



WATER OPERATING SERVICES
 WATER QUALITY
 10100 EAST JEFFERSON AVENUE
 DETROIT, MICHIGAN 48214
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GLWA Water Treatment Plants' - Mineral Reports

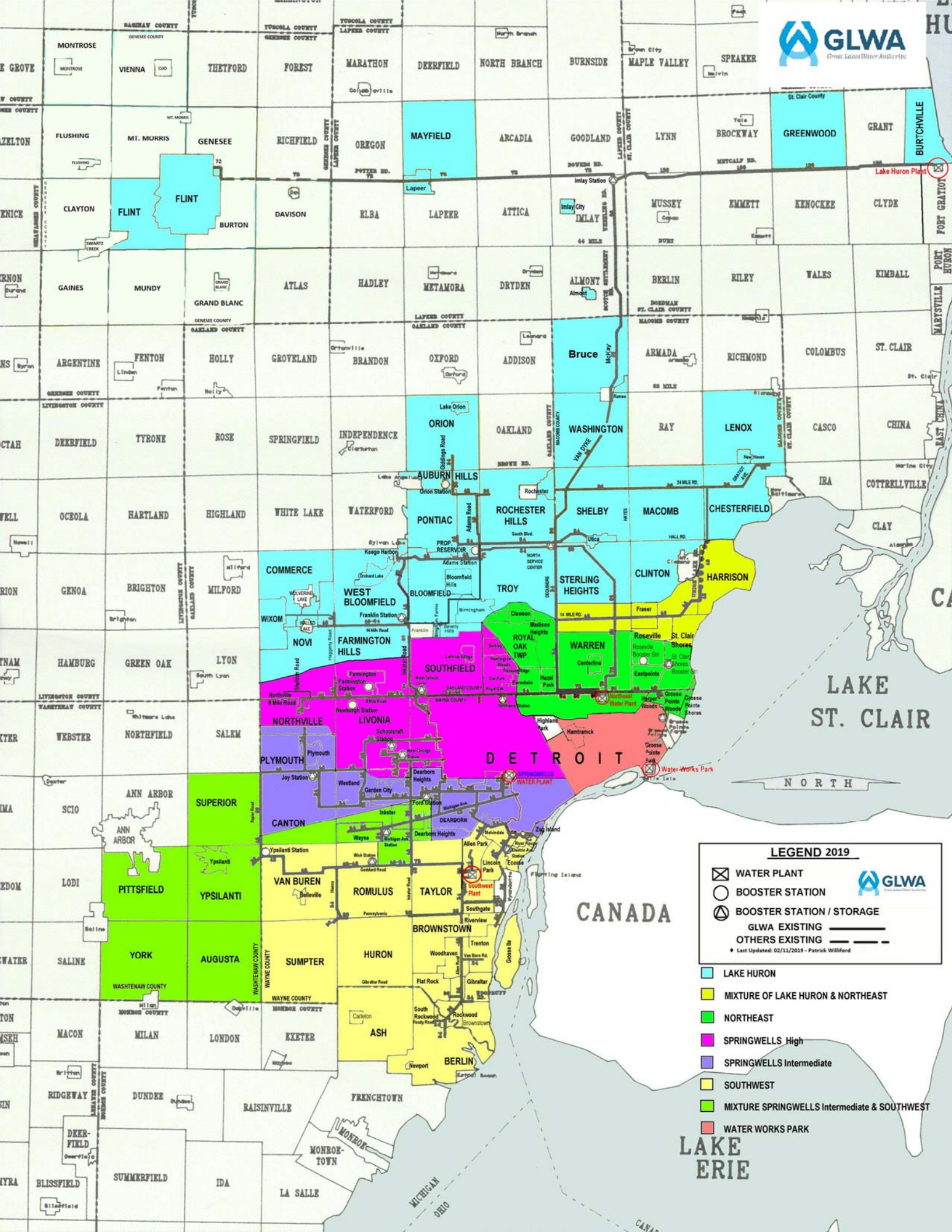
Sample Dates: 06/12/2018 06/12/2018 06/12/2018 06/12/2018 06/12/2018 06/12/2018 06/12/2018 06/12/2018

Parameter	Formula	Units	Lake Huron		Southwest		Belle Isle	Water Works Park		Northeast		Springwells	MCL	Sec.Std	MDL
			Raw	Tap	Raw	Tap	Raw	Tap	Tap	Tap	Tap				
Turbidity		NTU	0.30	0.05	1.50	0.20	2.40	0.08	0.07	0.13	0.3/95% (1)				
Total Solids		mg/L	86	137	129	170	82	144	91	124			500	10	
Total Dissolved Solids		mg/L	111	120	141	150	99	122	117	149			500	10	
Aluminum	Al	mg/L	0.032	0.059	AE	0.056	AE	0.132	0.055	0.054			0.05-0.2	0.005	
Iron	Fe	mg/L	0.053	0.029	0.098	0.038	0.128	0.031	0.044	0.027			0.3	0.005	
Copper	Cu	mg/L	0.010	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	0.005	1.3 (AL)		1.0	0.005	
Magnesium	Mg	mg/L	7.98	7.85	8.53	8.43	8.13	8.33	8.43	8.33				0.5	
Calcium	Ca	mg/L	26.8	26.5	28.1	29.1	28.1	28.1	28.0	28.3				0.1	
Sodium	Na	mg/L	4.98	5.21	6.81	6.36	5.71	5.76	5.94	5.99			20 (2)	0.1	
Potassium	K	mg/L	1.07	0.97	1.21	1.11	1.03	1.04	1.08	1.13				0.1	
Manganese	Mn	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	0.004	< 0.002	< 0.002	< 0.002			0.05	0.002	
Lead	Pb	mg/L	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.015 (AL)			0.001	
Zinc	Zn	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1			5	0.1	
Silica	SiO ₂	mg/L	1.9	2.1	0.8	1.0	1.1	1.2	1.1	1.1				0.4	
Sulfate	SO ₄ ²⁻	mg/L	16.8	18.6	18.4	26.2	17.0	22.2	25.5	25.9			250		
Chloride	Cl ⁻	mg/L	9.1	9.6	10.4	11.8	8.8	11.0	11.0	11.0			250	5	
Phosphorus	P	mg/L	< 0.05	0.40	< 0.05	0.38	< 0.05	0.29	0.40	0.41				0.05	
Free Carbon Dioxide	CO ₂	mg/L	0.0	0.0	0.3	0.1	1.0	6.3	0.0	0.0					
Total Hardness (3), (4), (5)		mg/L	98	97	106	104	100	102	102	102					
Total Alkalinity (3)		mg/L	78	73	85	74	86	77	74	72					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	0	0	80	67	85	77	48	58					
Non-Carbonate Hardness (3)		mg/L	20	24	21	30	14	25	28	30					
Chemical Oxygen Demand		mg/L	< 2	2.5	< 2	2.1	3.0	5.1	< 2	< 2				2	
Dissolved Oxygen		mg/L	9.3	9.4	7.9	8.0	9.1	9.2	9.4	8.6					
Nitrite Nitrogen	NO ₂ ⁻ - N	mg/L	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	1			0.1	
Nitrate Nitrogen	NO ₃ ⁻ - N	mg/L	0.32	0.33	0.43	0.41	0.33	0.43	0.35	0.34	10			0.1	
Fluoride	F ⁻	mg/L	0.16	0.76	0.17	0.66	0.12	0.75	0.65	0.67	4.0		2.0	0.5	
pH			8.20	7.50	8.79	7.60	8.23	7.39	7.26	7.01			6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	192	196	214	219	203	216	216	214					
Temperature		°C	14.7	13.4	18.9	18.3	18.0	18.5	19.8	18.9					

Legend MCL: Maximum Contaminant Level Sec.Std: Secondary Standard NTU: Nephelometric Turbidity Unit mg/L: Milligram Per Liter AL: Action Level MDL: Method Detection Limit < : Less than AE: Analytical Error IV: Invalid Sample	Notes: (1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU (2) EPA Guidance Level (3) As Calcium Carbonate mg/L is equivalent to part per million (ppm) (4) By Titration (5) Hardness in Grains per Gallon = 0.058 x (Hardness in mg/L) (6) Reported results are below the low calibration standard but above the instrument detection limit.
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Reporting Analyst: **Levoska & Khan** Chemist
 Reviewed By: **Williford** Management Professional - Operations

Great Lakes Water Authority



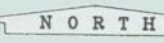
LEGEND 2019

- WATER PLANT
- BOOSTER STATION
- BOOSTER STATION / STORAGE
- GLWA EXISTING
- OTHERS EXISTING

◆ Last Updated: 02/11/2019 - Patrick Williford

- LAKE HURON
- MIXTURE OF LAKE HURON & NORTHEAST
- NORTHEAST
- SPRINGWELLS High
- SPRINGWELLS Intermediate
- SOUTHWEST
- MIXTURE SPRINGWELLS Intermediate & SOUTHWEST
- WATER WORKS PARK

LAKE ERIE



CANADA

MICHIGAN OHIO