



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Lake Huron Plant**  
**1/14/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	2.80	0.07	0.3/95% (1)		
Total Solids		mg/L	133	142		500	10
Total Dissolved Solids		mg/L	112	100		500	10
Aluminum	Al	mg/L	0.058	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.140	0.642		0.3	0.005
Copper	Cu	mg/L	0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.55	7.65			0.5
Calcium	Ca	mg/L	25.1	24.4			0.1
Sodium	Na	mg/L	4.49	4.44		20 (2)	0.1
Potassium	K	mg/L	0.89	0.87			0.1
Manganese	Mn	mg/L	0.005	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.10	< 0.10		5	0.1
Silica	SiO <sub>2</sub>	mg/L	1.0	1.1			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	17.8	21.7		250	
Chloride	Cl <sup>-</sup>	mg/L	9.0	10.0		250	5
Phosphorus	P	mg/L	< 0.05	0.34			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	2.1	7.0			
Total Hardness (3), (4), (5)		mg/L	100	110			
Total Alkalinity (3)		mg/L	102	72			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	102	72			
Non-Carbonate Hardness (3)		mg/L	0	38			
Chemical Oxygen Demand		mg/L	4.0	2.8			2
Dissolved Oxygen		mg/L	8.4	19.2			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.33	0.35	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.13	0.46	4.0	2.0	0.5
pH			7.99	7.31	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	191	187			
Temperature		°C	8.5	6.4			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
mg/L: Milligram Per Liter	mg/L is equivalent to part per million (ppm)
AL: Action Level	
MDL: Method Detection Limit	(4) By Titration
< : Less than	(5) Tap Water Hardness in Grains per Gallon <b>6.38 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Sr. Analytical Chemist      Initial **B. B.**      Date: 4/1/2015  
 Reviewed By: Patrick Williford      Principal Chemist      Initial **P. W.**      Date: 4/2/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Southwest Plant**  
**1/14/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	2.80	0.04	0.3/95% (1)		
Total Solids		mg/L	143	165		500	10
Total Dissolved Solids		mg/L	124	133		500	10
Aluminum	Al	mg/L	0.093	0.212		0.05-0.2	0.005
Iron	Fe	mg/L	0.145	0.218		0.3	0.005
Copper	Cu	mg/L	0.018	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.67	8.78			0.5
Calcium	Ca	mg/L	28.6	29.9			0.1
Sodium	Na	mg/L	5.66	5.85		20 (2)	0.1
Potassium	K	mg/L	1.04	1.06			0.1
Manganese	Mn	mg/L	0.003	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.10	< 0.10		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.8	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	18.8	25.8		250	
Chloride	Cl <sup>-</sup>	mg/L	10.0	13.0		250	5
Phosphorus	P	mg/L	< 0.05	0.26			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.7	7.5			
Total Hardness (3), (4), (5)		mg/L	116	130			
Total Alkalinity (3)		mg/L	88	88			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	88	88			
Non-Carbonate Hardness (3)		mg/L	28	42			
Chemical Oxygen Demand		mg/L	2.8	3.6			2
Dissolved Oxygen		mg/L	13.1	12.2			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.60	0.74	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.14	0.52	4.0	2.0	0.5
pH			8.01	7.37	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	209	220			
Temperature		°C	2.9	2.0			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
mg/L: Milligram Per Liter	mg/L is equivalent to part per million (ppm)
AL: Action Level	
MDL: Method Detection Limit	(4) By Titration
< : Less than	(5) Tap Water Hardness in Grains per Gallon <b>7.54 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Sr. Analytical Chemist      Initial **B. B.**      Date: 4/1/2015  
Reviewed By: Patrick Williford      Principal Chemist      Initial **P. W.**      Date: 4/2/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Water Works Park Plant**  
1/14/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.68	0.06	0.3/95% (1)		
Total Solids		mg/L	152	148		500	10
Total Dissolved Solids		mg/L	117	122		500	10
Aluminum	Al	mg/L	0.080	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.257	0.178		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.04	7.88			0.5
Calcium	Ca	mg/L	26.5	26.5			0.1
Sodium	Na	mg/L	6.34	6.02		20 (2)	0.1
Potassium	K	mg/L	1.08	0.96			0.1
Manganese	Mn	mg/L	0.004	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.10	< 0.10		5	0.1
Silica	SiO <sub>2</sub>	mg/L	1.0	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.0	21.7		250	
Chloride	Cl <sup>-</sup>	mg/L	10.0	12.0		250	5
Phosphorus	P	mg/L	< 0.05	0.32			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	4.4	8.4			
Total Hardness (3), (4), (5)		mg/L	114	116			
Total Alkalinity (3)		mg/L	88	82			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	88	82			
Non-Carbonate Hardness (3)		mg/L	26	34			
Chemical Oxygen Demand		mg/L	4.8	7.6			2
Dissolved Oxygen		mg/L	12.5	14.1			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.38	0.38	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.14	0.52	4.0	2.0	0.5
pH			7.60	7.29	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	219			
Temperature		°C	6.2	7.8			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
mg/L: Milligram Per Liter	mg/L is equivalent to part per million (ppm)
AL: Action Level	
MDL: Method Detection Limit	(4) By Titration
< : Less than	(5) Tap Water Hardness in Grains per Gallon <b>6.73 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Sr. Analytical Chemist      Initial **B. B.**      Date: 4/1/2015  
Reviewed By: Patrick Williford      Principal Chemist      Initial **P. W.**      Date: 4/2/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Northeast Plant**  
**1/14/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.68	0.09	0.3/95% (1)		
Total Solids		mg/L	152	141		500	10
Total Dissolved Solids		mg/L	117	128		500	10
Aluminum	Al	mg/L	0.080	0.069		0.05-0.2	0.005
Iron	Fe	mg/L	0.257	0.096		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.04	8.14			0.5
Calcium	Ca	mg/L	26.5	25.7			0.1
Sodium	Na	mg/L	6.34	5.93		20 (2)	0.1
Potassium	K	mg/L	1.08	0.98			0.1
Manganese	Mn	mg/L	0.004	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.10	< 0.10		5	0.1
Silica	SiO <sub>2</sub>	mg/L	1.0	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.0	23.4		250	
Chloride	Cl <sup>-</sup>	mg/L	10.0	12.5		250	5
Phosphorus	P	mg/L	< 0.05	0.40			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	4.4	10.2			
Total Hardness (3), (4), (5)		mg/L	114	110			
Total Alkalinity (3)		mg/L	88	104			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	88	104			
Non-Carbonate Hardness (3)		mg/L	26	6			
Chemical Oxygen Demand		mg/L	4.8	< 2.0			2
Dissolved Oxygen		mg/L	12.5	14.5			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.38	0.37	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.14	0.52	4.0	2.0	0.5
pH			7.60	7.31	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	205			
Temperature		°C	6.2	4.2			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
mg/L: Milligram Per Liter	mg/L is equivalent to part per million (ppm)
AL: Action Level	
MDL: Method Detection Limit	(4) By Titration
< : Less than	(5) Tap Water Hardness in Grains per Gallon <b>6.38 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Sr. Analytical Chemist      Initial **B. B.**      Date: 4/1/2015  
Reviewed By: Patrick Williford      Principal Chemist      Initial **P. W.**      Date: 4/2/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Springwells Plant**  
**1/14/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.68	0.05	0.3/95% (1)		
Total Solids		mg/L	152	146		500	10
Total Dissolved Solids		mg/L	117	126		500	10
Aluminum	Al	mg/L	0.080	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.257	0.115		0.3	0.005
Copper	Cu	mg/L	< 0.005	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.04	5.80			0.5
Calcium	Ca	mg/L	26.5	23.0			0.1
Sodium	Na	mg/L	6.34	5.32		20 (2)	0.1
Potassium	K	mg/L	1.08	0.98			0.1
Manganese	Mn	mg/L	0.004	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.10	< 0.10		5	0.1
Silica	SiO <sub>2</sub>	mg/L	1.0	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.0	24.0		250	
Chloride	Cl <sup>-</sup>	mg/L	10.0	12.5		250	5
Phosphorus	P	mg/L	< 0.05	0.25			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	4.4	9.4			
Total Hardness (3), (4), (5)		mg/L	114	120			
Total Alkalinity (3)		mg/L	88	92			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	88	92			
Non-Carbonate Hardness (3)		mg/L	26	28			
Chemical Oxygen Demand		mg/L	4.8	< 2.0			2
Dissolved Oxygen		mg/L	12.5	13.4			
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO <sub>3</sub> <sup>-</sup> -N	mg/L	0.38	0.37	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.14	0.54	4.0	2.0	0.5
pH			7.60	7.29	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	239	209			
Temperature		°C	6.2	4.5			

Legend	Notes:
MCL: Maximum Contaminant Level	(1) Turbidity must not exceed 0.3 NTU in 95% of samples in any month and always be < 1 NTU
Sec.Std: Secondary Standard	(2) EPA Guidance Level
NTU: Nephelometric Turbidity Unit	(3) As Calcium Carbonate
mg/L: Milligram Per Liter	mg/L is equivalent to part per million (ppm)
AL: Action Level	
MDL: Method Detection Limit	(4) By Titration
< : Less than	(5) Tap Water Hardness in Grains per Gallon <b>6.96 GPG</b>
AE: Analytical Error	(6) Reported results are below the low calibration standard but above the instrument
IV: Invalid Sample	detection limit.

Analyst: Brian Brown      Sr. Analytical Chemist      Initial **B. B.**      Date: 4/1/2015  
Reviewed By: Patrick Williford      Principal Chemist      Initial **P. W.**      Date: 4/2/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department  
Water Quality Division  
Laboratory Analysis of Water Samples Collected at Each Plant**

Date: 1/14/2015 1/14/2015 1/14/2015 1/14/2015 1/14/2015 1/14/2015 1/14/2015 1/14/2015

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	2.80	0.07	2.80	0.04	0.68	0.06	0.09	0.05	0.3/95% (1)				
Total Solids		mg/L	133	142	143	165	152	148	141	146			500	10	
Total Dissolved Solids		mg/L	112	100	124	133	117	122	128	126			500	10	
Aluminum	Al	mg/L	0.058	< 0.050	0.093	0.212	0.080	< 0.050	0.069	< 0.050			0.05-0.2	0.005	
Iron	Fe	mg/L	0.140	0.642	0.145	0.218	0.257	0.178	0.096	0.115			0.3	0.005	
Copper	Cu	mg/L	0.005	< 0.005	0.018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.3		1.0	0.002	
Magnesium	Mg	mg/L	7.55	7.65	8.67	8.78	8.04	7.88	8.14	5.80				0.5	
Calcium	Ca	mg/L	25.1	24.4	28.6	29.9	26.5	26.5	25.7	23.0				0.1	
Sodium	Na	mg/L	4.49	4.44	5.66	5.85	6.34	6.02	5.93	5.32			20 (2)	0.1	
Potassium	K	mg/L	0.89	0.87	1.04	1.06	1.08	0.96	0.98	0.98				0.1	
Manganese	Mn	mg/L	0.005	< 0.002	0.003	< 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)			0.002	
Zinc	Zn	mg/L	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10			5	0.1	
Silica	SiO <sub>2</sub>	mg/L	1.0	1.1	0.8	1.0	1.0	1.0	1.0	1.0				0.4	
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	17.8	21.7	18.8	25.8	16.0	21.7	23.4	24.0			250		
Chloride	Cl <sup>-</sup>	mg/L	9.0	10.0	10.0	13.0	10.0	12.0	12.5	12.5			250	5	
Phosphorus	P	mg/L	< 0.05	0.34	< 0.05	0.26	< 0.05	0.32	0.40	0.25				0.05	
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	2.1	7.0	1.7	7.5	4.4	8.4	10.2	9.4					
Total Hardness (3), (4), (5)		mg/L	100	110	116	130	114	116	110	120					
Total Alkalinity (3)		mg/L	102	72	88	88	88	82	104	92					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	102	72	88	88	88	82	104	92					
Non-Carbonate Hardness (3)		mg/L	0	38	28	42	26	34	6	28					
Chemical Oxygen Demand		mg/L	4.0	2.8	2.8	3.6	4.8	7.6	< 2.0	< 2.0				2	
Dissolved Oxygen		mg/L	8.4	19.2	13.1	12.2	12.5	14.1	14.5	13.4					
Nitrite Nitrogen	NO <sub>2</sub> <sup>-</sup> -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 <sub>3</sub> <sup>-</sup> -N	mg/L	0.33	0.35	0.60	0.74	0.38	0.38	0.37	0.37	10			0.1	
Fluoride	F <sup>-</sup>	mg/L	0.13	0.46	0.14	0.52	0.14	0.52	0.52	0.54	4.0		2.0	0.5	
pH			7.99	7.31	8.01	7.37	7.60	7.29	7.31	7.29	6.5-8.5		6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	191	187	209	220	239	219	205	209					
Temperature		°C	8.5	6.4	2.9	2.0	6.2	7.8	4.2	4.5					

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

Analyst: Brian Brown Sr. Analytical Chemist Initial **B. B.** Date: 4/1/2015  
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 4/2/2015

**Detroit Water & Sewerage Department**