



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Lake Huron Plant
2/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	0.70	0.06	0.3/95% (1)		
Total Solids		mg/L	124	123		500	10
Total Dissolved Solids		mg/L	129	122		500	10
Aluminum	Al	mg/L	< 0.050	< 0.050		0.05-0.2	0.005
Iron	Fe	mg/L	0.199	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.007	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.09	8.36			0.5
Calcium	Ca	mg/L	24.9	24.8			0.1
Sodium	Na	mg/L	4.67	4.83		20 (2)	0.1
Potassium	K	mg/L	1.01	0.95			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 ₂	mg/L	0.8	1.0			0.4
Sulfate	SO ₄ ²⁻	mg/L	15.0	19.6		250	
Chloride	Cl ⁻	mg/L	11.7	13.3		250	5
Phosphorus	P	mg/L	< 0.05	0.31			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.8	8.6			
Total Hardness (3), (4), (5)		mg/L	112	116			
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	24	28			
Chemical Oxygen Demand		mg/L	2.8	5.6			2
Dissolved Oxygen		mg/L	10.6	10.6			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.40	0.39	10		0.1
Fluoride	F ⁻	mg/L	0.11	0.47	4.0	2.0	0.5
pH			7.79	7.31	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	230	231			
Temperature		°C	4.0	4.0			

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 6.73 GPG
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: 6/15/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/15/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Southwest Plant
 2/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.45	0.13	0.3/95% (1)		
Total Solids		mg/L	120	125		500	10
Total Dissolved Solids		mg/L	115	130		500	10
Aluminum	Al	mg/L	0.207	0.069		0.05-0.2	0.005
Iron	Fe	mg/L	0.079	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.009	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	7.93	8.52			0.5
Calcium	Ca	mg/L	25.1	25.7			0.1
Sodium	Na	mg/L	5.05	4.97		20 (2)	0.1
Potassium	K	mg/L	0.99	0.97			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 ₂	mg/L	0.7	0.9			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.5	19.9		250	
Chloride	Cl ⁻	mg/L	13.3	15.6		250	5
Phosphorus	P	mg/L	< 0.05	0.31			0.05
Free Carbon Dioxide	CO ₂	mg/L	2.7	7.5			
Total Hardness (3), (4), (5)		mg/L	106	124			
Total Alkalinity (3)		mg/L	98	80			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	98	80			
Non-Carbonate Hardness (3)		mg/L	8	44			
Chemical Oxygen Demand		mg/L	8.4	< 2.0			2
Dissolved Oxygen		mg/L	13.6	12.9			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.39	0.43	10		0.1
Fluoride	F ⁻	mg/L	0.13	0.66	4.0	2.0	0.5
pH			7.86	7.33	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	236	241			
Temperature		°C	4.3	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 7.19 GPG
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: 6/15/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/15/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Water Works Park Plant
 2/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.70	0.06	0.3/95% (1)		
Total Solids		mg/L	123	133		500	10
Total Dissolved Solids		mg/L	128	141		500	10
Aluminum	Al	mg/L	0.164	0.094		0.05-0.2	0.005
Iron	Fe	mg/L	0.211	0.062		0.3	0.005
Copper	Cu	mg/L	0.006	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.17	8.72			0.5
Calcium	Ca	mg/L	26.8	25.8			0.1
Sodium	Na	mg/L	6.22	6.17		20 (2)	0.1
Potassium	K	mg/L	1.12	1.02			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	< 0.010	< 0.010		5	0.1
Silica	SiO ₂	mg/L	0.7	0.8			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.3	25.0		250	
Chloride	Cl ⁻	mg/L	21.9	20.3		250	5
Phosphorus	P	mg/L	< 0.05	0.32			0.05
Free Carbon Dioxide	CO ₂	mg/L	4.8	6.0			
Total Hardness (3), (4), (5)		mg/L	108	108			
Total Alkalinity (3)		mg/L	100	76			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	100	76			
Non-Carbonate Hardness (3)		mg/L	8	32			
Chemical Oxygen Demand		mg/L	6.8	7.2			2
Dissolved Oxygen		mg/L	9.8	10.5			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.34	0.37	10		0.1
Fluoride	F ⁻	mg/L	0.12	0.46	4.0	2.0	0.5
pH			7.62	7.40	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	259	252			
Temperature		°C	12.9	14.6			

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 6.26 GPG
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: 6/15/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/15/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Northeast Plant
2/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.70	0.07	0.3/95% (1)		
Total Solids		mg/L	123	120		500	10
Total Dissolved Solids		mg/L	128	127		500	10
Aluminum	Al	mg/L	0.164	0.180		0.05-0.2	0.005
Iron	Fe	mg/L	0.211	0.337		0.3	0.005
Copper	Cu	mg/L	0.006	< 0.005	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.17	16.76			0.5
Calcium	Ca	mg/L	26.8	AE			0.1
Sodium	Na	mg/L	6.22	6.53		20 (2)	0.1
Potassium	K	mg/L	1.12	1.00			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	< 0.010	0.04		5	0.1
Silica	SiO ₂	mg/L	0.7	1.0			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.3	24.2		250	
Chloride	Cl ⁻	mg/L	21.9	18.0		250	5
Phosphorus	P	mg/L	< 0.05	0.29			0.05
Free Carbon Dioxide	CO ₂	mg/L	4.8	9.0			
Total Hardness (3), (4), (5)		mg/L	108	106			
Total Alkalinity (3)		mg/L	100	90			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	100	90			
Non-Carbonate Hardness (3)		mg/L	8	16			
Chemical Oxygen Demand		mg/L	6.8	2.0			2
Dissolved Oxygen		mg/L	9.8	10.7			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.34	0.39	10		0.1
Fluoride	F ⁻	mg/L	0.12	0.49	4.0	2.0	0.5
pH			7.62	7.30	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	259	251			
Temperature		°C	12.9	4.0			

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 6.15 GPG
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:	6/15/2015
Reviewed By: Patrick Williford	Principal Chemist	Initial	P. W.	Date:	6/15/2015

Detroit Water & Sewerage Department



Detroit Water and Sewerage Department
Water Quality Division
Laboratory Analysis of Water Samples Collected at
Springwells Plant
2/10/2015

Parameter	Formula	Units	Raw	Tap	MCL	Sec.Std	MDL
Turbidity		NTU	1.70	0.09	0.3/95% (1)		
Total Solids		mg/L	123	132		500	10
Total Dissolved Solids		mg/L	128	138		500	10
Aluminum	Al	mg/L	0.164	0.096		0.05-0.2	0.005
Iron	Fe	mg/L	0.211	< 0.050		0.3	0.005
Copper	Cu	mg/L	0.006	0.009	1.3	1.0	0.002
Magnesium	Mg	mg/L	8.17	10.72			0.5
Calcium	Ca	mg/L	26.8	27.5			0.1
Sodium	Na	mg/L	6.22	6.50		20 (2)	0.1
Potassium	K	mg/L	1.12	1.00			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	< 0.010	0.06		5	0.1
Silica	SiO ₂	mg/L	0.7	1.1			0.4
Sulfate	SO ₄ ²⁻	mg/L	16.3	26.0		250	
Chloride	Cl ⁻	mg/L	21.9	18.7		250	5
Phosphorus	P	mg/L	< 0.05	0.48			0.05
Free Carbon Dioxide	CO ₂	mg/L	4.8	8.4			
Total Hardness (3), (4), (5)		mg/L	108	108			
Total Alkalinity (3)		mg/L	100	84			
Carbonate Alkalinity (3)		mg/L	0	0			
Bi-Carbonate Alkalinity (3)		mg/L	100	84			
Non-Carbonate Hardness (3)		mg/L	8	24			
Chemical Oxygen Demand		mg/L	6.8	< 2.0			2
Dissolved Oxygen		mg/L	9.8	10.2			
Nitrite Nitrogen	NO ₂ ⁻ -N	mg/L	< 0.1	< 0.1	1		0.1
Nitrate Nitrogen	NO ₃ ⁻ -N	mg/L	0.34	0.39	10		0.1
Fluoride	F ⁻	mg/L	0.12	0.46	4.0	2.0	0.5
pH			7.62	7.30	6.5-8.5	6.5-8.5	
Specific Conductance @ 25 °C.		micromhos	259	250			
Temperature		°C	12.9	3.9			

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 6.26 GPG
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: 6/15/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/15/2015

Detroit Water & Sewerage Department



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

Date: 2/10/2015 2/10/2015 2/10/2015 2/10/2015 2/10/2015 2/10/2015 2/10/2015 2/10/2015

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	0.70	0.06	1.45	0.13	1.70	0.06	0.07	0.09	0.3/95% (1)				
Total Solids		mg/L	124	123	120	125	123	133	120	132			500	10	
Total Dissolved Solids		mg/L	129	122	115	130	128	141	127	138			500	10	
Aluminum	Al	mg/L	< 0.050	< 0.050	0.207	0.069	0.164	0.094	0.180	0.096			0.05-0.2	0.005	
Iron	Fe	mg/L	0.199	< 0.050	0.079	< 0.050	0.211	0.062	0.337	< 0.050			0.3	0.005	
Copper	Cu	mg/L	0.007	< 0.005	0.009	< 0.005	0.006	< 0.005	< 0.005	0.009	1.3		1.0	0.002	
Magnesium	Mg	mg/L	8.09	8.36	7.93	8.52	8.17	8.72	16.76	10.72				0.5	
Calcium	Ca	mg/L	24.9	24.8	25.1	25.7	26.8	25.8	AE	27.5				0.1	
Sodium	Na	mg/L	4.67	4.83	5.05	4.97	6.22	6.17	6.53	6.50			20 (2)	0.1	
Potassium	K	mg/L	1.01	0.95	0.99	0.97	1.12	1.02	1.00	1.00				0.1	
Manganese	Mn	mg/L	< 0.002	< 0.002	0.002	< 0.002	0.003	< 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	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.04	0.06			5	0.1	
Silica	SiO ₂	mg/L	0.8	1.0	0.7	0.9	0.7	0.8	1.0	1.1				0.4	
Sulfate	SO ₄ ²⁻	mg/L	15.0	19.6	16.5	19.9	16.3	25.0	24.2	26.0			250		
Chloride	Cl ⁻	mg/L	11.7	13.3	13.3	15.6	21.9	20.3	18.0	18.7			250	5	
Phosphorus	P	mg/L	< 0.05	0.31	< 0.05	0.31	< 0.05	0.32	0.29	0.48				0.05	
Free Carbon Dioxide	CO ₂	mg/L	2.8	8.6	2.7	7.5	4.8	6.0	9.0	8.4					
Total Hardness (3), (4), (5)		mg/L	112	116	106	124	108	108	106	108					
Total Alkalinity (3)		mg/L	88	88	98	80	100	76	90	84					
Carbonate Alkalinity (3)		mg/L	0	0	0	0	0	0	0	0					
Bi-Carbonate Alkalinity (3)		mg/L	88	88	98	80	100	76	90	84					
Non-Carbonate Hardness (3)		mg/L	24	28	8	44	8	32	16	24					
Chemical Oxygen Demand		mg/L	2.8	5.6	8.4	< 2.0	6.8	7.2	2.0	< 2.0				2	
Dissolved Oxygen		mg/L	10.6	10.6	13.6	12.9	9.8	10.5	10.7	10.2					
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	0.40	0.39	0.39	0.43	0.34	0.37	0.39	0.39	10			0.1	
Fluoride	F ⁻	mg/L	0.11	0.47	0.13	0.66	0.12	0.46	0.49	0.46	4.0		2.0	0.5	
pH			7.79	7.31	7.86	7.33	7.62	7.40	7.30	7.30	6.5-8.5		6.5-8.5		
Specific Conductance @ 25 °C.		micromhos	230	231	236	241	259	252	251	250					
Temperature		°C	4.0	4.0	4.3	4.2	12.9	14.6	4.0	3.9					

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: 6/15/2015
 Reviewed By: Patrick Williford Principal Chemist Initial **P. W.** Date: 6/15/2015

Detroit Water & Sewerage Department