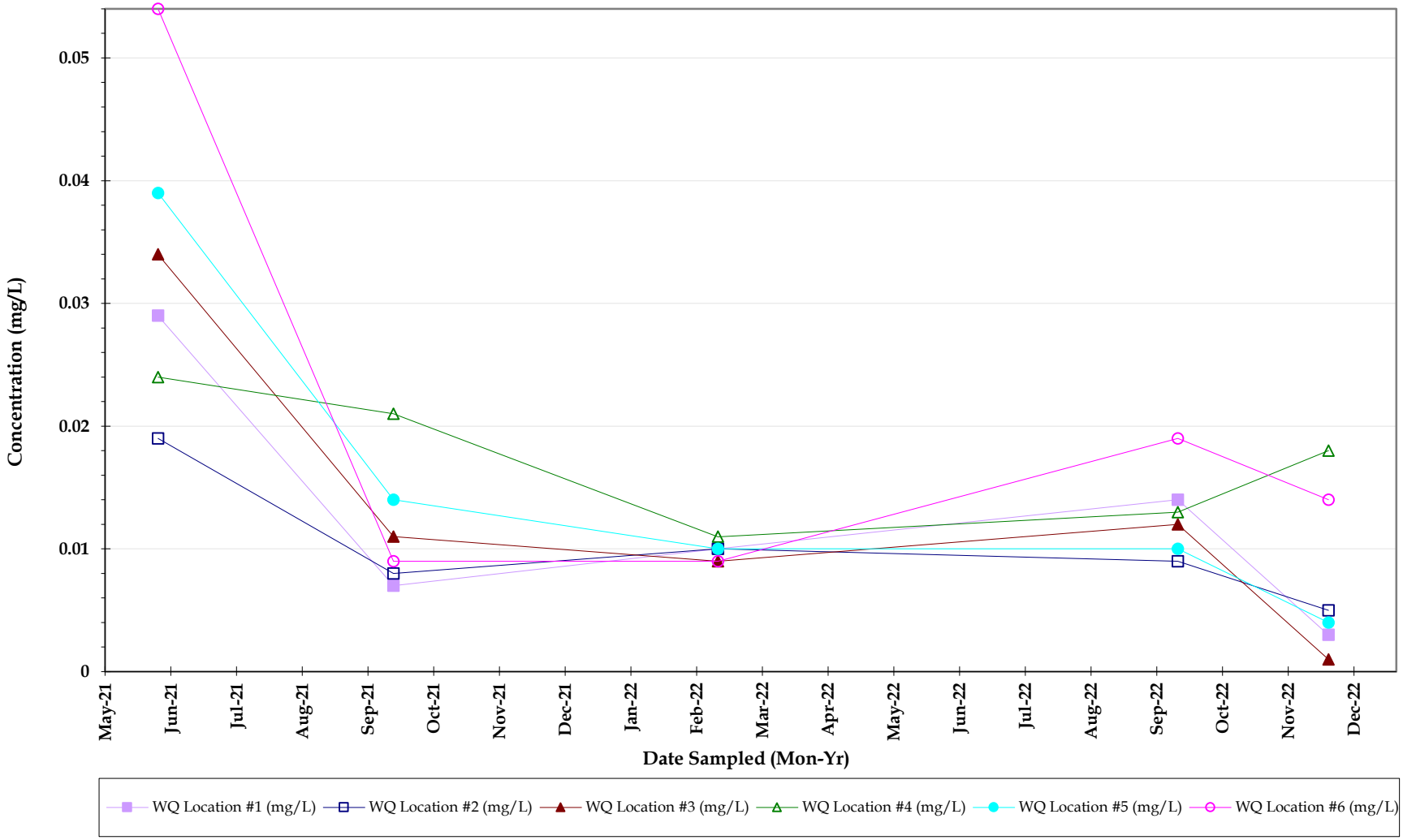


Chlorophyll *a*

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

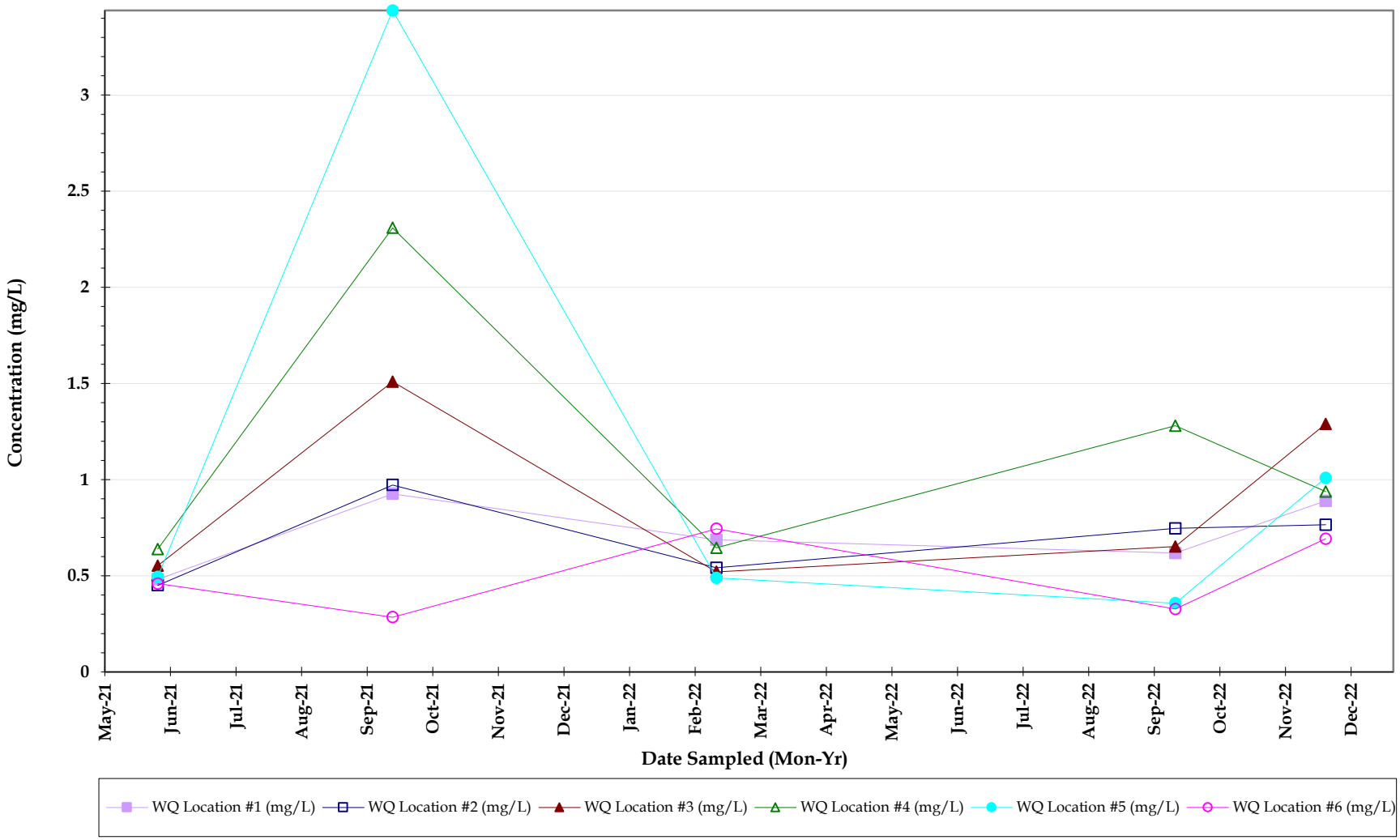


Orthophosphate

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

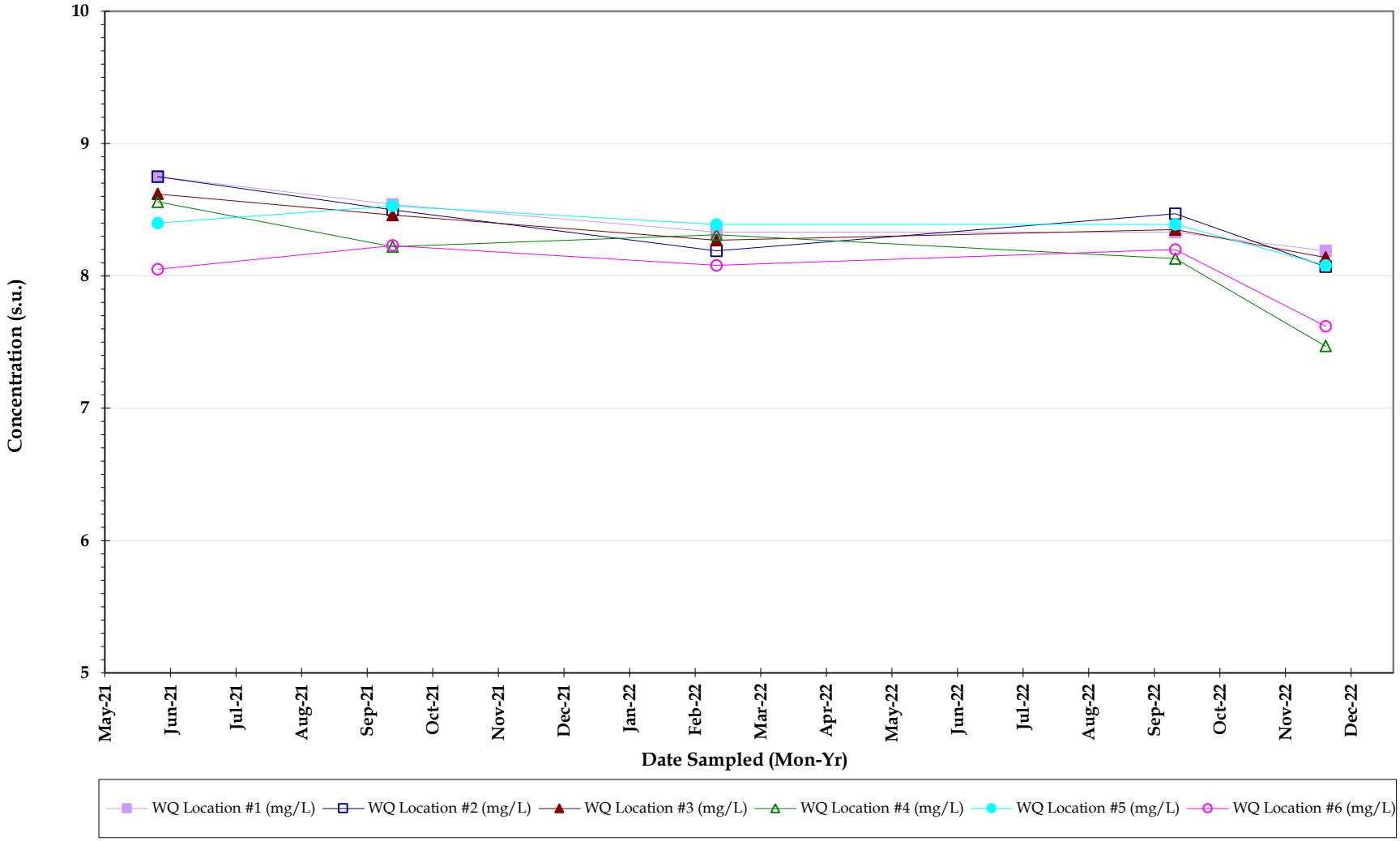


Total kjeldahl nitrogen (TKN)

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

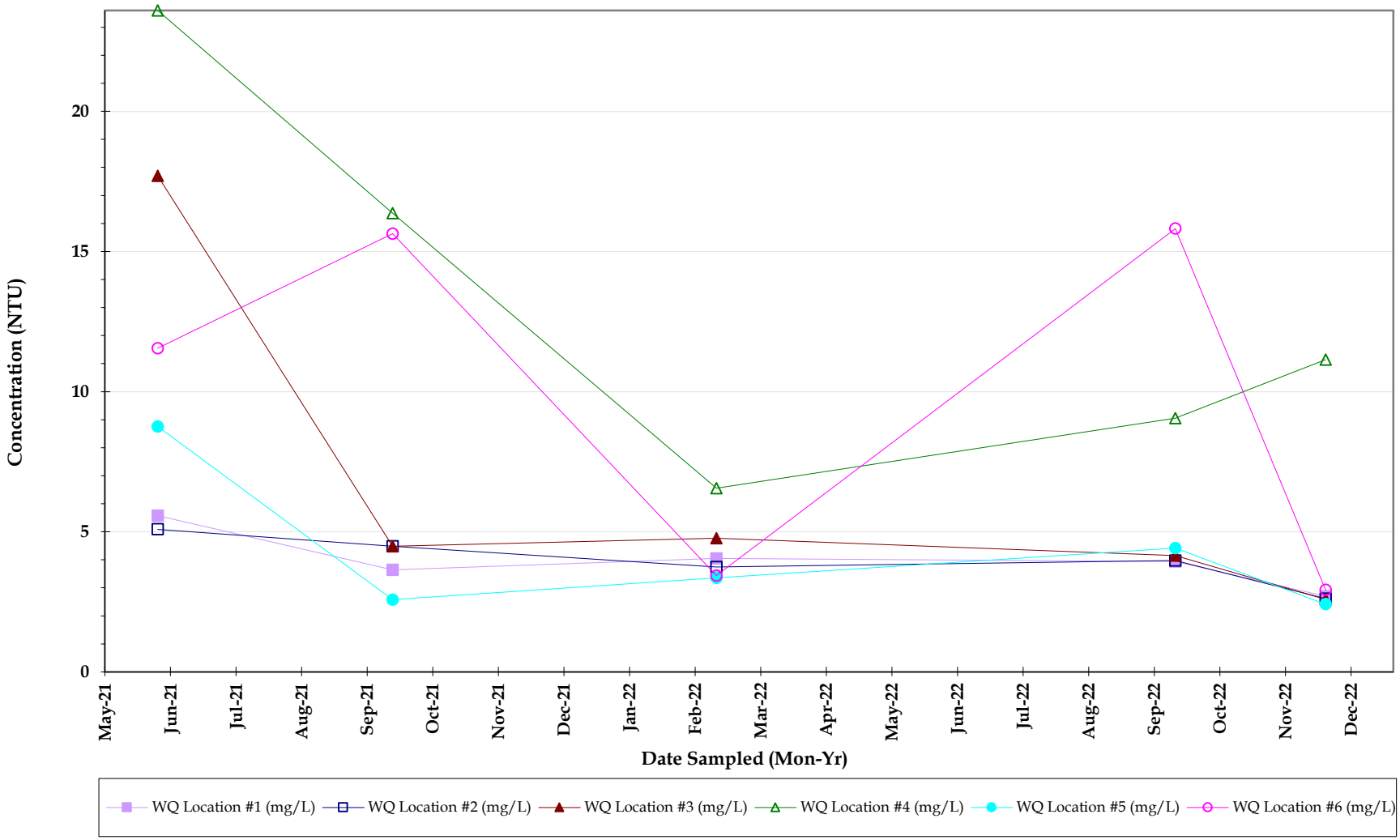


pH, Field

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

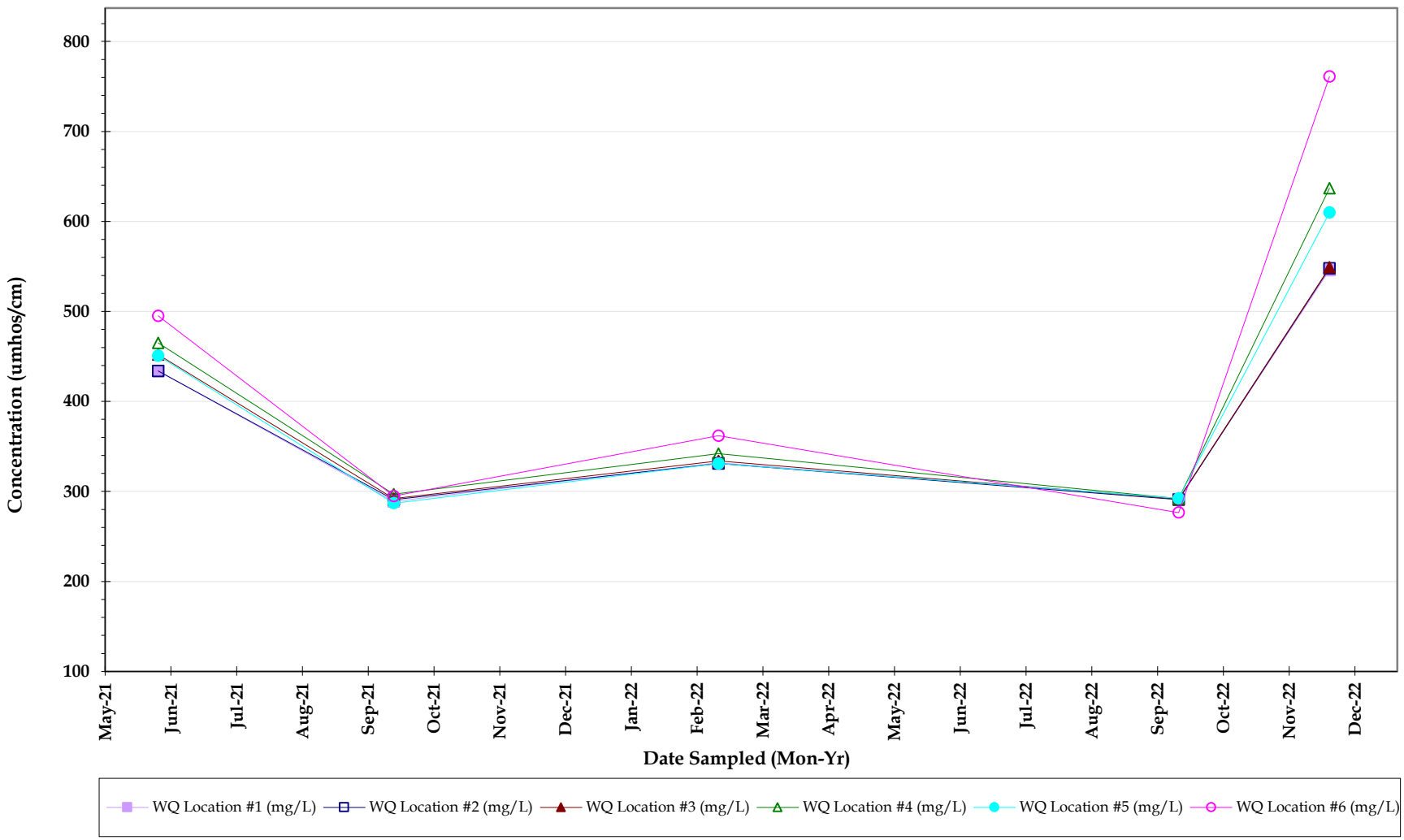


Turbidity

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

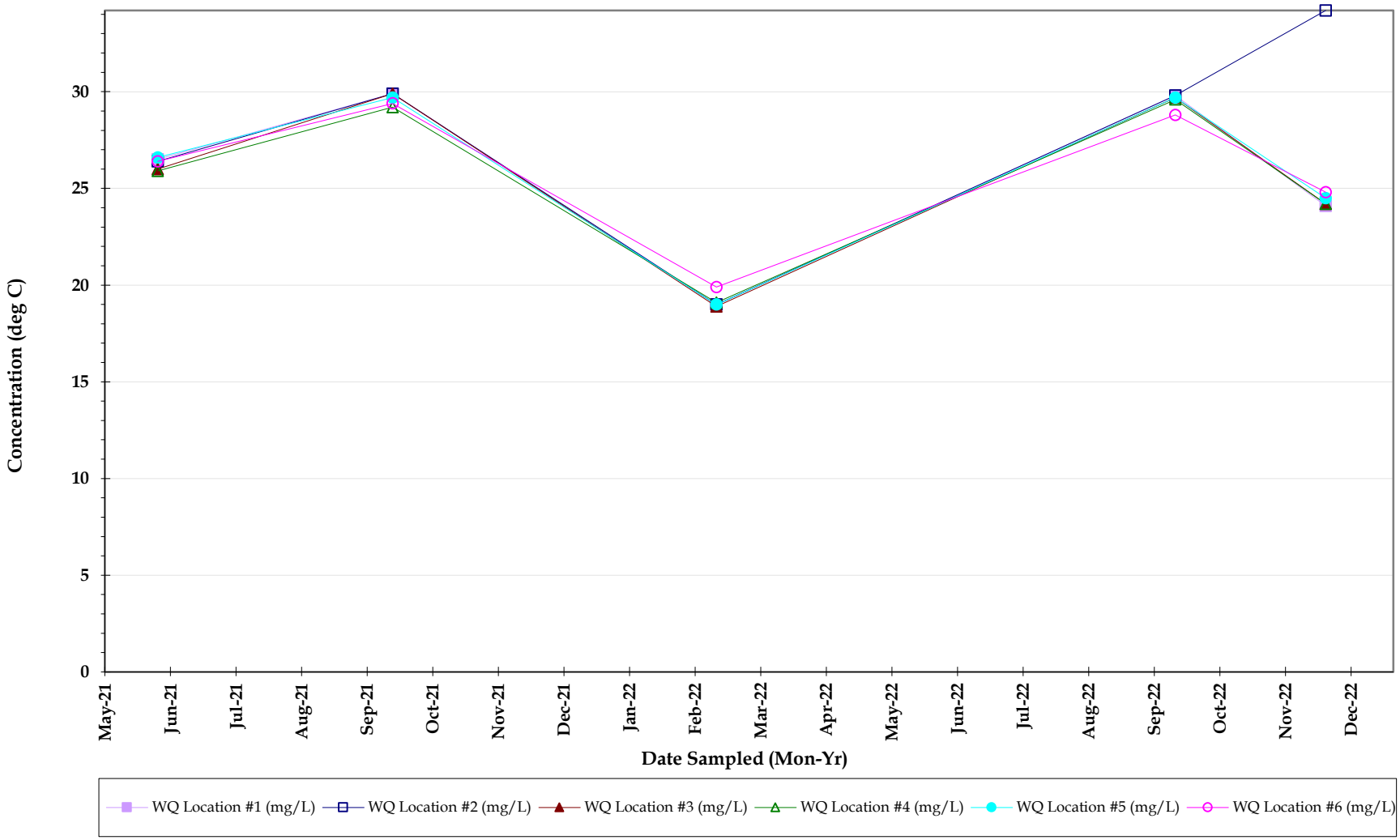


Conductivity

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022



Temperature, sample

Esplanade Lakes

Water Quality Surface Water Sample results

NOVEMBER 2022

Attachment 4

Laboratory Analytical Reports

FDOH Certification #E84167

BENCHMARK
EnviroAnalytical, Inc.

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 22111828

G H D Services, Inc.
2675 Winkler Ave., Ste.180
Fort Myers, FL 33901

Project Name : ESPLANADE LAKES
Date Received : 11/30/2022
Time Received : 15:35
Project #: 11225022-02

Submission Number: 22111828
Sample Number: 001
Sample Description: WQ Location #1

Sample Date: 11/29/2022
Sample Time: 10:05
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:16	LL
TOTAL KJELDAHL NITROGEN	0.889	MG/L	0.05	0.20	351.2	12/02/2022 12:03	EO
ORTHO PHOSPHORUS AS P	0.003 I	MG/L	0.002	0.008	365.3	11/30/2022 18:02	YQ
TOTAL PHOSPHORUS AS P	0.008 U	MG/L	0.008	0.032	365.3	12/02/2022 12:42	YQ
CHLOROPHYLL A	0.25 U	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	3.60	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1.03 I	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD
NITRATE+NITRITE AS N	0.008 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 11:57	YQ
TOTAL NITROGEN	0.897	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 11:57	EO/YQ

Submission Number: 22111828
Sample Number: 002
Sample Description: WQ Location #2

Sample Date: 11/29/2022
Sample Time: 10:10
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:18	LL
TOTAL KJELDAHL NITROGEN	0.765	MG/L	0.05	0.20	351.2	12/02/2022 12:05	EO
ORTHO PHOSPHORUS AS P	0.005 I	MG/L	0.002	0.008	365.3	11/30/2022 18:03	YQ
TOTAL PHOSPHORUS AS P	0.008 U	MG/L	0.008	0.032	365.3	12/02/2022 12:43	YQ
CHLOROPHYLL A	7.33	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	4.80	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD
NITRATE+NITRITE AS N	0.007 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 11:58	YQ
TOTAL NITROGEN	0.772	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 11:58	EO/YQ

Submission Number: 22111828
Sample Number: 003
Sample Description: WQ Location #3
Sample Date: 11/29/2022
Sample Time: 10:00
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:20	LL
TOTAL KJELDAHL NITROGEN	1.29	MG/L	0.05	0.20	351.2	12/02/2022 12:06	EO
ORTHO PHOSPHORUS AS P	0.002 U	MG/L	0.002	0.008	365.3	11/30/2022 18:04	YQ
TOTAL PHOSPHORUS AS P	0.008 U	MG/L	0.008	0.032	365.3	12/02/2022 12:44	YQ
CHLOROPHYLL A	7.21	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	4.00	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD
NITRATE+NITRITE AS N	0.009 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 11:59	YQ
TOTAL NITROGEN	1.30	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 11:59	EO/YQ

Submission Number: 22111828
Sample Number: 004
Sample Description: WQ Location #4
Sample Date: 11/29/2022
Sample Time: 09:50
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:22	LL
TOTAL KJELDAHL NITROGEN	0.938	MG/L	0.05	0.20	351.2	12/02/2022 12:07	EO
ORTHO PHOSPHORUS AS P	0.018	MG/L	0.002	0.008	365.3	11/30/2022 18:06	YQ
TOTAL PHOSPHORUS AS P	0.045	MG/L	0.008	0.032	365.3	12/21/2022 12:45	YQ
CHLOROPHYLL A	7.42	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	4.80	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1 U	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD
NITRATE+NITRITE AS N	0.008 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 12:00	YQ
TOTAL NITROGEN	0.946	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 12:00	EO/YQ

Submission Number: 22111828
Sample Number: 005
Sample Description: WQ Location #5
Sample Date: 11/29/2022
Sample Time: 10:25
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:24	LL
TOTAL KJELDAHL NITROGEN	1.01	MG/L	0.05	0.20	351.2	12/02/2022 12:09	EO
ORTHO PHOSPHORUS AS P	0.004 I	MG/L	0.002	0.008	365.3	11/30/2022 18:07	YQ
TOTAL PHOSPHORUS AS P	0.008 U	MG/L	0.008	0.032	365.3	12/02/2022 12:46	YQ
CHLOROPHYLL A	7.08	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	4.80	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1.02 I	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD

NITRATE+NITRITE AS N	0.008 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 12:00	YQ
TOTAL NITROGEN	1.02	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 12:00	EO/YQ

Submission Number: 22111828
Sample Number: 006
Sample Description: WQ Location #6

Sample Date: 11/29/2022
Sample Time: 10:40
Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date/Time	Analyst
AMMONIA NITROGEN	0.008 U	MG/L	0.008	0.032	350.1	12/07/2022 14:26	LL
TOTAL KJELDAHL NITROGEN	0.693	MG/L	0.05	0.20	351.2	12/02/2022 12:10	EO
ORTHO PHOSPHORUS AS P	0.014	MG/L	0.002	0.008	365.3	11/30/2022 18:08	YQ
TOTAL PHOSPHORUS AS P	0.008 U	MG/L	0.008	0.032	365.3	12/02/2022 12:47	YQ
CHLOROPHYLL A	8.82	MG/M3	0.25	1.00	445.0	12/05/2022 10:45	CH
TOTAL SUSPENDED SOLIDS	6.40	MG/L	0.570	2.280	SM2540D	12/02/2022 12:51	TG/MN
BIOCHEMICAL OXYGEN DEMAND	1.18 I	MG/L	1	4	SM5210B	12/01/2022 14:27	LD/LD
NITRATE+NITRITE AS N	0.009 I	MG/L	0.006	0.024	SYSTEA EASY	12/08/2022 12:01	YQ
TOTAL NITROGEN	0.702	MG/L	0.05	0.20	SYSTEA+351	12/08/2022 12:01	EO/YQ

Haley Rin
Dale D. Dixon / Laboratory Director — 12/27/2022 Date

Tülay Tanrisever - Technical Director/QC Officer

Haley Richardson - QA Officer

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.
B = Results based upon colony counts outside the ideal range.
H = Value based on field kit determination. Results may not be accurate.
I = Reported value is between the laboratory MDL and the PQL.
J1 = Estimated value. Surrogate recovery limits exceeded.
J2 = Estimated value. No quality control criteria exists for component.
J3 = Estimated value. Quality control criteria for precision or accuracy not met.
J4 = Estimated value. Sample matrix interference suspected.
J5 = Estimated value. Data questionable due to improper lab or field protocols.
K = Off-scale low. Value is known to be < the value reported.
L = Off-scale high. Value is known to be > the value reported.
N = Presumptive evidence of presence of material.
O = Sampled, but analysis lost or not performed.
Q = Sample held beyond accepted hold time.
T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.
U = Analyte analyzed but not detected at the value indicated.
V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.
Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.
Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.
I = Data deviate from historically established concentration ranges.
? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the presence or absence of the analyte cannot be determined from the data.
* = Not reported due to interference.
Oil & Grease - If client does not send sufficient sample quantity for spike evaluation surface water samples are supplied by the laboratory.

NOTES:

MBAS calculated as LAS; molecular weight = 340.
PQL = 4xMDL.
ND = Not detected at or above the adjusted reporting limit.
G1 = Accuracy standard does not meet method control limits, but does meet lab control limits that are in agreement with USEPA generated data. USEPA letter available upon request.
G2 = Accuracy standard exceeds acceptable control limits. Duplicate and spike values are within control limits. Reported data are usable.

COMMENTS:

Chlorophyll A was filtered at E85086 on 11/30/2022 at 0830.

For questions or comments regarding these results, please contact us at (941) 723-9986.

Results relate only to the samples.

Benchmark EA South
1001 Corporate Avenue, Suite 102
North Port, FL 34289
(941) 625-3137 / (800) 736-9986
(941) 423-7336 fax
Sample Temperature checked upon receipt at BEAS with Temperature Gun ID #7

Benchmark EA, Inc.
1711 12th St. East
Palmetto, FL 34221
(941) 723-9986 / (800) 736-9986
(941) 723-6061-fax
Sample Temperature checked upon receipt at BEA with Temperature Gun ID #258

Client: **GHD Services, Inc.** (HSA ENG)
2675 Winkler Ave. Suite 180
Ft. Myers Fl 33901
~~Erik Evans (239) 215-2914~~ ~~Shannon Tucker 239 210 8663~~ Connor Haydon
Email EDD Reports to: Connor Haydon (Connor.Haydon@ghd.com)
2020 PO# 34043123

Kit Shipped to client via UPS Standard in 1 large cooler

Chain of Custody Form: Esplanade Lakes WQ

Project Number:

Profile: 840, QC Report

Laboratory Submission #: 22111828

Station ID	Sample Type[1]	Sample Matrix[2]	Parameters. Preservative[4]. Container Type[3] / Total # of Containers = 4				Laboratory Submission #
			Unique bottle ID 1A	Unique bottle ID 1B	Unique bottle ID 1C	Unique bottle ID 1D	
			NO_3-NO_2 (353.2) TKN (351.2) NH_3 (350.1) TP (365.3) T-N (Calc.)	BOD5 (SM5210B) TSS (SM2540D)	Ortho-Phos (Lab Filtered) (365.3)	Chlorophyll a (445.0) Filtered @ BEAS 11/30/22 0830	
			1.1mL 1:4 H_2SO_4 pH<2 Lot # 22-19	Plain	Plain	Plain	
			1 x ½ Pint Plastic	1 x 2 Quart Plastic	1 x ½ Pint Plastic	1 x 500mL Opaque Plastic	
WQ Location #1	Grab	SW	Date/Time: 11/29/22 1005				1
WQ Location #2	Grab	SW	Date/Time: 11/29/22 1010				2
WQ Location #3	Grab	SW	Date/Time: 11/29/22 1000				3
WQ Location #4	Grab	SW	Date/Time: 11/29/22 0950				4
WQ Location #5	Grab	SW	Date/Time: 11/29/22 1025				5
WQ Location #6	Grab	SW	Date/Time: 11/29/22 1040				6

Notes:
1. "Sample Type" is used to indicate whether the sample was a grab (G) or whether it was a composite (C).
2. "Sample Matrix" is used to indicate whether the sample is being discharged to drinking water (DW), groundwater (GW), surface water (SW), fresh surface water (FSW), saline surface water (SSW), soil, sediment (SDMNT), or sludge (SLDG).
3. "Container Type" is used to indicate whether the container is plastic (P) or glass (G).
4. **Sample must be refrigerated or stored in wet ice after collection. The temperature during storage should be less than or equal to 6°C (42.8°F).**
5. Under "Preservative," list any preservatives that were added to the sample container. Lot Number of preservative used is specific to the bottles included in the kit. NaThio, H_2SO_4 and HNO_3 do not have expiration dates per the manufacturer. Micro bottles are pre-preserved at manufacturing stage. 40mL vials are pre-preserved at manufacturing stage.
6. 2 Quart plastic bottles are not certified.

Instructions:
1. Each bottle has a label identifying sample ID, premeasured preservative contained in the bottle, sample type, client ID, and parameters for analysis.
2. The following information should be added to each bottle label after collection with permanent black ink: date and time of collection, sampler's name or initials, and any field number or ID.
3. All bottles not containing preservative may be rinsed with appropriate sample prior to collection.
4. The client is responsible for documentation of the sampling event. Please note special sampling events on the sample custody form.
5. Sample kit has been created by BEA using new, certified bottles unless otherwise noted.

Laboratory Sample Acceptability:
pH <2 : ☐ BEA Temperature: 0.8°C
BEAS Temp: 4.4°C

1	Collector & Affiliation: (Print & Sign) Jessica Walsh / James Walsh	Date: 11/29/22	Time: 1410	Received By & Affiliation: (Print & Sign) Brooke Kratenick BEAS	Brooke Kratenick BEAS	Date: 11/29/22	Time: 1410
2	Relinquished By & Affiliation: (Print & Sign) Brooke Kratenick BEAS	Date: 11/30/22	Time: 11:24a	Received By & Affiliation: (Print & Sign) JAMES Stone		Date: 11/30	Time: 11:24a
3	Relinquished By & Affiliation: (Print & Sign) James Stone	Date: 11/30	Time: 1535	Received By & Affiliation: (Print & Sign) Kara McGowan GHD		Date: 11/30/22	Time: 1535
4	Relinquished By & Affiliation: (Print & Sign)	Date:	Time:	Received By & Affiliation: (Print & Sign)		Date:	Time:
5	Relinquished By & Affiliation: (Print & Sign)	Date:	Time:	Received By & Affiliation: (Print & Sign)		Date:	Time:

Rev 10/14

Submission Number: 22111828
Project Name: ESPLANADE LAKES

QC REPORT

SUBMISSION NUMBER	SAMPLE NUMBER	METHOD	ANALYTE	ANALYSIS DATE/TIME	QC FLAG	QC VALUE	SAMPLE RESULT	LR RESULT	LR %RSD	SPK RESULT	STD-SPK %REC
22111819 - 001	667783	350.1	AMMONIA NITROGEN	12/07/2022 17:37	LR		862.000	859.000	0.19		
		350.1	AMMONIA NITROGEN	12/07/2022 16:39	MB	0.00	0.000				
22120271 - 002	668240	350.1	AMMONIA NITROGEN	12/07/2022 15:01	SPK	0.00	0.038			1.050	
		350.1	AMMONIA NITROGEN	12/07/2022 16:41	STD	1.00	0.957				95.7
22111814 - 001	667772	351.2	TOTAL KJELDAHL NITROGEN	12/02/2022 17:04	LR		53.000	52.100	1.20		
		351.2	TOTAL KJELDAHL NITROGEN	12/02/2022 18:06	MB	0.00	0.000				
22120055 - 001	667925	351.2	TOTAL KJELDAHL NITROGEN	12/02/2022 17:18	SPK	2.00	3.130			2.990	93.0
		351.2	TOTAL KJELDAHL NITROGEN	12/02/2022 14:02	STD	2.50	2.360				94.6
		351.2	TOTAL KJELDAHL NITROGEN	12/02/2022 13:09	STD	2.00	2.190				109.0
22111785 - 001	667726	365.3	ORTHO PHOSPHORUS AS P	11/30/2022 17:43	LR		1.450	1.500	2.30		
		365.3	ORTHO PHOSPHORUS AS P	11/30/2022 18:28	MB	0.00	0.000				
22111762 - 001	667698	365.3	ORTHO PHOSPHORUS AS P	11/30/2022 17:45	SPK	0.20	0.357			0.363	103.0
		365.3	ORTHO PHOSPHORUS AS P	11/30/2022 18:29	STD	0.20	0.186				93.2
22121201 - 004	669734	365.3	TOTAL PHOSPHORUS AS P	12/21/2022 15:33	LR		106.000	107.000	0.27		
		365.3	TOTAL PHOSPHORUS AS P	12/21/2022 11:14	MB	0.00	0.000				
		365.3	TOTAL PHOSPHORUS AS P	12/21/2022 11:40	PQL	0.02	0.019				95.5
22111828 - 001	667795	365.3	TOTAL PHOSPHORUS AS P	12/02/2022 12:42	SPK	0.20	0.193			0.193	100.0
		365.3	TOTAL PHOSPHORUS AS P	12/21/2022 11:15	STD	0.20	0.200				100.0
22111692 - 001	667601	445.0	CHLOROPHYLL A	12/05/2022 10:45	LR		12.695	12.400	1.66		
22111815 - 001	667775	SM2540D	TOTAL SUSPENDED SOLIDS	12/02/2022 12:51	LR		128.000	132.000	2.18		
		SM2540D	TOTAL SUSPENDED SOLIDS	12/02/2022 12:51	MB	0.00	0.000				
		SM2540D	TOTAL SUSPENDED SOLIDS	12/02/2022 12:51	STD	951.00	888.000				93.4
		SM5210B	BIOCHEMICAL OXYGEN DEMAND	12/01/2022 14:27	MB	0.00	0.000				
		SM5210B	BIOCHEMICAL OXYGEN DEMAND	12/01/2022 14:27	STD	198.00	181.300				91.6
0 - 002		SYSTEA EASY	NITRATE+NITRITE AS N	12/08/2022 11:31	LR		5.310	5.300	0.25		

QC FLAGS: MB or BLK = METHOD BLANK LR = LAB REPLICATE MSD = MATRIX SPIKE DUPLICATE STD or LCS = STANDARD SPK or MS = MATRIX SPIKE

SUBMISSION NUMBER	SAMPLE NUMBER	METHOD	ANALYTE	ANALYSIS DATE/TIME	QC FLAG	QC VALUE	SAMPLE RESULT	LR RESULT	LR %RSD	SPK RESULT	STD-SPK %REC
		SYSTEA EASY	NITRATE+NITRITE AS N	12/08/2022 14:28	MB	0.00	0.000				
22120064 - 002	667951	SYSTEA EASY	NITRATE+NITRITE AS N	12/08/2022 14:21	SPK	2.50	3.350			3.290	97.4
		SYSTEA EASY	NITRATE+NITRITE AS N	12/08/2022 11:27	STD	0.25	0.254				102.0

Comments:

Attachment 5

Surface Water Field Sheets

11/24/22

1 of 1

Project: Esplanade Lakes - 11225022

PM: Lori Coolidge

Task: SW Sampling

Equipment: Truck, 4SI, trailer, boat, life jackets, turbidimeter, bottles, paddles, weighted tape measure

Tech: Jessie Walsh, Justin Leblanc

920 Arrive at Site

935 Put boat → water

950 Took Sample from WQL # 1 → #6

1115 Took boat out of water

1125 Depart Site

eod Jessie Walsh

Field Surface Water Sheets

11/29/22

WQL #1-#6

Waterbody type: Large Lake

Total DTW: n/a (current too strong, pulled weight)

Sample Depth: 1.5'

Stream flow: flow within banks

Water level: normal

Collection device: direct grab

Weather: clear

Personnel: Jessie Walton, Jordan Lebbance

Field Measurements:

WQL	Location	Time	pH	DO (mg/L)	DO (%)	Temp (°C)	Cond.	Turb.
#1	middle of lake	1005	8.19	7.96	94.6	24.1	546	2.7
#2	middle of lake	1010	8.07	8.06	95.9	24.2	548	2.62
#3	west of Bridge	1000	8.14	5.73	64.4	24.2	549	2.59
#4	at Bridge	0950	7.47	7.69	88.4	24.2	637	11.14
#5	outfall of canal	1025	8.08	6.90	78.5	24.5	610	2.42
#6	South end of canal	1040	7.62	5.98	71.7	24.8	761	2.93

Attachment 6

Laboratory Data Compliance Memo

Technical Memorandum

January 18, 2023

To	Mr. Bruce Bernard Manager of Field Operations Calvin, Giordano & Associates, Inc. 1800 Eller Drive, Suite 600 Fort Lauderdale, FL 33316	**Tel**	716.205-1977
Copy to	Connor Haydon	**Email**	Connor.Haydon@ghd.com
From	Sheri Finn/eew/19	**Ref. No.**	11225022
Subject	Analytical Results Compliance Report Surface Water Quality Monitoring Esplanade Lakes Fort Myers, Florida November 2022		

1. Compliance Review

Samples were collected in November 2022 in support of the Esplanade Lakes sampling. The analytical results are summarized in Table 1. All samples were prepared and analyzed within the method required holding times. The method blank results were non-detect. All reported laboratory control sample (LCS) analyses demonstrated acceptable accuracy. Laboratory duplicate analyses were performed for some analytes. All results were acceptable, indicating good analytical precision. The matrix spike (MS) results were evaluated per the laboratory limits. The MS analyses performed were acceptable, demonstrating good analytical accuracy.

Based on this compliance review, the results in Table 1 are acceptable for use.

Regards

Sheri Finn
Analyst

Table 1

Analytical Results Summary
Surface Water Quality Monitoring
Esplanade Lakes Fort Myers, Florida
November 2022

Sample Location/Sample ID:		WQ Location #1					WQ Location #2					WQ Location #3				
Sample Date:		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**	**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**	**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**
Field Parameters	**Units**															
Total Water Depth	Feet	NM	27.0	27.5	31.5	NM	NM	27.0	27.5	28.7	NM	NM	18.0	18.5	19.9	NM
Sample Depth	Feet	1.5	1.5	1.5	1.5	1.5	6.5	13	13.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	434	289	332	291.5	546	434	291	331	291.0	548	452	292	334	291.5	549
Dissolved oxygen (DO), field	mg/L	7.47	6.29	8.85	6.41	7.96	7.06	5.86	9.35	6.27	8.06	7.24	5.12	9.26	6.11	5.73
Dissolved oxygen (DO), field	%	94.1	82.8	86.2	86.3	94.6	89	76.9	100.7	82.6	95.9	89.3	67.3	92.9	82.2	64.4
pH, field	s.u.	8.75	8.54	8.33	8.33	8.19	8.75	8.50	8.19	8.47	8.07	8.62	8.46	8.27	8.35	8.14
Temperature, field	Deg C	26.5	29.9	19.0	29.8	24.1	26.4	29.9	19.0	29.8	34.2	26.0	29.9	18.9	29.7	24.2
Turbidity, field	NTU	5.58	3.64	4.05	3.94	2.7	5.09	4.48	3.74	3.98	2.62	17.7	4.48	4.77	4.15	2.59
Secchi Disk	Feet	6.20	5.0	6.75	2.7	NM	6.20	5.0	6.75	3.6	NM	3.0	5.5	5.0	3.3	NM
Wet Parameters	**Units**															
Ammonia-N	mg/L	0.013 I	0.009 I	0.122	0.008 U	0.008 U	0.008 U	0.015 I	0.008 U	0.008 U	0.008 U	0.008 U	0.014 I	0.008 U	0.008 U	0.008 U
Total kjeldahl nitrogen (TKN)	mg/L	0.482	0.927	0.687	0.619	0.889	0.451	0.973	0.542	0.746	0.765	0.552	1.51	0.521	0.652	1.29
Total nitrogen	mg/L	0.482	0.936	0.687	0.629	0.897	0.451	0.973	0.542	0.756	0.772	0.552	1.51	0.521	0.662	1.30
Nitrite/Nitrate	mg/L	0.006 U	0.009 I	0.006 U	0.010 I	0.008 I	0.006 U	0.006 U	0.006 U	0.010 I	0.007 I	0.006 U	0.006 U	0.006 U	0.010 I	0.009 I
Ortho phosphorus (Field Filtered)	mg/L	0.029	0.007 I	0.010	0.014	0.003 I	0.019	0.008	0.010	0.009	0.005 I	0.034	0.011	0.009	0.012	0.002 U
Total phosphorus	mg/L	0.037	0.008 U	0.074	0.669	0.008 U	0.023 I	0.009 I	0.076	0.455	0.008 U	0.049	0.014 I	0.077	0.253	0.008 U
Chlorophyll	mg/m3	4.53	9.43	3.95	24.4	0.25 U	4.39	8.45	3.89	7.93	7.33	7.37	7.13	4.61	8.40	7.21
Total suspended solids (TSS)	mg/L	3.39	1.60 I	3.00	3.00	3.60	1.91 I	0.667 I	4.25	4.00	4.80	2.40	1.33 I	5.00	3.33	4.00
Biochemical oxygen demand (total BOD5)	mg/L	1 U	1.22 I	1.0 U	1.02 I	1.03 I	1 U	1 U	1.0 U	1 U	1 U	1.16 I	1 U	1.0 U	1 U	1 U

Sample Location/Sample ID:		WQ Location #4					WQ Location #5					WQ Location #6				
Sample Date:		**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**	**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**	**5/26/2021**	**09/14/2021**	**02/14/2022**	**09/19/2022**	**11/29/2022**
Field Parameters	**Units**															
Total Water Depth	Feet	NM	7.0	7.0	7.7	NM	NM	10.0	10.0	8.7	NM	NM	8.0	4.0	10.6	NM
Sample Depth	Feet	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Conductivity, field	umhos/cm	465	297	342	292.2	637	451	287	331	292.3	610	495	295	362	276.7	761
Dissolved oxygen (DO), field	mg/L	6.78	5.43	9.32	5.93	7.69	7.33	5.59	9.33	6.06	6.90	4.07	6.61	9.38	6.30	5.98
Dissolved oxygen (DO), field	%	83.6	72.6	100.8	79.4	88.4	81.4	73.4	100.2	79.6	78.5	50.6	84.6	100.7	82.7	71.7
pH, field	s.u.	8.56	8.22	8.31	8.13	7.47	8.40	8.53	8.39	8.39	8.08	8.05	8.23	8.08	8.2	7.62
Temperature, field	Deg C	25.9	29.2	19.1	29.6	24.2	26.6	29.7	19.0	29.7	24.5	26.4	29.4	19.9	28.8	24.8
Turbidity, field	NTU	23.60	16.37	6.56	9.05	11.14	8.76	2.58	3.36	4.42	2.42	11.55	15.64	3.44	15.82	2.93
Secchi Disk	Feet	2.0	2.5	4.5	2.7	NM	3.4	7.0	5.75	2.6	NM	2.5	3.0	3.5	2.2	NM
Wet Parameters	**Units**															
Ammonia-N	mg/L	0.008 U	0.019 I	0.030 I	0.008 U	0.008 U	0.012 I	0.019 I	0.008 U	0.008 U	0.008 U	0.022 I	0.023 I	0.008 U	0.047	0.008 U
Total kjeldahl nitrogen (TKN)	mg/L	0.639	2.31	0.645	1.28	0.938	0.494	3.44	0.489	0.358	1.01	0.459	0.285	0.745	0.328	0.693
Total nitrogen	mg/L	0.639	2.31	0.645	1.29	0.946	0.494	3.44	0.489	0.368	1.02	0.459	0.285	0.745	0.338	0.702
Nitrite/Nitrate	mg/L	0.006 U	0.006 U	0.006 U	0.009 I	0.008 I	0.006 U	0.006 U	0.006 U	0.010 I	0.008 I	0.006 U	0.006 U	0.006 U	0.010 I	0.009 I
Ortho phosphorus (Field Filtered)	mg/L	0.024	0.021	0.011	0.013	0.018	0.039	0.014	0.010	0.010	0.004 I	0.054	0.009	0.009	0.019	0.014
Total phosphorus	mg/L	0.049	0.022 I	0.080	0.017 I	0.045	0.040	0.008 U	0.078	0.054	0.008 U	0.096	0.011 I	0.080	0.043	0.008 U
Chlorophyll	mg/m3	10.1	8.01	5.08	8.65	7.42	6.89	6.47	3.92	8.70	7.08	8.54	4.76	4.56	8.03	8.82
Total suspended solids (TSS)	mg/L	7.60	5.67	8.00	5.33	4.80	6.80	1.67 I	4.50	2.67	4.80	0.570 U	4.33	4.75	10.0	6.40
Biochemical oxygen demand (total BOD5)	mg/L	1.18 I	1 U	1.0 U	1.20 I	1 U	1.07 I	1 U	1.0 U	1 U	1.02 I	1 U	1 U	1.0 U	1.17 I	1.18 I

Notes:

U - Not detected at the associated reporting limit
I - Reported value is between method detection limit and the practical quantitation limit
NM - Not measured during noted event
* DO values at or above 100% are possible super-saturation conditions due to high water temperatures and/or high volume of algae.