

**GOWANUS CANAL SUPERFUND SITE
RTA1 REMEDIAL CONSTRUCTION
Water Quality Monitoring Weekly Data Summary**

PERIOD: November 29 – December 3, 2021

Date of Report: December 08, 2021

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Prepared by

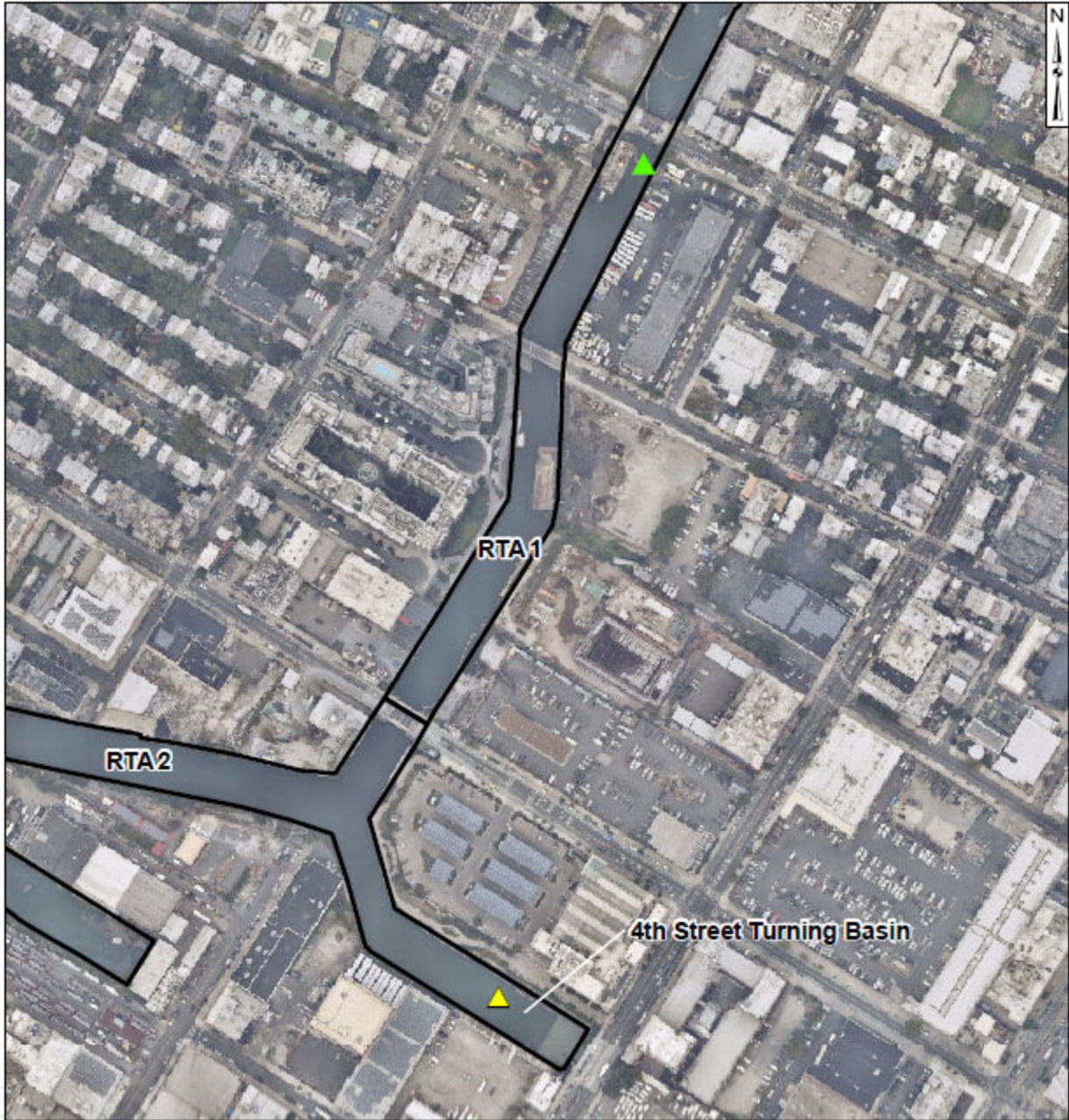
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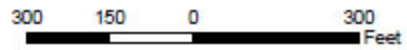
1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of November 29, 2021. In accordance with the Water Quality Monitoring Plan for In-waterway Construction Activities (WQMP) three turbidity buoys were deployed to monitor turbidity at the start of dredging between Carroll Street Bridge and 3rd Street Bridge. One turbidity buoy was deployed just south of the 3rd Street Bridge outside of the air curtain and traditional turbidity curtain. This buoy is referred to as the 3rd Street Sentinel Buoy. A second turbidity buoy was deployed just south of the Carroll Street Bridge and is referred to as the Carroll Street Sentinel Buoy. The third turbidity buoy was deployed in the Fourth Street Turning Basin in order to monitor background turbidity unaffected by in-water construction activities. This turbidity buoy is referred to as the Ambient Buoy. Prior to dredging north of the Union Street Bridge, on January 22, 2021 a fourth turbidity buoy was deployed just south of the Union Street Bridge and is referred to as the Union Street Sentinel Buoy. This fourth turbidity buoy was removed prior to the start of pipe pile installation. On Wednesday, September 22, 2021, the Carroll Street Sentinel Buoy was relocated to the west side of the canal where Degraw Street intersects the canal to monitor cofferdam removal activities conducted in the vicinity of the Flushing Tunnel. This buoy was renamed the Degraw Street Sentinel Buoy during cofferdam removal activities. On October 14, 2021, the Degraw Street Sentinel Buoy was removed from the canal for servicing. On October 20, 2021, the Degraw Street Sentinel Buoy was redeployed to its position south of the Carroll Street Bridge and was renamed to the Carroll Street Sentinel Buoy. On November 15, 2021, the Carroll Street Sentinel Buoy was moved to the Union Street Bridge and renamed the Union Street Sentinel Buoy. On December 3, 2021, the Union Street Buoy was removed from the canal for servicing and re-deployed at 3rd Street Bridge in preparation for the resumption of ISS operations. Each turbidity buoy was equipped with a YSI EXO3 water quality meter with optical turbidity sensor. The buoys were field calibrated and programmed such that readings were collected every 15 minutes. After each measurement, the turbidity data were transmitted to a File Transfer Portal (FTP) site via telemetry. No handheld measurements were collected during this reporting period. Visual observations of turbidity and sheen are summarized in Section 4.



Legend

- ▲ Ambient Buoy
- ▲ Sentinel Buoy
- RTA Boundary



Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

B&B Engineers & Geologists
of new york, p.c.

an affiliate of Grosynco Consultants

Kennesaw, GA

February 2021

Figure

1

2. REPORT OF EXCEEDANCES

No exceedances to the trigger or action level criteria were observed during the reporting period.

- **Trigger criterion** – Any of the following:
 - The rolling average of the relevant sentinel buoy turbidity measurements over a one-hour period exceeds the rolling average of the ambient buoy turbidity measurements by 20 NTU excluding any eliminated outlier measurements and in-waterway construction activities cannot be immediately excluded as the source following consultation with EPA; or
 - Either an oil sheen or a turbidity plume is visually observed at the relevant sentinel buoy and in-waterway construction activities are readily identified as the source.
- **Action criterion** – Any of the following:
 - The rolling average of the turbidity measurements of the sentinel buoy outside of RTA1 over a one-hour period exceeds the rolling average of the ambient buoy turbidity measurements by 40 NTU excluding any eliminated outlier measurements and in-waterway construction activities cannot be immediately excluded as the source following consultation with EPA; or
 - Either an oil sheen or a turbidity plume is visually observed outside of RTA1 and any deployed engineering controls and in-waterway construction activities are readily identified as the source.

An outlier is defined as a reading that is outside the range of 50 to 200 percent of the average of the three previous readings. In addition, to be considered an outlier, the subsequent reading must return to a range of 75 to 133 percent of the average of the three readings preceding the outlier.

2.1 Response to Criteria Exceedances

The trigger level criterion serves to provide early notification to the contractor of construction activities that may lead to an exceedance of the action level criterion. In the event of an exceedance to the trigger criterion, the contractor will not be stopped, and the contractor will be directed to investigate the source of the exceedance and evaluate Best Management Practices (BMPs). In the event of an exceedance to the action level criterion, in-waterway construction activities may be slowed or temporarily suspended as necessary while the contractor investigates the source of the exceedance and appropriate mitigation and corrective measures are determined. A more detailed description of responses to exceedances of the trigger and action level criteria is provided in Section 4.2 of the WQMP.

No exceedances to the trigger or action level criteria were observed during the reporting period.

3. TURBIDITY BUOY DATA

The following section provides turbidity data for the sentinel and ambient turbidity buoys from 7 AM to 6 PM from November 29 to December 3, 2021. On December 3, 2021, the Union Street Sentinel Buoy was removed from the canal for servicing. No exceedances of the action or trigger level criteria occurred during this reporting period.

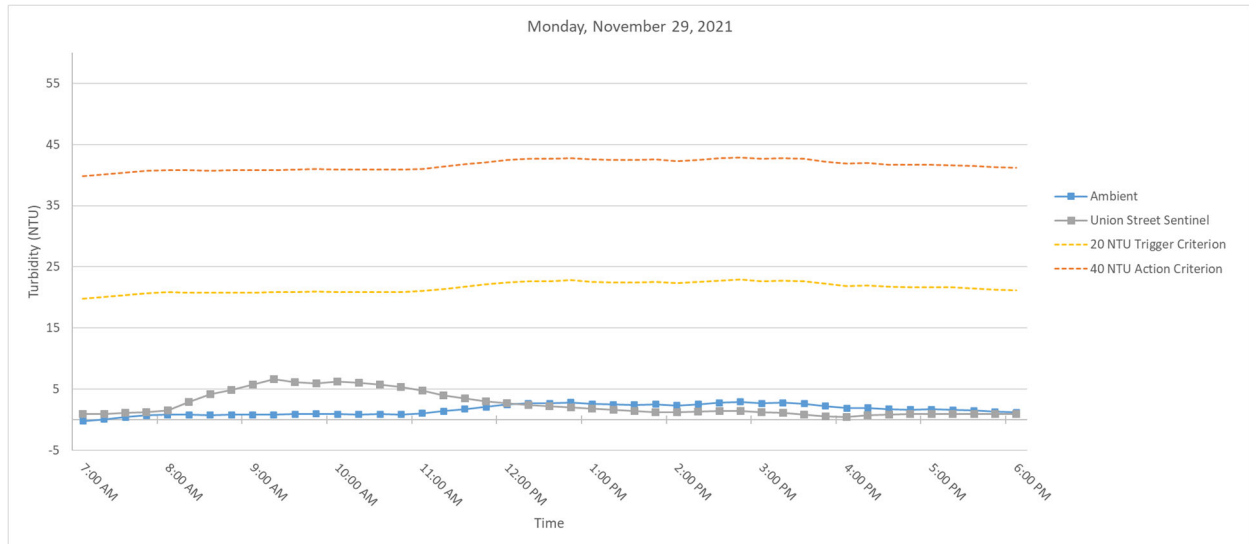
Section 2.1 contains further information on these exceedances. **Table 1** below provides a summary of the turbidity data for the reporting period.

Date	Average Rolling Average Difference (NTU)	Maximum Rolling Average Difference (NTU)
	Union St - Ambient	Union St - Ambient
Monday, November 29, 2021	0.88	5.81
Tuesday, November 30, 2021	2.72	10.09
Wednesday, December 1, 2021	2.77	9.08
Thursday, December 2, 2021	4.33	7.03
Friday, December 3, 2021	N/A	N/A

Table 1. Daily average and maximum differences between the rolling average turbidity readings from RTA1 sentinel buoys and the ambient buoy between 7 AM and 6 PM

3.1 Monday, November 29, 2021

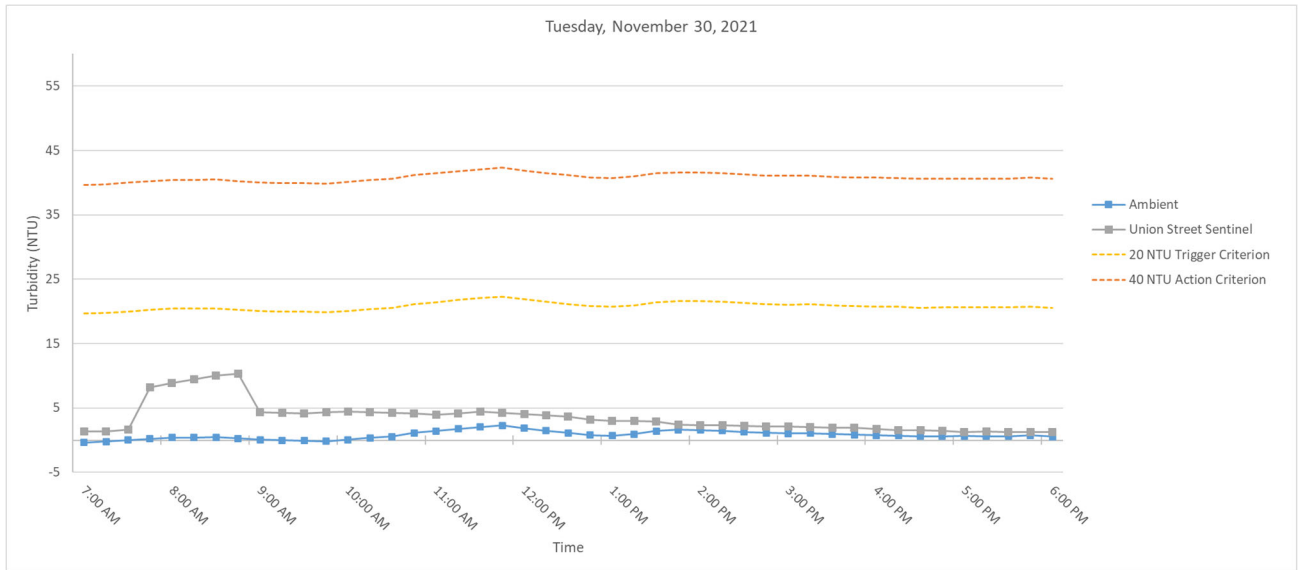
Figure 2. Hourly rolling average turbidity readings on Monday, November 29, 2021 from 7 AM to 6 PM.



Note: On November 29, 2021 at 9:15 AM an outlier of 21.65 NTU was removed from the Union Street Buoy.

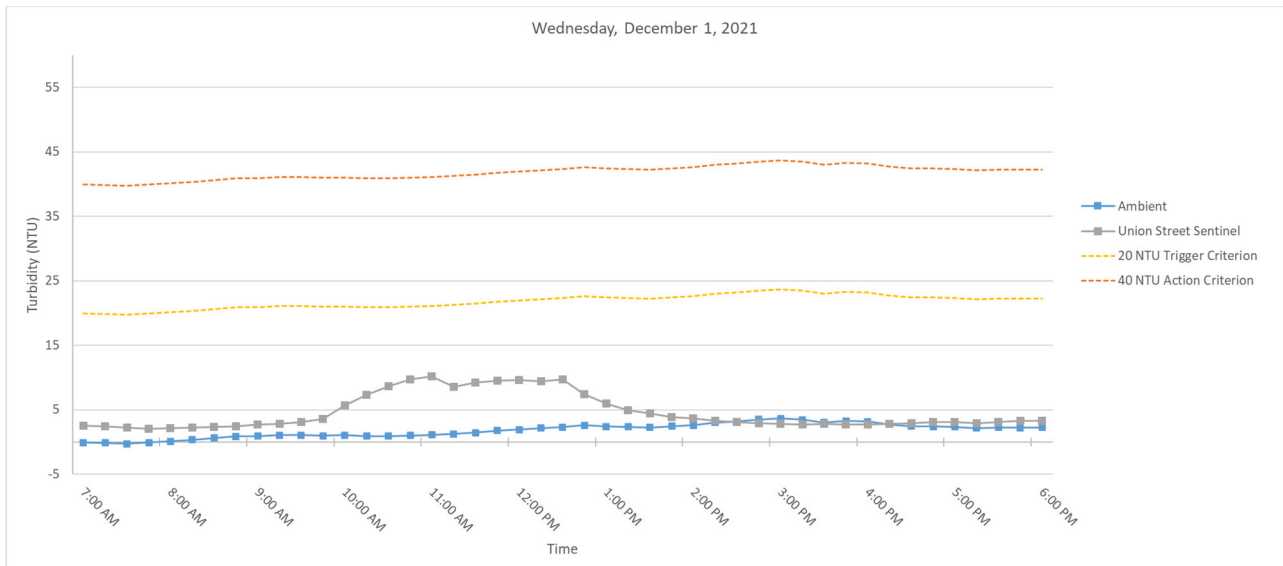
3.2 Tuesday, November 30, 2021

Figure 3. Hourly rolling average turbidity readings on Tuesday, November 30, 2021 from 7 AM to 6 PM.



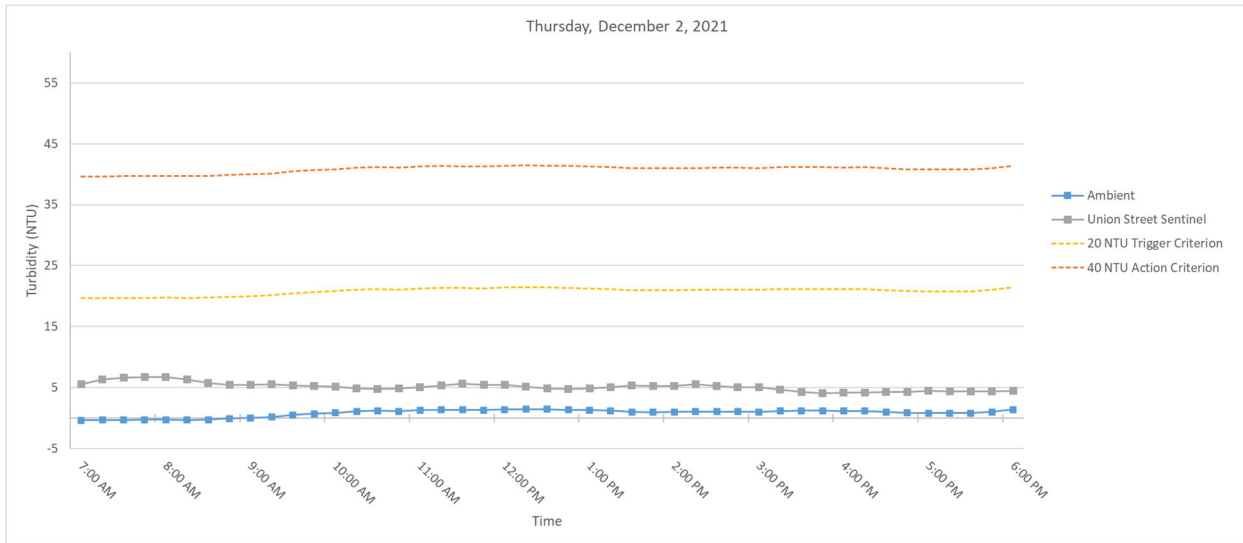
3.3 Wednesday, December 1, 2021

Figure 4. Hourly rolling average turbidity readings on Wednesday, December 1, 2021 from 7 AM to 6 PM.



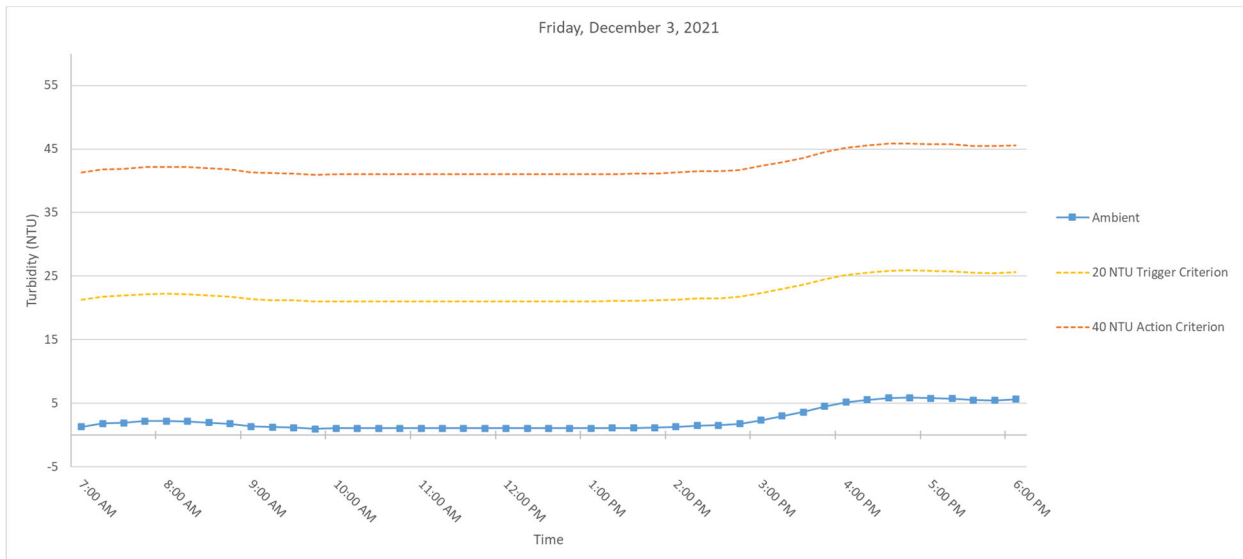
3.4 Thursday, December 2, 2021

Figure 5. Hourly rolling average turbidity readings on Thursday, December 2, 2021 from 7 AM to 6 PM.



3.5 Friday, December 3, 2021

Figure 6. Hourly rolling average turbidity readings on Friday, December 3, 2021 from 7 AM to 6 PM.



4. SUMMARY OF VISUAL OBSERVATIONS

No sheen above background conditions was observed during the reporting period.

APPENDIX A
Turbidity Data Tables

Monday, November 29, 2021

Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)		Difference (NTU)
	Ambient	Union Street	Ambient	Union Street	Union St - Ambient
7:00:00	--	1.17	-0.21	0.89	1.11
7:15:00	0.83	1.02	0.08	0.91	0.83
7:30:00	0.92	1.99	0.42	1.14	0.72
7:45:00	0.88	1.34	0.70	1.26	0.56
8:00:00	0.67	2.1	0.83	1.52	0.70
8:15:00	0.72	7.92	0.80	2.87	2.07
8:30:00	0.48	7.63	0.73	4.20	3.46
8:45:00	1.21	5.5	0.79	4.90	4.11
9:00:00	0.95	5.5	0.81	5.73	4.92
9:15:00	0.77	--	0.83	6.64	5.81
9:30:00	1	6.04	0.88	6.17	5.29
9:45:00	0.83	6.69	0.95	5.93	4.98
10:00:00	0.94	6.68	0.90	6.23	5.33
10:15:00	0.84	4.71	0.88	6.03	5.15
10:30:00	0.81	4.75	0.88	5.77	4.89
10:45:00	0.85	3.73	0.85	5.31	4.46
11:00:00	1.72	3.74	1.03	4.72	3.69
11:15:00	2.65	2.72	1.37	3.93	2.56
11:30:00	2.66	2.46	1.74	3.48	1.74
11:45:00	2.62	2.5	2.10	3.03	0.93
12:00:00	2.7	1.92	2.47	2.67	0.20
12:15:00	2.65	2.17	2.66	2.35	-0.30
12:30:00	2.61	1.98	2.65	2.21	-0.44
12:45:00	3.44	1.44	2.80	2.00	-0.80
13:00:00	1.45	1.39	2.57	1.78	-0.79
13:15:00	2.23	1.24	2.48	1.64	-0.83
13:30:00	2.5	1.15	2.45	1.44	-1.01
13:45:00	3.02	1.06	2.53	1.26	-1.27
14:00:00	2.32	1.11	2.30	1.19	-1.11
14:15:00	2.49	2.09	2.51	1.33	-1.18
14:30:00	3.56	1.62	2.78	1.41	-1.37
14:45:00	3.13	1.18	2.90	1.41	-1.49
15:00:00	1.83	0.29	2.67	1.26	-1.41
15:15:00	2.74	0.34	2.75	1.10	-1.65
15:30:00	1.94	0.54	2.64	0.79	-1.85
15:45:00	1.41	0.56	2.21	0.58	-1.63
16:00:00	1.46	0.67	1.88	0.48	-1.40
16:15:00	2.14	1.5	1.94	0.72	-1.22
16:30:00	1.69	0.95	1.73	0.84	-0.88
16:45:00	1.52	0.82	1.64	0.90	-0.74
17:00:00	1.65	0.92	1.69	0.97	-0.72
17:15:00	1.02	0.67	1.60	0.97	-0.63
17:30:00	1.48	1.14	1.47	0.90	-0.57
17:45:00	0.8	1.08	1.29	0.93	-0.37
18:00:00	0.95	0.77	1.18	0.92	-0.26

Tuesday, November 30, 2021

Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)		Difference (NTU)
	Ambient	Union Street	Ambient	Union Street	Union St - Ambient
7:00:00	0.22	1.57	-0.34	1.39	1.74
7:15:00	0.04	1.24	-0.23	1.39	1.62
7:30:00	0.67	2.57	0.00	1.67	1.66
7:45:00	0.69	34.12	0.23	8.21	7.97
8:00:00	0.43	4.95	0.41	8.89	8.48
8:15:00	0.35	4.37	0.44	9.45	9.01
8:30:00	0.17	4.01	0.46	10.00	9.54
8:45:00	-0.42	4.24	0.24	10.34	10.09
9:00:00	-0.26	4.15	0.05	4.34	4.29
9:15:00	--	4.54	-0.04	4.26	4.30
9:30:00	0.2	3.98	-0.08	4.18	4.26
9:45:00	-0.1	4.83	-0.15	4.35	4.49
10:00:00	0.53	4.7	0.09	4.44	4.35
10:15:00	0.89	3.86	0.38	4.38	4.00
10:30:00	1.34	3.7	0.57	4.21	3.64
10:45:00	3.02	3.78	1.14	4.17	3.04
11:00:00	1.4	3.7	1.44	3.95	2.51
11:15:00	2.15	5.7	1.76	4.15	2.39
11:30:00	2.35	5.15	2.05	4.41	2.35
11:45:00	2.52	3.08	2.29	4.28	1.99
12:00:00	0.85	2.85	1.85	4.10	2.24
12:15:00	-0.48	2.49	1.48	3.85	2.38
12:30:00	0.43	4.92	1.13	3.70	2.56
12:45:00	0.74	2.53	0.81	3.17	2.36
13:00:00	1.98	2.35	0.70	3.03	2.32
13:15:00	2.06	2.54	0.95	2.97	2.02
13:30:00	1.89	2.34	1.42	2.94	1.52
13:45:00	1.34	2.47	1.60	2.45	0.84
14:00:00	0.56	2.05	1.57	2.35	0.78
14:15:00	1.55	2.1	1.48	2.30	0.82
14:30:00	1.15	1.98	1.30	2.19	0.89
14:45:00	1	2.05	1.12	2.13	1.01
15:00:00	1.05	2.45	1.06	2.13	1.06
15:15:00	0.65	1.39	1.08	1.99	0.91
15:30:00	0.75	1.76	0.92	1.93	1.01
15:45:00	0.69	1.84	0.83	1.90	1.07
16:00:00	0.68	1.29	0.76	1.75	0.98
16:15:00	0.69	1.42	0.69	1.54	0.85
16:30:00	0.12	1.5	0.59	1.56	0.98
16:45:00	0.88	1.2	0.61	1.45	0.84
17:00:00	0.82	1.09	0.64	1.30	0.66
17:15:00	0.6	1.41	0.62	1.32	0.70
17:30:00	0.55	0.9	0.59	1.22	0.63
17:45:00	0.92	1.59	0.75	1.24	0.48
18:00:00	-0.02	1.53	0.57	1.30	0.73

Wednesday, December 1, 2021

Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)		Difference (NTU)
	Ambient	Union Street	Ambient	Union Street	Union St - Ambient
7:00:00	-0.13	1.91	-0.08	2.56	2.63
7:15:00	-0.29	1.93	-0.13	2.41	2.54
7:30:00	-0.37	2.03	-0.25	2.22	2.48
7:45:00	0.9	1.91	-0.07	2.01	2.08
8:00:00	0.47	3.06	0.12	2.17	2.05
8:15:00	1.11	2.13	0.36	2.21	1.85
8:30:00	0.98	2.4	0.62	2.31	1.69
8:45:00	0.86	2.88	0.86	2.48	1.61
9:00:00	1.23	3.26	0.93	2.75	1.82
9:15:00	1.12	3.55	1.06	2.84	1.78
9:30:00	1.13	3.45	1.06	3.11	2.04
9:45:00	0.58	4.64	0.98	3.56	2.57
10:00:00	1.16	13.3	1.04	5.64	4.60
10:15:00	0.62	11.83	0.92	7.35	6.43
10:30:00	1.21	9.85	0.94	8.61	7.67
10:45:00	1.42	8.97	1.00	9.72	8.72
11:00:00	1.09	6.96	1.10	10.18	9.08
11:15:00	1.91	4.98	1.25	8.52	7.27
11:30:00	1.63	15.43	1.45	9.24	7.79
11:45:00	2.98	11.36	1.81	9.54	7.73
12:00:00	2.1	9.5	1.94	9.65	7.70
12:15:00	2.19	6.02	2.16	9.46	7.30
12:30:00	2.62	6.07	2.30	9.68	7.37
12:45:00	3.08	4.04	2.59	7.40	4.80
13:00:00	2.12	4.06	2.42	5.94	3.52
13:15:00	1.7	4.19	2.34	4.88	2.53
13:30:00	1.79	3.83	2.26	4.44	2.18
13:45:00	3.52	2.99	2.44	3.82	1.38
14:00:00	3.86	3.19	2.60	3.65	1.05
14:15:00	4.35	2.19	3.04	3.28	0.23
14:30:00	2.39	3.33	3.18	3.11	-0.08
14:45:00	3.34	2.66	3.49	2.87	-0.62
15:00:00	4.25	2.87	3.64	2.85	-0.79
15:15:00	2.95	2.49	3.46	2.71	-0.75
15:30:00	2.31	2.63	3.05	2.80	-0.25
15:45:00	3.49	2.9	3.27	2.71	-0.56
16:00:00	2.93	2.91	3.19	2.76	-0.43
16:15:00	2.04	3.26	2.74	2.84	0.09
16:30:00	1.61	--	2.48	2.93	0.45
16:45:00	1.97	3.43	2.41	3.13	0.72
17:00:00	3.24	2.77	2.36	3.09	0.73
17:15:00	1.92	2.34	2.16	2.95	0.79
17:30:00	2.66	3.95	2.28	3.12	0.84
17:45:00	1.26	4.12	2.21	3.32	1.11
18:00:00	--	--	2.27	3.30	1.03

Thursday, December 2, 2021

Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)		Difference (NTU)
	Ambient	Union Street	Ambient	Union Street	Union St - Ambient
7:00:00	-0.01	7.62	-0.36	5.58	5.93
7:15:00	-0.53	7.71	-0.33	6.29	6.63
7:30:00	-0.37	6.54	-0.32	6.58	6.90
7:45:00	-0.23	5.8	-0.28	6.75	7.03
8:00:00	-0.12	6.02	-0.25	6.74	6.99
8:15:00	-0.26	5.56	-0.30	6.33	6.63
8:30:00	-0.33	4.68	-0.26	5.72	5.98
8:45:00	0.43	5.08	-0.10	5.43	5.53
9:00:00	0.31	6.06	0.01	5.48	5.47
9:15:00	0.67	6.19	0.16	5.51	5.35
9:30:00	1.37	4.77	0.49	5.36	4.87
9:45:00	0.72	4.15	0.70	5.25	4.55
10:00:00	1.18	4.81	0.85	5.20	4.35
10:15:00	1.49	4.59	1.09	4.90	3.82
10:30:00	1.24	5.53	1.20	4.77	3.57
10:45:00	0.84	5.33	1.09	4.88	3.79
11:00:00	1.77	5.21	1.30	5.09	3.79
11:15:00	1.43	5.96	1.35	5.32	3.97
11:30:00	1.34	6.1	1.32	5.63	4.30
11:45:00	1.14	4.65	1.30	5.45	4.15
12:00:00	1.37	5.12	1.41	5.41	4.00
12:15:00	1.95	3.83	1.45	5.13	3.69
12:30:00	1.31	4.8	1.42	4.90	3.48
12:45:00	0.95	5.53	1.34	4.79	3.44
13:00:00	0.81	4.98	1.28	4.85	3.57
13:15:00	0.95	6.04	1.19	5.04	3.84
13:30:00	1.03	5.18	1.01	5.31	4.30
13:45:00	1.11	4.57	0.97	5.26	4.29
14:00:00	1.1	5.44	1.00	5.24	4.24
14:15:00	--	6.42	1.05	5.53	4.48
14:30:00	1	4.56	1.06	5.23	4.17
14:45:00	0.99	4.24	1.05	5.05	4.00
15:00:00	0.99	4.36	1.02	5.00	3.98
15:15:00	1.63	3.92	1.15	4.70	3.55
15:30:00	1.3	4.35	1.18	4.29	3.10
15:45:00	1.02	3.51	1.19	4.08	2.89
16:00:00	0.76	4.85	1.14	4.20	3.06
16:15:00	1.09	4.37	1.16	4.20	3.04
16:30:00	0.74	4.35	0.98	4.29	3.30
16:45:00	0.62	4.22	0.85	4.26	3.41
17:00:00	--	4.66	0.80	4.49	3.69
17:15:00	0.7	4.21	0.79	4.36	3.57
17:30:00	1.15	--	0.80	4.36	3.56
17:45:00	1.6	4.52	1.02	4.40	3.39
18:00:00	2.19	4.3	1.41	4.42	3.01

Friday, December 3, 2021

Time	Turbidity (NTU)		Rolling Average Turbidity (NTU)		Difference (NTU)
	Ambient	Union Street	Ambient	Union Street	Union St - Ambient
7:00:00	1.72	--	1.31	--	--
7:15:00	2.89	--	1.80	--	--
7:30:00	1.76	--	1.92	--	--
7:45:00	3.09	--	2.18	--	--
8:00:00	1.58	--	2.21	--	--
8:15:00	1.45	--	2.15	--	--
8:30:00	1.96	--	1.97	--	--
8:45:00	0.66	--	1.75	--	--
9:00:00	1.09	--	1.35	--	--
9:15:00	1.03	--	1.24	--	--
9:30:00	1.03	--	1.15	--	--
9:45:00	1.03	--	0.97	--	--
10:00:00	1.03	--	1.04	--	--
10:15:00	1.03	--	1.03	--	--
10:30:00	1.03	--	1.03	--	--
10:45:00	1.03	--	1.03	--	--
11:00:00	1.03	--	1.03	--	--
11:15:00	1.03	--	1.03	--	--
11:30:00	1.03	--	1.03	--	--
11:45:00	1.03	--	1.03	--	--
12:00:00	1.03	--	1.03	--	--
12:15:00	1.03	--	1.03	--	--
12:30:00	1.03	--	1.03	--	--
12:45:00	1.03	--	1.03	--	--
13:00:00	1.03	--	1.03	--	--
13:15:00	1.28	--	1.08	--	--
13:30:00	1.13	--	1.10	--	--
13:45:00	1.37	--	1.17	--	--
14:00:00	1.68	--	1.30	--	--
14:15:00	1.88	--	1.47	--	--
14:30:00	1.57	--	1.53	--	--
14:45:00	2.19	--	1.74	--	--
15:00:00	4.27	--	2.32	--	--
15:15:00	4.94	--	2.97	--	--
15:30:00	5.15	--	3.62	--	--
15:45:00	5.88	--	4.49	--	--
16:00:00	5.5	--	5.15	--	--
16:15:00	6.29	--	5.55	--	--
16:30:00	6.25	--	5.81	--	--
16:45:00	5.5	--	5.88	--	--
17:00:00	5.43	--	5.79	--	--
17:15:00	5.17	--	5.73	--	--
17:30:00	5.18	--	5.51	--	--
17:45:00	5.91	--	5.44	--	--
18:00:00	6.4	--	5.62	--	--