



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Lake Huron Plant**  
**6/9/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.35	0.05	0.3/95% (1)		
Total Solids		mg/L	136	162		500	10
Total Dissolved Solids		mg/L	145	136		500	10
Aluminum	Al	mg/L	0.510	0.142		0.05-0.2	0.005
Iron	Fe	mg/L	0.082	0.118		0.3	0.005
Copper	Cu	mg/L	0.007	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.20	7.99			0.5
Calcium	Ca	mg/L	27.5	25.1			0.1
Sodium	Na	mg/L	4.55	4.42		20 (2)	0.1
Potassium	K	mg/L	0.76	0.74			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	0.02	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.9	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.3	18.3		250	
Chloride	Cl <sup>-</sup>	mg/L	7.5	8.5		250	5
Phosphorus	P	mg/L	< 0.05	0.33			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	2.1	7.5			
Total Hardness (3), (4), (5)		mg/L	114	118			
Total Alkalinity (3)		mg/L	82	86			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	82	86			
Non-Carbonate Hardness (3)		mg/L	32	32			
Chemical Oxygen Demand		mg/L	4.4	6.0			2
Dissolved Oxygen		mg/L	10.0	10.3			
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	0.30	0.30	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.11	0.70	4.0	2.0	0.5
pH			7.89	7.36	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	218	221			
Temperature		°C	15.8	15.8			

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>6.84 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      Chemist      Initial **B. B.**      Date: 7/14/2015  
 Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Southwest Plant**  
**6/9/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	3.30	0.04	0.3/95% (1)		
Total Solids		mg/L	142	161		500	10
Total Dissolved Solids		mg/L	142	82		500	10
Aluminum	Al	mg/L	0.146	0.136		0.05-0.2	0.005
Iron	Fe	mg/L	0.139	0.148		0.3	0.005
Copper	Cu	mg/L	0.017	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.52	8.54			0.5
Calcium	Ca	mg/L	26.3	25.8			0.1
Sodium	Na	mg/L	5.34	5.20		20 (2)	0.1
Potassium	K	mg/L	0.90	0.83			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	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.6	0.7			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.6	21.6		250	
Chloride	Cl <sup>-</sup>	mg/L	9.5	10.5		250	5
Phosphorus	P	mg/L	< 0.05	0.25			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	1.8	8.0			
Total Hardness (3), (4), (5)		mg/L	100	106			
Total Alkalinity (3)		mg/L	88	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	88	76			
Non-Carbonate Hardness (3)		mg/L	12	30			
Chemical Oxygen Demand		mg/L	6.0	3.6			2
Dissolved Oxygen		mg/L	8.5	8.2			
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	0.38	0.35	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.13	0.73	4.0	2.0	0.5
pH			7.99	7.28	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	228	233			
Temperature		°C	19.6	19.3			

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>6.15 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      Chemist      Initial **B. B.**      Date: 7/14/2015  
 Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Water Works Park Plant**  
**6/9/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.63	0.09	0.3/95% (1)		
Total Solids		mg/L	171	138		500	10
Total Dissolved Solids		mg/L	143	133		500	10
Aluminum	Al	mg/L	0.110	0.793		0.05-0.2	0.005
Iron	Fe	mg/L	0.100	0.126		0.3	0.005
Copper	Cu	mg/L	0.011	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.42	8.07			0.5
Calcium	Ca	mg/L	25.0	29.6			0.1
Sodium	Na	mg/L	4.62	5.34		20 (2)	0.1
Potassium	K	mg/L	0.76	0.90			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.5	0.7			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.3	20.3		250	
Chloride	Cl <sup>-</sup>	mg/L	9.0	11.5		250	5
Phosphorus	P	mg/L	< 0.05	0.28			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	0.9	9.1			
Total Hardness (3), (4), (5)		mg/L	100	106			
Total Alkalinity (3)		mg/L	78	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	76			
Non-Carbonate Hardness (3)		mg/L	22	30			
Chemical Oxygen Demand		mg/L	9.2	< 2.0			2
Dissolved Oxygen		mg/L	9.1	11.0			
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	0.35	0.33	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.12	0.64	4.0	2.0	0.5
pH			8.21	7.22	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	202	228			
Temperature		°C	18.2	14.1			

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>6.15 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      Chemist      Initial **B. B.**      Date: 7/14/2015  
 Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Northeast Plant**  
**6/9/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.63	0.06	0.3/95% (1)		
Total Solids		mg/L	171	138		500	10
Total Dissolved Solids		mg/L	143	95		500	10
Aluminum	Al	mg/L	0.110	0.097		0.05-0.2	0.005
Iron	Fe	mg/L	0.100	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.011	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.42	6.03			0.5
Calcium	Ca	mg/L	25.0	25.1			0.1
Sodium	Na	mg/L	4.62	4.84		20 (2)	0.1
Potassium	K	mg/L	0.76	0.78			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	< 0.010		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.5	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.3	23.5		250	
Chloride	Cl <sup>-</sup>	mg/L	9.0	9.5		250	5
Phosphorus	P	mg/L	< 0.05	0.24			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	0.9	7.9			
Total Hardness (3), (4), (5)		mg/L	100	102			
Total Alkalinity (3)		mg/L	78	74			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	74			
Non-Carbonate Hardness (3)		mg/L	22	28			
Chemical Oxygen Demand		mg/L	9.2	2.4			2
Dissolved Oxygen		mg/L	9.1	8.8			
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	0.35	0.31	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.12	0.71	4.0	2.0	0.5
pH			8.21	7.27	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	202	220			
Temperature		°C	18.2	19.1			

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
AE: Analytical Error	<b>5.92 GPG</b>
IV: Invalid Sample	(6) Reported results are below the low calibration standard but above the instrument detection limit.

Analyst: Brian Brown      Chemist      Initial    **B. B.**      Date:      7/14/2015  
 Reviewed By: Patrick Williford      Chemist      Initial    **P. W.**      Date:      7/14/2015

**Detroit Water & Sewerage Department**



**Detroit Water and Sewerage Department**  
**Water Quality Division**  
**Laboratory Analysis of Water Samples Collected at**  
**Springwells Plant**  
**6/9/2015**

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.63	0.11	0.3/95% (1)		
Total Solids		mg/L	171	176		500	10
Total Dissolved Solids		mg/L	143	145		500	10
Aluminum	Al	mg/L	0.110	0.097		0.05-0.2	0.005
Iron	Fe	mg/L	0.100	0.050		0.3	0.005
Copper	Cu	mg/L	0.011	0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.42	7.93			0.5
Calcium	Ca	mg/L	25.0	24.7			0.1
Sodium	Na	mg/L	4.62	4.80		20 (2)	0.1
Potassium	K	mg/L	0.76	0.84			0.1
Manganese	Mn	mg/L	< 0.002	< 0.002		0.05	0.002
Lead	Pb	mg/L	< 0.002	< 0.002	0.015 (AL)		0.002
Zinc	Zn	mg/L	< 0.010	0.07		5	0.1
Silica	SiO <sub>2</sub>	mg/L	0.5	1.0			0.4
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	14.3	22.7		250	
Chloride	Cl <sup>-</sup>	mg/L	9.0	11.0		250	5
Phosphorus	P	mg/L	< 0.05	0.31			0.05
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	0.9	8.2			
Total Hardness (3), (4), (5)		mg/L	100	110			
Total Alkalinity (3)		mg/L	78	78			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	78	78			
Non-Carbonate Hardness (3)		mg/L	22	32			
Chemical Oxygen Demand		mg/L	9.2	4.0			2
Dissolved Oxygen		mg/L	9.1	8.0			
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	0.35	0.30	10		0.1
Fluoride	F <sup>-</sup>	mg/L	0.12	0.68	4.0	2.0	0.5
pH			8.21	7.28	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	202	230			
Temperature		°C	18.2	19.0			

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>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      Chemist      Initial **B. B.**      Date: 7/14/2015  
Reviewed By: Patrick Williford      Chemist      Initial **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**



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

Date: 6/9/2015 6/9/2015 6/9/2015 6/9/2015 6/9/2015 6/9/2015 6/9/2015 6/9/2015

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	0.35	0.05	3.30	0.04	0.63	0.09	0.06	0.11	0.3/95% (1)				
Total Solids		mg/L	136	162	142	161	171	138	138	176			500	10	
Total Dissolved Solids		mg/L	145	136	142	82	143	133	95	145			500	10	
Aluminum	Al	mg/L	0.510	0.142	0.146	0.136	0.110	0.793	0.097	0.097			0.05-0.2	0.005	
Iron	Fe	mg/L	0.082	0.118	0.139	0.148	0.100	0.126	< 0.050	0.050			0.3	0.005	
Copper	Cu	mg/L	0.007	< 0.005	0.017	< 0.005	0.011	< 0.005	< 0.005	0.005	1.3		1.0	0.002	
Magnesium	Mg	mg/L	8.20	7.99	8.52	8.54	8.42	8.07	6.03	7.93				0.5	
Calcium	Ca	mg/L	27.5	25.1	26.3	25.8	25.0	29.6	25.1	24.7				0.1	
Sodium	Na	mg/L	4.55	4.42	5.34	5.20	4.62	5.34	4.84	4.80			20 (2)	0.1	
Potassium	K	mg/L	0.76	0.74	0.90	0.83	0.76	0.90	0.78	0.84				0.1	
Manganese	Mn	mg/L	0.003	< 0.002	0.005	< 0.002	< 0.002	< 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	0.02	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.07			5	0.1	
Silica	SiO <sub>2</sub>	mg/L	0.9	1.0	0.6	0.7	0.5	0.7	1.0	1.0				0.4	
Sulfate	SO <sub>4</sub> <sup>2-</sup>	mg/L	16.3	18.3	16.6	21.6	14.3	20.3	23.5	22.7			250		
Chloride	Cl <sup>-</sup>	mg/L	7.5	8.5	9.5	10.5	9.0	11.5	9.5	11.0			250	5	
Phosphorus	P	mg/L	< 0.05	0.33	< 0.05	0.25	< 0.05	0.28	0.24	0.31				0.05	
Free Carbon Dioxide	CO <sub>2</sub>	mg/L	2.1	7.5	1.8	8.0	0.9	9.1	7.9	8.2					
Total Hardness (3), (4), (5)		mg/L	114	118	100	106	100	106	102	110					
Total Alkalinity (3)		mg/L	82	86	88	76	78	76	74	78					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	82	86	88	76	78	76	74	78					
Non-Carbonate Hardness (3)		mg/L	32	32	12	30	22	30	28	32					
Chemical Oxygen Demand		mg/L	4.4	6.0	6.0	3.6	9.2	< 2.0	2.4	4.0				2	
Dissolved Oxygen		mg/L	10.0	10.3	8.5	8.2	9.1	11.0	8.8	8.0					
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	0.30	0.30	0.38	0.35	0.35	0.33	0.31	0.30	10			0.1	
Fluoride	F <sup>-</sup>	mg/L	0.11	0.70	0.13	0.73	0.12	0.64	0.71	0.68	4.0		2.0	0.5	
pH			7.89	7.36	7.99	7.28	8.21	7.22	7.27	7.28	6.5-8.5		6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	218	221	228	233	202	228	220	230					
Temperature		°C	15.8	15.8	19.6	19.3	18.2	14.1	19.1	19.0					

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 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      Chemist      Initial      **B. B.**      Date: 7/14/2015  
 Reviewed By: Patrick Williford      Chemist      Initial      **P. W.**      Date: 7/14/2015

**Detroit Water & Sewerage Department**