

WEEKLY PROGRESS REPORT – TRC SOLUTIONS

**Gowanus Canal Turning Basin 4 Dredging and Capping Pilot Study
Brooklyn, New York**

Project number: 283126

Period: September 17 to 21, 2018

Date of Report: September 26, 2018

Rev: 0

Prepared For: Gowanus Environmental Remediation Trust



On-Site Activities Conducted During Week:

Sevenson Environmental Services (SES)

Water Treatment and Monitoring

- Discharged following volumes of treated water during period:
 - 22,620 gallons on 09/18/18
 - 33,110 gallons on 09/19/18
 - 21,447 gallons on 09/20/18
 - 24,232 gallons on 09/21/18
- No exceedances of continuous monitoring.

Turbidity Monitoring

- Exceedance of the rolling average threshold criteria on the afternoon of September 18th due to rainfall and unrelated to on-waterway construction activities. Further details provided in attached report.

Capping Activities

- Continue hydraulic capping of remainder of Turning Basin 4.
- Complete hydraulic placement of treatment layers in two (2) areas based on loss on ignition sample results and documented thicknesses. Collect cores and retrieve catch pans to measure thickness of additional granulated activated carbon/sand treatment layer placed.
- Commence hydraulic placement of sand isolation and filter layer. Collect cores and retrieve catch pans to measure thickness of sand isolation and filter layer placed.
- Perform hydrographic survey of treatment layers.

Citizens Site Activities

- Continue decontaminating and demobilizing equipment.

Quality Assurance and Control – Geosyntec

- DWTS discharge sampling conducted on 09/19/18.
- Exceedance of the rolling average threshold criteria on the afternoon of September 18th due to rainfall and unrelated to on-waterway construction activities. Further details provided in attached report.
- Measurements for 9/17/18:
 - Daily average for ambient buoy – 5.0 NTU
 - Daily average for sentinel buoy – 5.2 NTU
 - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 23.0 NTU at 12:45.
- Measurements for 9/18/18:
 - Daily average for ambient buoy – 9.1 NTU
 - Daily average for sentinel buoy – 11.9 NTU
 - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 73.7 NTU at 12:15.
- Measurements for 9/19/18:
 - Daily average for ambient buoy – 3.3 NTU
 - Daily average for sentinel buoy – 5.1 NTU
 - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 10.0 NTU at 12:15.



- Measurements for 9/20/18:
 - Daily average for ambient buoy – 5.1 NTU
 - Daily average for sentinel buoy – 2.5 NTU
 - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 2.4 NTU at 16:45.
- Measurements for 9/21/18:
 - Daily average for ambient buoy – 2.1 NTU
 - Daily average for sentinel buoy – 6.8 NTU
 - Greatest difference between ambient and sentinel buoy during 15-minute interval with sentinel buoy exceeding ambient buoy – 14.9 NTU at 09:15.

Community Air Monitoring Program – TRC CAMP

- Operated and maintained two (2) air monitoring stations at the upland staging area and five (5) monitoring station at the 4th Street Turning Basin Area.
- No exceedances of particulate matter of 10 microns in diameter or smaller (PM₁₀) or total volatile organic compounds (TVOC) of the action level of 150 micrograms per cubic meter or 1,000 parts per billion, respectively.
- Maximum weekly measurements of PM₁₀ in µg/m³
 - Station 1 – 37 µg/m³ recorded on 09/17/18
 - Station 2 – 34 µg/m³ recorded on 09/18/18
 - Station 3 – 56 µg/m³ recorded on 09/18/18
 - Station 4 – 21 µg/m³ recorded on 09/21/18
 - Station 5 – 19 µg/m³ recorded on 09/18/18
 - Station 6 – 29 µg/m³ recorded on 09/19/18
 - Station 7 – <1 µg/m³ recorded throughout the week
- Maximum weekly measurements of TVOC in ppb
 - Station 1 – 23 ppb recorded on 09/18/18
 - Station 2 – <1 ppb recorded throughout the week
 - Station 3 – 68 ppb recorded on 09/17/18
 - Station 4 – 137 ppb recorded on 09/20/18
 - Station 5 – 116 ppb recorded on 09/21/18
 - Station 6 – 127 ppb recorded on 09/19/18
 - Station 7 – <1 ppb recorded throughout the week
- All real-time readings of formaldehyde, hydrogen sulfide, or ammonia less than instrument reporting limit except for the following.
 - Formaldehyde – 4.18 ppb at ST-3 at 13:45 on 09/19/18
 - Formaldehyde – 3.76 ppb at ST-4 at 13:50 on 09/19/18
- 23-hour samples collected at ST-1 collected on 09/20 through 09/21 and ST-7 collected on 09/18 through 09/19. Laboratory turnaround time is 10 business days.

Noise and Vibration Monitoring – Wilson Ihrig

- Operated and maintained two (2) noise monitors: NM-1 (north side of canal on Whole Foods promenade) and NM-2 (south side of canal on southeast corner of 386 3rd Avenue).
- No exceedance of the hourly Leq noise limit of 80 dBA.



- Greatest hourly Leq noise measurements
 - Northern monitor (NM-1) – 73.3 dBA during 1000-1100 on 09/19/18
 - Southern monitor (NM-2) – 72.2 dBA during 1600-1700 on 09/21/18

Cultural Natural Resource Monitoring – Archeology and Historic Resource Services (AHRS)

- Submit draft inventory of segregated material at Clean Earth-Claremont.

Two-Week Look Ahead:

Sevenson:

- Treatment and discharge of water accumulated during decontamination operations.
- Perform optical monitoring of bulkheads and surrounding structures with autonomous total survey stations. Along with weekly optical surveys conducted by subcontractor.
- Complete hydraulic placement of isolation and filter layer.
- Mobilize crane and articulated concrete block mats for installation following placement of isolation and filter layer.
- Cleaning of rip rap adjacent to Whole Foods pending EPA approval.

Geosyntec – Perform construction quality assurance responsibilities, including collection of water samples from dredge water treatment system.

TRC CAMP Monitoring – Perform community air monitoring.

AHRS – Finalize inventory and final report for EPA review.

Key Milestones

- No milestones completed this period.

Attachments:

1. Geosyntec In-Canal Water Quality Monitoring Weekly Data Summary
2. TRC Weekly CAMP Report
3. Wilson Ihrig Weekly Noise and Vibration Monitoring Report
4. AHRS Weekly Report (no activities during week)
5. Water Treatment System Monitoring Analytical Laboratory Data (no activities during week)
6. Cumulative Dredged Material Chart (no activities during week)



| | | |
|------------------------------------|-------------------------------------------|-----------------------------------------|
| Client Name: Gowanus ERT | Site Location: TB-4 Pilot Study | Project No.: 283126.0000.0001 |
|------------------------------------|-------------------------------------------|-----------------------------------------|

| | |
|-------------------------|---------------------------|
| Photo No. 001 | Date 09-17-2018 |
|-------------------------|---------------------------|

Description
Placing the drive cable back onto the winch after rotating the hydraulic capping barge.



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|-------------------------|---------------------------|
| Photo No. 002 | Date 09-17-2018 |
|-------------------------|---------------------------|

Description
Loading the sand hopper with rubber tired loader at Citizens Site.



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|------------------------------------|-------------------------------------------|-----------------------------------------|
| Client Name: Gowanus ERT | Site Location: TB-4 Pilot Study | Project No.: 283126.0000.0001 |
|------------------------------------|-------------------------------------------|-----------------------------------------|

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|-------------------------|---------------------------|
| Photo No. 003 | Date 09-18-2018 |
|-------------------------|---------------------------|

Description
Placing sand isolation and filter layer in the northeast portion of the turning basin.



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|-------------------------|---------------------------|
| Photo No. 004 | Date 09-18-2018 |
|-------------------------|---------------------------|

Description
Collecting core samples while placing material to gauge progress.



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|------------------------------------|-------------------------------------------|-----------------------------------------|
| Client Name: Gowanus ERT | Site Location: TB-4 Pilot Study | Project No.: 283126.0000.0001 |
|------------------------------------|-------------------------------------------|-----------------------------------------|

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|-------------------------|---------------------------|
| Photo No. 005 | Date 09-19-2018 |
|-------------------------|---------------------------|

Description
Placing sand filter and isolation layer on the north side of the turning basin, within the eastern 100'.



| | |
|-------------------------|---------------------------|
| Photo No. 006 | Date 09-19-2018 |
|-------------------------|---------------------------|

Description
Pumping clear water to prime the system on the south side of the turning basin.



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|------------------------------------|-------------------------------------------|-----------------------------------------|
| Client Name: Gowanus ERT | Site Location: TB-4 Pilot Study | Project No.: 283126.0000.0001 |
|------------------------------------|-------------------------------------------|-----------------------------------------|

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|-------------------------|---------------------------|
| Photo No. 007 | Date 09-20-2018 |
|-------------------------|---------------------------|

Description
Placing sand filter and isolation layer in the southeast portion of the turning basin.



| | |
|-------------------------|---------------------------|
| Photo No. 008 | Date 09-20-2018 |
|-------------------------|---------------------------|

Description
Working on repairing the pump end of the 14" booster pump.



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|------------------------------------|-------------------------------------------|-----------------------------------------|
| Client Name: Gowanus ERT | Site Location: TB-4 Pilot Study | Project No.: 283126.0000.0001 |
|------------------------------------|-------------------------------------------|-----------------------------------------|

| | |
|-------------------------|---------------------------|
| Photo No. 009 | Date 09-21-2018 |
|-------------------------|---------------------------|

Description
Placing the sand filter and isolation layer on the north side of the turning basin.



| | |
|-------------------------|---------------------------|
| Photo No. 010 | Date 09-21-2018 |
|-------------------------|---------------------------|

Description
Preparing to spin the hydraulic capping barge 360 degrees to allow for sand filter and isolation layer to be placed on the south side of the turning basin.



GEOSYNTEC IN-CANAL WATER QUALITY MONITORING WEEKLY DATA SUMMARY



GOWANUS CANAL SUPERFUND SITE DREDGING AND CAPPING PILOT STUDY Water Quality Monitoring Weekly Data Summary

Week of September 17th, 2018

Report Contents

- Scope of Monitoring
- Turbidity Buoy Data
- Handheld Measurements
- Summary of Visual Observations
 - Report of Exceedances

Prepared by

Geosyntec  **Beech and Bonaparte** 
consultants engineering p.c.

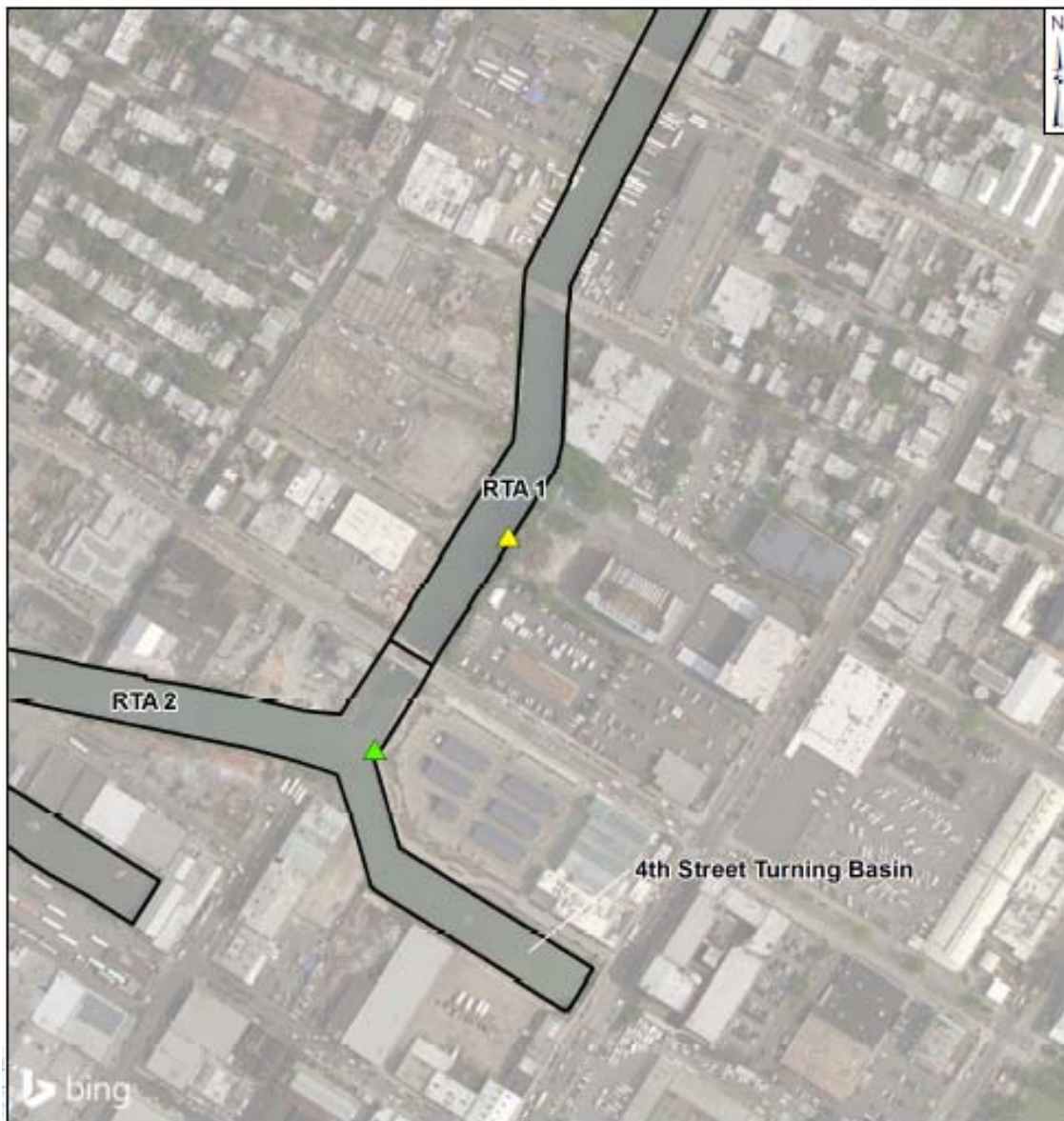
engineers | scientists | innovators

an affiliate of Geosyntec Consultants




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Ewing, NJ 08628
Project Number HPH106A (52)

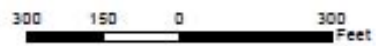
1. SCOPE OF MONITORING

The following report summarizes water quality monitoring data collected during the week of September 17th, 2018. Two turbidity buoys were deployed to monitor turbidity during the pilot study. One turbidity buoy was deployed just outside of the 4th Street Turning Basin and is referred to as the sentinel buoy. A second turbidity buoy was deployed further upstream in RTA1 in order to monitor background turbidity unaffected by on-water construction activities. This turbidity buoy is referred to as the ambient buoy. A map indicating the approximate locations of the turbidity buoys is provided in Figure 1. Each turbidity buoy was equipped with a YSI 600 OMS water quality meter with optical turbidity sensor. The buoys were programmed such that readings were collected every 15 minutes. After each measurement, the turbidity data were transmitted to a FTP site via telemetry. This report provides the turbidity data collected every 15 minutes from both the ambient and sentinel buoys during each day between 7 AM and 5 PM during the week of September 17th. Average and maximum turbidity are also presented. Visual observations of turbidity and sheen are summarized in Section 4. The data provided in this summary report have not yet been validated and should be considered preliminary.



Legend

-  Ambient Buoy
-  Sentinel Buoy
-  RTA Boundary



Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

Gowanus Canal Remedial Design Group | Geosyntec consultants | Beech and Benaparte engineering p.c. an affiliate of Geosyntec Consultants

Ewing, NJ

October 2017

Figure

1

2. TURBIDITY BUOY DATA

The following section provides turbidity data for the sentinel and ambient turbidity buoys from 7 AM to 5 PM from September 17th to September 21st, 2018. Background data prior to the start of dredging is provided in Appendix A. A one-time spike in turbidity was observed at the sentinel buoy on September 17th at 12:45. An exceedance to the numerical rolling average trigger criterion was observed on the afternoon of September 18th due to rainfall. Further information regarding the exceedance is provided in Section 5.

2.1 Monday, September 17th, 2018

| Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) | Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) |
|-----------------|-------------------------|--------------------------|-------------------------|-----------------|-------------------------|--------------------------|-------------------------|
| 9/17/2018 7:00 | 2.6 | 3.1 | Y | 9/17/2018 12:15 | 5.5 | 5.9 | Y |
| 9/17/2018 7:15 | 2.7 | 2.3 | N | 9/17/2018 12:30 | 4.8 | 5.7 | Y |
| 9/17/2018 7:30 | 2.1 | 2.6 | Y | 9/17/2018 12:45 | 4.8 | 27.8 | Y |
| 9/17/2018 7:45 | 2.8 | 2.6 | N | 9/17/2018 13:00 | 4.6 | 5.9 | Y |
| 9/17/2018 8:00 | 2.8 | 2.8 | N | 9/17/2018 13:15 | 5.5 | 5.2 | N |
| 9/17/2018 8:15 | 6.1 | 2.3 | N | 9/17/2018 13:30 | 4.3 | 8.4 | Y |
| 9/17/2018 8:30 | 5.7 | 2.6 | N | 9/17/2018 13:45 | 4.9 | 4.5 | N |
| 9/17/2018 8:45 | 6.5 | 2.7 | N | 9/17/2018 14:00 | 4.1 | 3.2 | N |
| 9/17/2018 9:00 | 7.1 | 4.4 | N | 9/17/2018 14:15 | 3.2 | 4.5 | Y |
| 9/17/2018 9:15 | 7.1 | 5.1 | N | 9/17/2018 14:30 | 3.5 | 3.1 | N |
| 9/17/2018 9:30 | 6.1 | 6.5 | Y | 9/17/2018 14:45 | 6.3 | 4.1 | N |
| 9/17/2018 9:45 | 7.8 | 6.4 | N | 9/17/2018 15:00 | 3.2 | 5.3 | Y |
| 9/17/2018 10:00 | 6.8 | 4.8 | N | 9/17/2018 15:15 | 4.1 | 4.9 | Y |
| 9/17/2018 10:15 | 6.5 | 4.9 | N | 9/17/2018 15:30 | 4.4 | 5.4 | Y |
| 9/17/2018 10:30 | 6.7 | 7.5 | Y | 9/17/2018 15:45 | 3.6 | 6.2 | Y |
| 9/17/2018 10:45 | 6.7 | 6.8 | Y | 9/17/2018 16:00 | 3.3 | 4.5 | Y |
| 9/17/2018 11:00 | 11.3 | 4.9 | N | 9/17/2018 16:15 | 3.4 | 4.8 | Y |
| 9/17/2018 11:15 | 5.9 | 6.5 | Y | 9/17/2018 16:30 | 3.3 | 4.2 | Y |
| 9/17/2018 11:30 | 5.4 | 4.5 | N | 9/17/2018 16:45 | 3.2 | 3.1 | N |
| 9/17/2018 11:45 | 7.2 | 5.5 | N | 9/17/2018 17:00 | 3.4 | 3.7 | Y |
| 9/17/2018 12:00 | 6.1 | 5.8 | N | | | | |

| | | | |
|---------|------|------|---|
| Average | 5.0 | 5.2 | Y |
| Maximum | 11.3 | 27.8 | Y |

Notes:

No exceedance to rolling average threshold criteria during reporting period

Values highlighted in green are greater than 20 NTU above the ambient buoy reading

Values highlighted in blue are greater than 40 NTU above the ambient buoy reading

2.2 Tuesday, September 18th, 2018

| Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) | Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) |
|-----------------|-------------------------|--------------------------|-------------------------|-----------------|-------------------------|--------------------------|-------------------------|
| 9/18/2018 7:00 | 2.1 | 1.9 | N | 9/18/2018 12:15 | 7.2 | 80.9 | Y |
| 9/18/2018 7:15 | 2.2 | 1.4 | N | 9/18/2018 12:30 | 9.2 | 37.3 | Y |
| 9/18/2018 7:30 | 3.1 | 1.9 | N | 9/18/2018 12:45 | 11.7 | 14.8 | Y |
| 9/18/2018 7:45 | 1.9 | 1.5 | N | 9/18/2018 13:00 | 17.8 | 15.7 | N |
| 9/18/2018 8:00 | 2.8 | 1.4 | N | 9/18/2018 13:15 | 15.8 | 18.7 | Y |
| 9/18/2018 8:15 | 2.2 | 2.2 | N | 9/18/2018 13:30 | 12.8 | 30.0 | Y |
| 9/18/2018 8:30 | 2.7 | 2.9 | Y | 9/18/2018 13:45 | 25.4 | 20.5 | N |
| 9/18/2018 8:45 | 2.8 | 3.4 | Y | 9/18/2018 14:00 | 24.9 | 19.2 | N |
| 9/18/2018 9:00 | 3.0 | 2.9 | N | 9/18/2018 14:15 | 23.9 | 18.9 | N |
| 9/18/2018 9:15 | 3.2 | 2.1 | N | 9/18/2018 14:30 | 19.3 | 18.0 | N |
| 9/18/2018 9:30 | 5.3 | 3.4 | N | 9/18/2018 14:45 | 14.7 | 14.2 | N |
| 9/18/2018 9:45 | 5.3 | 3.6 | N | 9/18/2018 15:00 | 16.8 | 15.7 | N |
| 9/18/2018 10:00 | 6.9 | 3.7 | N | 9/18/2018 15:15 | 12.1 | 13.3 | Y |
| 9/18/2018 10:15 | 7.5 | 3.1 | N | 9/18/2018 15:30 | 9.8 | 12.4 | Y |
| 9/18/2018 10:30 | 6.5 | 6.0 | N | 9/18/2018 15:45 | 10.5 | 11.8 | Y |
| 9/18/2018 10:45 | 9.4 | 9.1 | N | 9/18/2018 16:00 | 9.4 | 11.8 | Y |
| 9/18/2018 11:00 | 7.4 | 6.4 | N | 9/18/2018 16:15 | 8.9 | 11.2 | Y |
| 9/18/2018 11:15 | 5.5 | 9.3 | Y | 9/18/2018 16:30 | 8.7 | 10.4 | Y |
| 9/18/2018 11:30 | 7.0 | 10.9 | Y | 9/18/2018 16:45 | 7.2 | 10.6 | Y |
| 9/18/2018 11:45 | 8.2 | 6.4 | N | 9/18/2018 17:00 | 5.8 | 11.0 | Y |
| 9/18/2018 12:00 | 6.5 | 7.5 | Y | | | | |

| | | | |
|---------|------|------|---|
| Average | 9.1 | 11.9 | Y |
| Maximum | 25.4 | 80.9 | Y |

Notes:

Values highlighted in green are greater than 20 NTU above the ambient buoy reading

Values highlighted in blue are greater than 40 NTU above the ambient buoy reading

2.5 Friday, September 21st, 2018

| Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) | Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel >Ambient (Y/N) |
|-----------------|-------------------------|--------------------------|-------------------------|-----------------|-------------------------|--------------------------|-------------------------|
| 9/21/2018 7:00 | 1.2 | 2.0 | Y | 9/21/2018 12:15 | 1.8 | 4.8 | Y |
| 9/21/2018 7:15 | 1.5 | 2.6 | Y | 9/21/2018 12:30 | 2.3 | 2.6 | Y |
| 9/21/2018 7:30 | 1.4 | 4.1 | Y | 9/21/2018 12:45 | 2.5 | 10.0 | Y |
| 9/21/2018 7:45 | 1.9 | 5.2 | Y | 9/21/2018 13:00 | 3.9 | 14.4 | Y |
| 9/21/2018 8:00 | 1.7 | 3.4 | Y | 9/21/2018 13:15 | 3.6 | 16.4 | Y |
| 9/21/2018 8:15 | 1.6 | 5.0 | Y | 9/21/2018 13:30 | 3.5 | 15.5 | Y |
| 9/21/2018 8:30 | 2.4 | 5.3 | Y | 9/21/2018 13:45 | 3.3 | 14.0 | Y |
| 9/21/2018 8:45 | 2.5 | 10.4 | Y | 9/21/2018 14:00 | 3.2 | 8.8 | Y |
| 9/21/2018 9:00 | 2.4 | 14.7 | Y | 9/21/2018 14:15 | 3.0 | 8.1 | Y |
| 9/21/2018 9:15 | 2.1 | 17.0 | Y | 9/21/2018 14:30 | 2.2 | 10.3 | Y |
| 9/21/2018 9:30 | 1.5 | 13.3 | Y | 9/21/2018 14:45 | 3.0 | 6.9 | Y |
| 9/21/2018 9:45 | 1.6 | 4.5 | Y | 9/21/2018 15:00 | 1.9 | 10.2 | Y |
| 9/21/2018 10:00 | 1.3 | 2.7 | Y | 9/21/2018 15:15 | 2.8 | 7.2 | Y |
| 9/21/2018 10:15 | 1.4 | 6.4 | Y | 9/21/2018 15:30 | 2.3 | 10.5 | Y |
| 9/21/2018 10:30 | 1.4 | 2.3 | Y | 9/21/2018 15:45 | 2.4 | 4.9 | Y |
| 9/21/2018 10:45 | 1.0 | 2.7 | Y | 9/21/2018 16:00 | 2.5 | 2.6 | Y |
| 9/21/2018 11:00 | 1.1 | 4.0 | Y | 9/21/2018 16:15 | 2.4 | 2.4 | N |
| 9/21/2018 11:15 | 1.1 | 2.7 | Y | 9/21/2018 16:30 | 2.0 | 3.1 | Y |
| 9/21/2018 11:30 | 1.4 | 3.4 | Y | 9/21/2018 16:45 | 1.4 | 2.8 | Y |
| 9/21/2018 11:45 | 1.3 | 3.0 | Y | 9/21/2018 17:00 | 2.5 | 2.4 | N |
| 9/21/2018 12:00 | 1.2 | 5.4 | Y | | | | |

| | | | |
|---------|-----|------|---|
| Average | 2.1 | 6.8 | Y |
| Maximum | 3.9 | 17.0 | Y |

Notes:

No exceedance to rolling average threshold criteria during reporting period

Values highlighted in green are greater than 20 NTU above the ambient buoy reading

Values highlighted in blue are greater than 40 NTU above the ambient buoy reading

3. HANDHELD MEASUREMENTS

No handheld measurements were collected during this reporting period.

4. SUMMARY OF VISUAL OBSERVATIONS

Canal conditions outside of the turning basin appeared consistent with background conditions.

5. REPORT OF EXCEEDANCES

An exceedance of the quantitative trigger level criterion occurred on the afternoon of September 18 due to the rolling average of the sentinel turbidity buoy measurements over a one-hour period exceeding the rolling average of the ambient buoy turbidity measurements by 20 NTU. However, the exceedance was due to heavy rainfall and not a result of waterway construction activities. Due to the presence of thunderstorms in the area, no waterway construction activities were occurring during the spike in turbidity. Approximately 1.2 inches of rainfall was reported to have fallen in the area according to the National Weather Service.

Refer to the Water Quality Monitoring Plan for In-waterway Construction Activities (Geosyntec 2017) for further information regarding the Trigger and Action Criteria. Threshold criteria are summarized as follows:

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




FIGURES

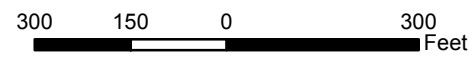


X:\03_GIS\mxd\Canal_Wide_Turbidity_Buoy_Locations.mxd; acarnes; 10/19/2017



Legend

-  Ambient Buoy
-  Sentinel Buoy
-  RTA Boundary



Turbidity Buoy Locations

Gowanus Canal, Brooklyn, NY

Gowanus Canal Remedial Design Group **Geosyntec** consultants **Beech and Bonaparte** engineering p.c.
an affiliate of Geosyntec Consultants

Figure

1

Ewing, NJ

October 2017

APPENDIX A
PRE-DREDGE TURBIDITY BUOY DATA

| Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel> Ambient (Y/N) | Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel> Ambient (Y/N) | Time (Local) | Ambient Turbidity (NTU) | Sentinel Turbidity (NTU) | Sentinel> Ambient (Y/N) |
|-----------------|-------------------------------|--------------------------------|-------------------------------|-----------------|-------------------------------|--------------------------------|-------------------------------|-----------------|-------------------------------|--------------------------------|-------------------------------|
| 10/3/2017 15:00 | 7.4 | 2.7 | N | 10/4/2017 4:30 | 4.8 | 7.1 | Y | 10/4/2017 18:00 | 6.9 | 2.7 | N |
| 10/3/2017 15:15 | 6.6 | 2.4 | N | 10/4/2017 4:45 | 5 | 6.3 | Y | 10/4/2017 18:15 | 7.2 | 2.7 | N |
| 10/3/2017 15:30 | 6.4 | 2.7 | N | 10/4/2017 5:00 | 4.7 | 6 | Y | 10/4/2017 18:30 | 7.8 | 3.4 | N |
| 10/3/2017 15:45 | 6.9 | 2 | N | 10/4/2017 5:15 | 5.1 | 6.4 | Y | 10/4/2017 18:45 | 8.2 | 4.4 | N |
| 10/3/2017 16:00 | 6.3 | 2.1 | N | 10/4/2017 5:30 | 5 | 7.3 | Y | 10/4/2017 19:00 | 7.5 | 3.1 | N |
| 10/3/2017 16:15 | 6.5 | 2.4 | N | 10/4/2017 5:45 | 5.4 | 7.8 | Y | 10/4/2017 19:15 | 8.7 | 3.6 | N |
| 10/3/2017 16:30 | 7.1 | 2.9 | N | 10/4/2017 6:00 | 5.5 | 8.3 | Y | 10/4/2017 19:30 | 8.7 | 4.5 | N |
| 10/3/2017 16:45 | 6.1 | 2.8 | N | 10/4/2017 6:15 | 5.2 | 9 | Y | 10/4/2017 19:45 | 9.4 | 4.1 | N |
| 10/3/2017 17:00 | 7 | 2.8 | N | 10/4/2017 6:30 | 5.8 | 7.2 | Y | 10/4/2017 20:00 | 8.4 | 4 | N |
| 10/3/2017 17:15 | 7 | 4.4 | N | 10/4/2017 6:45 | 5.4 | 8.8 | Y | 10/4/2017 20:15 | 8.2 | 4 | N |
| 10/3/2017 17:30 | 7 | 4.7 | N | 10/4/2017 7:00 | 5.5 | 8 | Y | 10/4/2017 20:30 | 9 | 3.6 | N |
| 10/3/2017 17:45 | 6.3 | 4 | N | 10/4/2017 7:15 | 5.6 | 7.5 | Y | 10/4/2017 20:45 | 8.4 | 3.5 | N |
| 10/3/2017 18:00 | 6.5 | 6.9 | Y | 10/4/2017 7:30 | 6.9 | 7.2 | Y | 10/4/2017 21:00 | 9.5 | 4.7 | N |
| 10/3/2017 18:15 | 7.8 | 6.7 | Y | 10/4/2017 7:45 | 6.8 | 6.1 | N | 10/4/2017 21:15 | 10.2 | 3.9 | N |
| 10/3/2017 18:30 | 7.9 | 6.5 | N | 10/4/2017 8:00 | 6.7 | 7.4 | Y | 10/4/2017 21:30 | 9.5 | 3.5 | N |
| 10/3/2017 18:45 | 8.5 | 5.9 | N | 10/4/2017 8:15 | 7.3 | 6.1 | N | 10/4/2017 21:45 | 8.9 | 3.6 | N |
| 10/3/2017 19:00 | 7.9 | 6 | N | 10/4/2017 8:30 | 7.2 | 4.6 | N | 10/4/2017 22:00 | 8.6 | 2.9 | N |
| 10/3/2017 19:15 | 7.4 | 6.3 | N | 10/4/2017 8:45 | 6.6 | 9 | Y | 10/4/2017 22:15 | 8.7 | 3.6 | N |
| 10/3/2017 19:30 | 7.4 | 4.3 | N | 10/4/2017 9:00 | 9.2 | 14.1 | Y | 10/4/2017 22:30 | 8.4 | 6.3 | N |
| 10/3/2017 19:45 | 8.3 | 4.6 | N | 10/4/2017 9:15 | 7.9 | 4.8 | N | 10/4/2017 22:45 | 7.3 | 3.3 | N |
| 10/3/2017 20:00 | 8.9 | 5.2 | N | 10/4/2017 9:30 | 9.3 | 4.6 | N | 10/4/2017 23:00 | 7.4 | 3.8 | N |
| 10/3/2017 20:15 | 8.6 | 4.5 | N | 10/4/2017 9:45 | 7.6 | 5.1 | N | 10/4/2017 23:15 | 7.1 | 4.5 | N |
| 10/3/2017 20:30 | 8 | 4.9 | N | 10/4/2017 10:00 | 8.1 | 3.9 | N | 10/4/2017 23:30 | 7 | 3.8 | N |
| 10/3/2017 20:45 | 10.6 | 4.3 | N | 10/4/2017 10:15 | 7.8 | 3.1 | N | 10/4/2017 23:45 | 8.3 | 5.3 | N |
| 10/3/2017 21:00 | 11.1 | 4.6 | N | 10/4/2017 10:30 | 7.3 | 4.5 | N | 10/5/2017 0:00 | 7.7 | 6.2 | N |
| 10/3/2017 21:15 | 9.8 | 4.7 | N | 10/4/2017 10:45 | 7.5 | 3.9 | N | 10/5/2017 0:15 | 7.8 | 5.1 | N |
| 10/3/2017 21:30 | 8.8 | 4.6 | N | 10/4/2017 11:00 | 7.6 | 9 | Y | 10/5/2017 0:30 | 7.2 | 5.7 | N |
| 10/3/2017 21:45 | 9 | 4.7 | N | 10/4/2017 11:15 | 6.5 | 16.7 | Y | 10/5/2017 0:45 | 7 | 5.4 | N |
| 10/3/2017 22:00 | 8.3 | 4.8 | N | 10/4/2017 11:30 | 7.4 | 6 | N | 10/5/2017 1:00 | 7.5 | 4.9 | N |
| 10/3/2017 22:15 | 7.3 | 6.1 | N | 10/4/2017 11:45 | 6.8 | 5.3 | N | 10/5/2017 1:15 | 7 | 8.2 | Y |
| 10/3/2017 22:30 | 7 | 4.7 | N | 10/4/2017 12:00 | 7.7 | 5.1 | N | 10/5/2017 1:30 | 8.1 | 4.9 | N |
| 10/3/2017 22:45 | 6.6 | 5.3 | N | 10/4/2017 12:15 | 6.6 | 6.1 | N | 10/5/2017 1:45 | 9.1 | 6.5 | N |
| 10/3/2017 23:00 | 7.1 | 6.1 | N | 10/4/2017 12:30 | 7.6 | 4 | N | 10/5/2017 2:00 | 9.2 | 5.2 | N |
| 10/3/2017 23:15 | 6.5 | 6 | N | 10/4/2017 12:45 | 7.7 | 3.9 | N | 10/5/2017 2:15 | 8.5 | 3.7 | N |
| 10/3/2017 23:30 | 6.6 | 6.9 | Y | 10/4/2017 13:00 | 8.3 | 4.8 | N | 10/5/2017 2:30 | 10.2 | 5.2 | N |
| 10/3/2017 23:45 | 7.2 | 5.2 | N | 10/4/2017 13:15 | 8.5 | 3.9 | N | 10/5/2017 2:45 | 10.1 | 4.2 | N |
| 10/4/2017 0:00 | 6.8 | 6.3 | N | 10/4/2017 13:30 | 9.2 | 5.5 | N | 10/5/2017 3:00 | 10.3 | 4.9 | N |
| 10/4/2017 0:15 | 7.2 | 5.6 | N | 10/4/2017 13:45 | 9.4 | 4.5 | N | 10/5/2017 3:15 | 9 | 6.3 | N |
| 10/4/2017 0:30 | 7.4 | 6.4 | N | 10/4/2017 14:00 | 11.1 | 3.1 | N | 10/5/2017 3:30 | 9.2 | 4.5 | N |
| 10/4/2017 0:45 | 7.1 | 5 | N | 10/4/2017 14:15 | 10 | 2.5 | N | 10/5/2017 3:45 | 8.4 | 4.1 | N |
| 10/4/2017 1:00 | 7.1 | 4.3 | N | 10/4/2017 14:30 | 9.8 | 2 | N | 10/5/2017 4:00 | 7.4 | 4.4 | N |
| 10/4/2017 1:15 | 8.3 | 4.6 | N | 10/4/2017 14:45 | 9.7 | 2.1 | N | 10/5/2017 4:15 | 7.3 | 4.4 | N |
| 10/4/2017 1:30 | 9 | 5.1 | N | 10/4/2017 15:00 | 9.3 | 2.4 | N | 10/5/2017 4:30 | 6.4 | 4.6 | N |
| 10/4/2017 1:45 | 7.9 | 4.5 | N | 10/4/2017 15:15 | 8.5 | 2.1 | N | 10/5/2017 4:45 | 6.2 | 5.1 | N |
| 10/4/2017 2:00 | 9.1 | 4 | N | 10/4/2017 15:30 | 8.5 | 1.8 | N | 10/5/2017 5:00 | 5.3 | 5.2 | N |
| 10/4/2017 2:15 | 7 | 5.3 | N | 10/4/2017 15:45 | 7.2 | 1.8 | N | 10/5/2017 5:15 | 5.3 | 5.3 | N |
| 10/4/2017 2:30 | 7.2 | 5.5 | N | 10/4/2017 16:00 | 7.3 | 1.6 | N | 10/5/2017 5:30 | 4.8 | 5 | Y |
| 10/4/2017 2:45 | 6.6 | 4.8 | N | 10/4/2017 16:15 | 6.4 | 1.8 | N | 10/5/2017 5:45 | 5.7 | 5 | N |
| 10/4/2017 3:00 | 6.6 | 5.7 | N | 10/4/2017 16:30 | 7 | 1.6 | N | 10/5/2017 6:00 | 5.6 | 4.8 | N |
| 10/4/2017 3:15 | 6.2 | 5.1 | N | 10/4/2017 16:45 | 7.5 | 2.6 | N | 10/5/2017 6:15 | 5.4 | 4.9 | N |
| 10/4/2017 3:30 | 5.9 | 4.7 | N | 10/4/2017 17:00 | 6.4 | 2.7 | N | 10/5/2017 6:30 | 6.1 | 5.7 | N |
| 10/4/2017 3:45 | 5.5 | 5.9 | N | 10/4/2017 17:15 | 6.5 | 2 | N | 10/5/2017 6:45 | 5.9 | 6.4 | Y |
| 10/4/2017 4:00 | 4.9 | 6.4 | Y | 10/4/2017 17:30 | 6.7 | 2.3 | N | 10/5/2017 7:00 | 6.1 | 7.8 | Y |
| 10/4/2017 4:15 | 5.1 | 7 | Y | 10/4/2017 17:45 | 6.6 | 2.1 | N | | | | |
| | | | | | | | | | | | |
| Average | 7.5 | 6.0 | N | | | | | | | | |
| Maximum | 11.1 | 16.7 | Y | | | | | | | | |

TRC WEEKLY COMMUNITY AIR MONITORING PROJECT REPORT





**Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Weekly Report
(TRC Project No.274286-0000-00000)**

**Community Air Monitoring Project
50th Weekly Monitoring Period
Summary Report:**

September 17th, through September 21st, 2018

Report Contents

- Executive Summary
- Daily Data Summary Report – PM₁₀/TVOC
 - Daily Meteorological Summary Report
 - Periodic Monitoring Results

Gowanus Canal Superfund Site TB-4 Dredging and Capping Pilot Study Brooklyn, New York

Executive Summary – Week 50 Monitoring Period September 17th through September 21st, 2018

The following report summarizes site air monitoring activities for the Week 50 monitoring period from September 17th through September 21st, 2018. The start and stop times associated with each daily monitoring period are listed on the respective daily reports.

TRC continued to operate two (2) air monitoring stations on the Citizen Property or Staging Area, and five (5) air monitoring stations in the 4th St Turning Basin Area using the equipment specified previously in the *Gowanus Canal TB-4 Dredging and Pilot Study Executive Summary – Background Monitoring Period Report*. During the Week 50 monitoring period there were no PM₁₀ or TVOC exceedances of the action level of 150 ug/m³ or 1,000 ppb respectively as defined in the *Community Air Monitoring Plan for the Gowanus Canal TB-4 Dredging and Pilot Study Project Brooklyn, NY, August 2017*.

Figure 1 depicts Total Volatile Organics (TVOC) daily averages and maximums. Figure 2 depicts particulate monitoring (PM₁₀) daily averages and maximums. Figure 3 depicts the station locations along the Gowanus Canal.

Additional monitoring for hydrogen sulfide, ammonia, and formaldehyde took place at all stations throughout the Week 50 monitoring period twice daily. The results of these measurements are shown in Table 1.

During the Week 50 monitoring period of September 17th through September 21st, 2018 TRC conducted Volatile Organic Compounds (USEPA Method TO-15) sampling at Stations 1 and 7. The ST-1 sample was collected on September 20th through September 21st, 2018 and the ST-7 sample was collected on September 18th through September 19th, 2018. Both samples were collected over a 23-hour period and shipped to Con-Test

Analytical Laboratory for analyses. The results of the summa canister sampling are pending lab analyses

Site activities which were conducted at the Citizen Property during September 17th through September 21st, 2018 included the following:

- Material and equipment deliveries on Citizen Property
- General vehicular traffic site-wide throughout the monitoring period
- Maintenance of the barges and equipment
- Continue decontaminating and demobilizing equipment

Site activities which were conducted at the 4th St Turning Basin Area of the Canal during September 17th through September 21st, 2018 include the following:

- Continue hydraulic capping of remainder of 4th St Turning Basin
- Completed hydraulic placement of treatment layers in two (2) areas based on loss on ignition sample results and documented thicknesses.
- Collect cores and retrieve catch pans to measure thickness of additional granular activated carbon/sand treatment layer placed
- Commence hydraulic placement of sand isolation and filter layer.
- Collect cores and retrieve catch pans to measure thickness of sand isolation and filter layer placed
- Perform hydrographic survey of treatment layers

Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM₁₀
(TRC Project No.274286-0000-00000)
09/17/2018 06:30 AM - 09/17/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 13 | ppb | Max. | 37 | ug/m ³ |
| Avg. | 3 | ppb | Avg. | 8 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 2 (Citizen Property near Pad Area)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 33 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 10 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 3 (Whole Foods Property NW Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 68 | ppb | Max. | 24 | ug/m ³ |
| Avg. | 33 | ppb | Avg. | 15 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 4 (Whole Foods Property Central Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 11 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

| TVOC | | | PM ₁₀ | | |
|------|-----|-------|------------------|----|-------------------|
| Max. | 109 | ppb | Max. | 13 | ug/m ³ |
| Avg. | 43 | ppb | Avg. | 7 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 6 (Maritime Estates Property along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 94 | ppb | Max. | 11 | ug/m ³ |
| Avg. | 28 | ppb | Avg. | 7 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 7 (386 3rd Avenue along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

TVOC – Total Volatile Organic Compounds

PM₁₀ – Particulates as PM₁₀

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m³ - PM₁₀)

Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM₁₀
(TRC Project No.274286-0000-00000)
09/18/2018 00:00 AM - 09/18/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 23 | ppb | Max. | 26 | ug/m ³ |
| Avg. | 4 | ppb | Avg. | 7 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 2 (Citizen Property near Pad Area)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 34 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 10 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 3 (Whole Foods Property NW Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 44 | ppb | Max. | 56 | ug/m ³ |
| Avg. | 19 | ppb | Avg. | 21 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 4 (Whole Foods Property Central Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|---|-------|------------------|----|-------------------|
| Max. | 9 | ppb | Max. | 13 | ug/m ³ |
| Avg. | 1 | ppb | Avg. | 7 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 36 | ppb | Max. | 19 | ug/m ³ |
| Avg. | 15 | ppb | Avg. | 9 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 6 (Maritime Estates Property along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 78 | ppb | Max. | 14 | ug/m ³ |
| Avg. | 42 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 7 (386 3rd Avenue along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

TVOC – Total Volatile Organic Compounds

PM₁₀ – Particulates as PM₁₀

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m³ - PM₁₀)

**Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM₁₀
(TRC Project No.274286-0000-00000)
09/19/2018 00:00 AM - 09/19/2018 23:45 PM**

Station 1 (Citizen Property near Construction Trailers)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 2 (Citizen Property near Pad Area)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 18 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 9 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 3 (Whole Foods Property NW Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 44 | ppb | Max. | 31 | ug/m ³ |
| Avg. | 36 | ppb | Avg. | 14 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 4 (Whole Foods Property Central Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 80 | ppb | Max. | 12 | ug/m ³ |
| Avg. | 14 | ppb | Avg. | 5 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 72 | ppb | Max. | 14 | ug/m ³ |
| Avg. | 19 | ppb | Avg. | 5 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 6 (Maritime Estates Property along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|-----|-------|------------------|----|-------------------|
| Max. | 127 | ppb | Max. | 29 | ug/m ³ |
| Avg. | 21 | ppb | Avg. | 2 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 7 (386 3rd Avenue along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

TVOC – Total Volatile Organic Compounds

PM₁₀ – Particulates as PM₁₀

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m³ - PM₁₀)

Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM₁₀
(TRC Project No.274286-0000-00000)
09/20/2018 00:00 AM - 09/20/2018 23:45 PM

Station 1 (Citizen Property near Construction Trailers)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|---|-------------------|
| Max. | <1 | ppb | Max. | 5 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 2 (Citizen Property near Pad Area)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 10 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 6 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 3 (Whole Foods Property NW Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 38 | ppb | Max. | 24 | ug/m ³ |
| Avg. | 7 | ppb | Avg. | 5 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 4 (Whole Foods Property Central Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|-----|-------|------------------|----|-------------------|
| Max. | 137 | ppb | Max. | 10 | ug/m ³ |
| Avg. | 57 | ppb | Avg. | 5 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

| TVOC | | | PM ₁₀ | | |
|------|-----|-------|------------------|----|-------------------|
| Max. | 107 | ppb | Max. | 14 | ug/m ³ |
| Avg. | 54 | ppb | Avg. | 3 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 6 (Maritime Estates Property along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 7 (386 3rd Avenue along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

TVOC – Total Volatile Organic Compounds

PM₁₀ – Particulates as PM₁₀

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m³ - PM₁₀)

**Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York
Daily Station Report – TVOC/PM₁₀
(TRC Project No.274286-0000-00000)
09/21/2018 00:00 AM - 09/21/2018 16:00 PM**

Station 1 (Citizen Property near Construction Trailers)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 1 | ppb | Max. | 16 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 5 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 2 (Citizen Property near Pad Area)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | 19 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | 7 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 3 (Whole Foods Property NW Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 32 | ppb | Max. | 25 | ug/m ³ |
| Avg. | 1 | ppb | Avg. | 9 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 4 (Whole Foods Property Central Riverwalk Location)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 63 | ppb | Max. | 21 | ug/m ³ |
| Avg. | 16 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 5 (Whole Foods Property near 3rd Avenue Bridge)

| TVOC | | | PM ₁₀ | | |
|------|-----|-------|------------------|----|-------------------|
| Max. | 116 | ppb | Max. | 11 | ug/m ³ |
| Avg. | 23 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 6 (Maritime Estates Property along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | 47 | ppb | Max. | 17 | ug/m ³ |
| Avg. | 12 | ppb | Avg. | 4 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

Station 7 (386 3rd Avenue along Canal Fencing)

| TVOC | | | PM ₁₀ | | |
|------|----|-------|------------------|----|-------------------|
| Max. | <1 | ppb | Max. | <1 | ug/m ³ |
| Avg. | <1 | ppb | Avg. | <1 | ug/m ³ |
| Exc. | 0 | total | Exc. | 0 | Total |

TVOC – Total Volatile Organic Compounds

PM₁₀ – Particulates as PM₁₀

Max. – Maximum daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Avg. – Daily average (15 min. avg. – TVOC / 15 min. avg. – PM₁₀)

Exc. – Total # of averages which exceed the action level (≥1 ppm - TVOC / ≥150 ug/m³ - PM₁₀)

Figure 1
Gowanus Canal Superfund Site -TB4 Dredging and Capping Pilot Program
TVOC Monitoring Data - Week 50

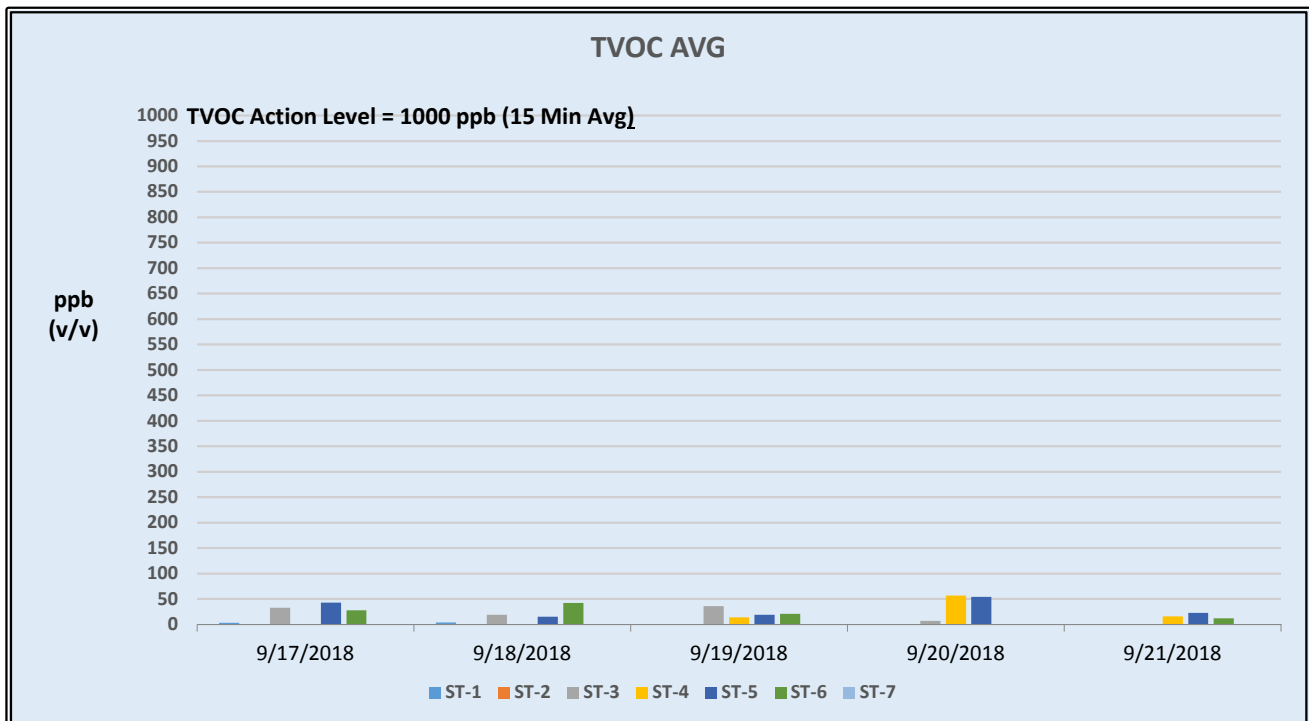
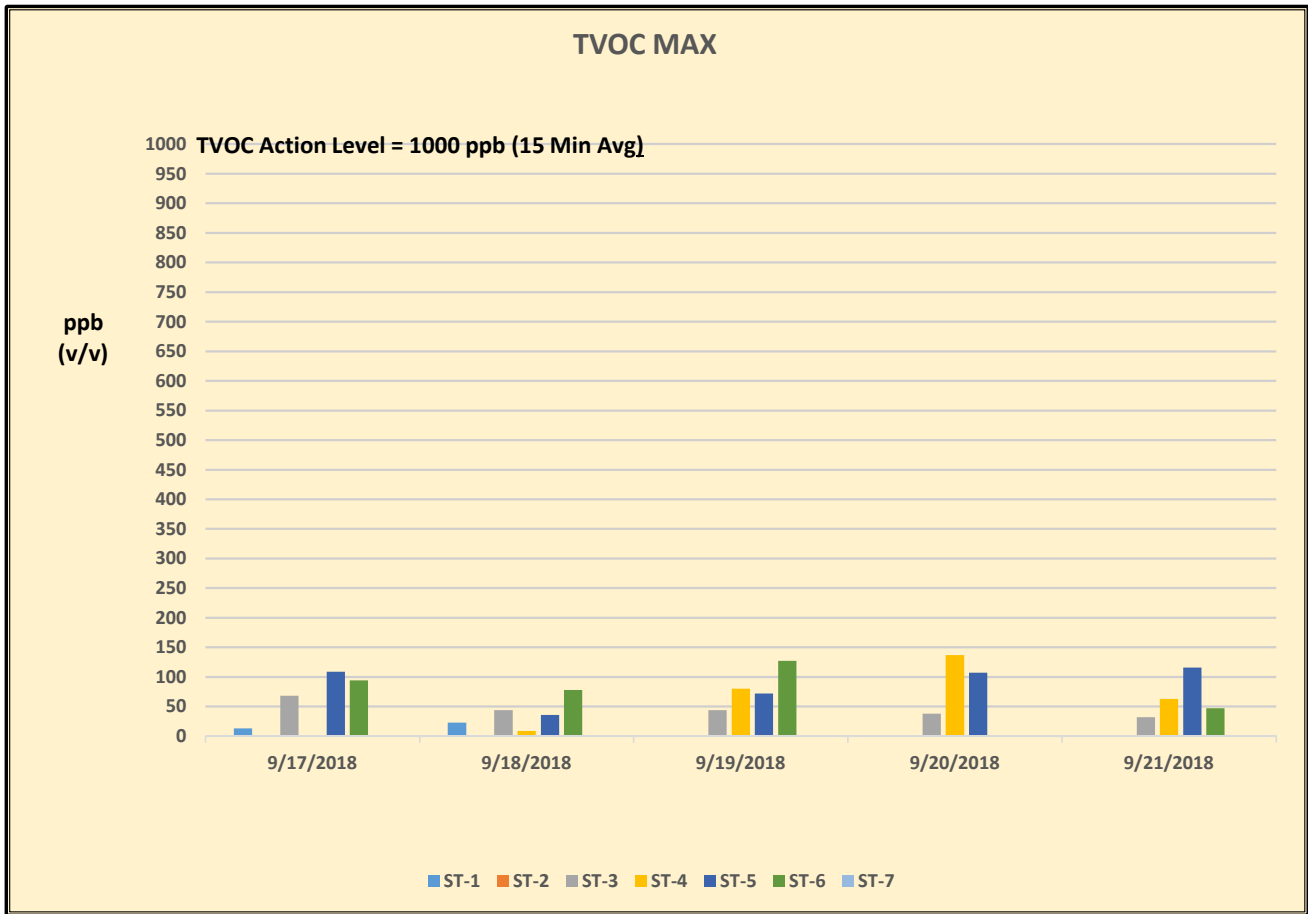
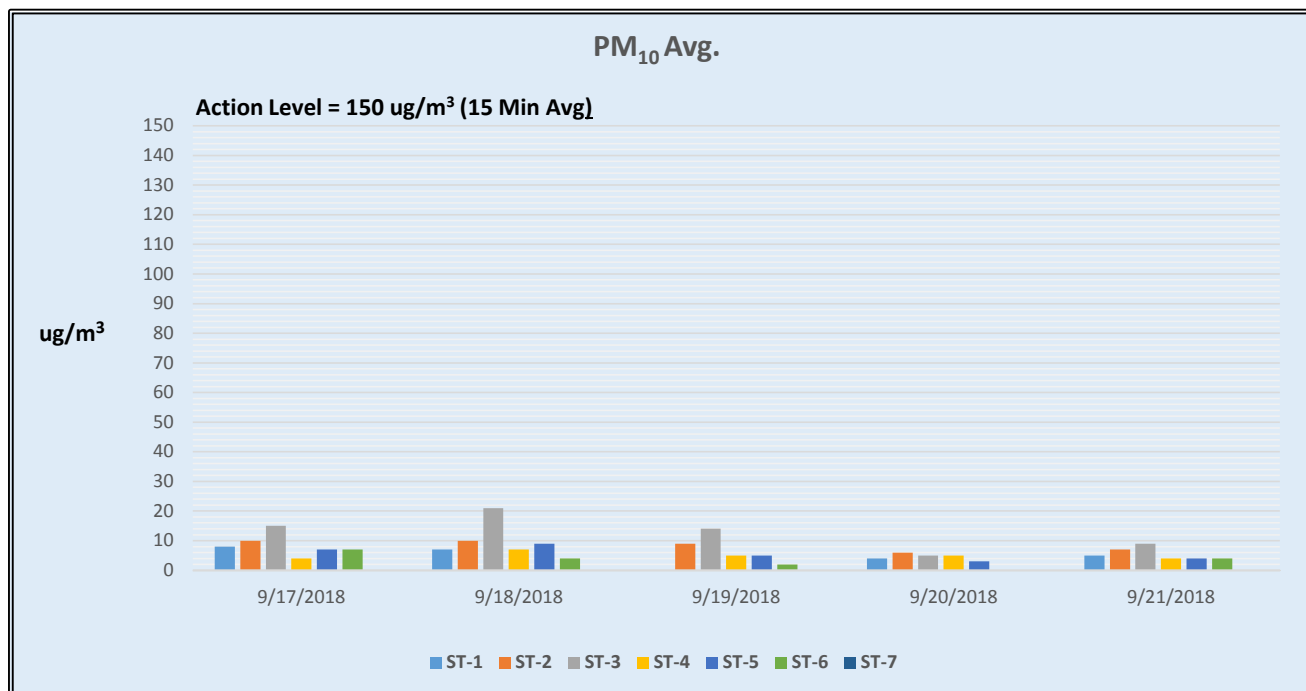
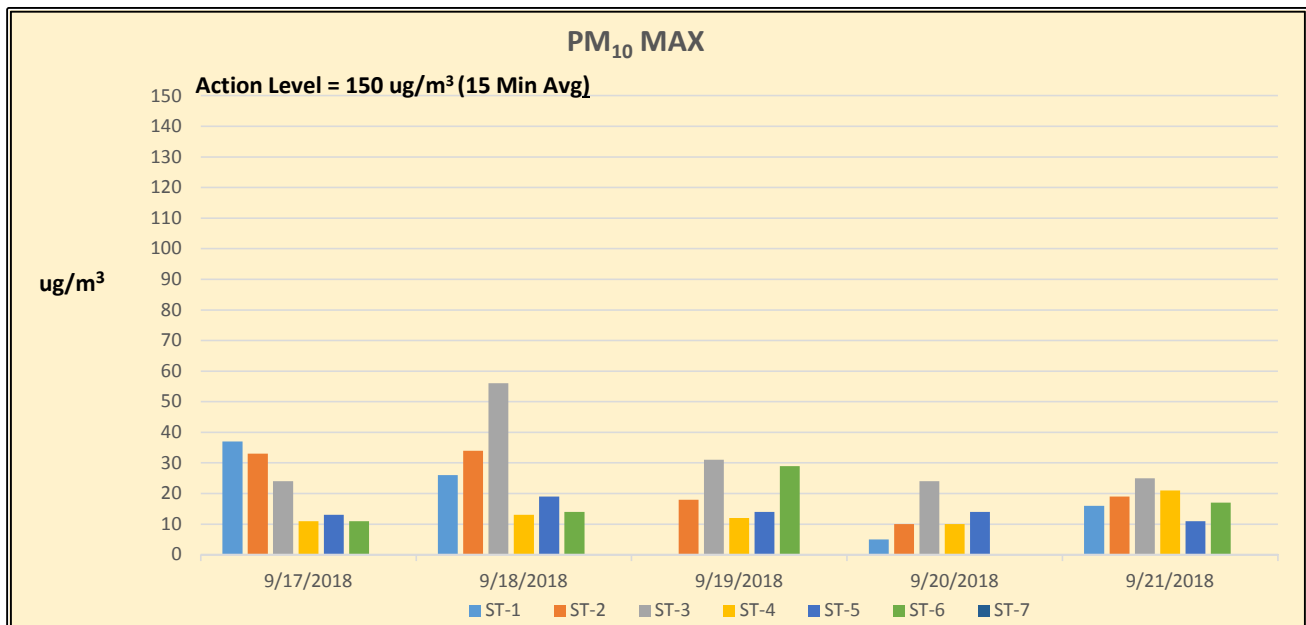


Figure 2
Gowanus Canal Superfund Site - TB4 Dredging and Capping Pilot Program
TRC CAMP PM₁₀ Monitoring Data - Week 50



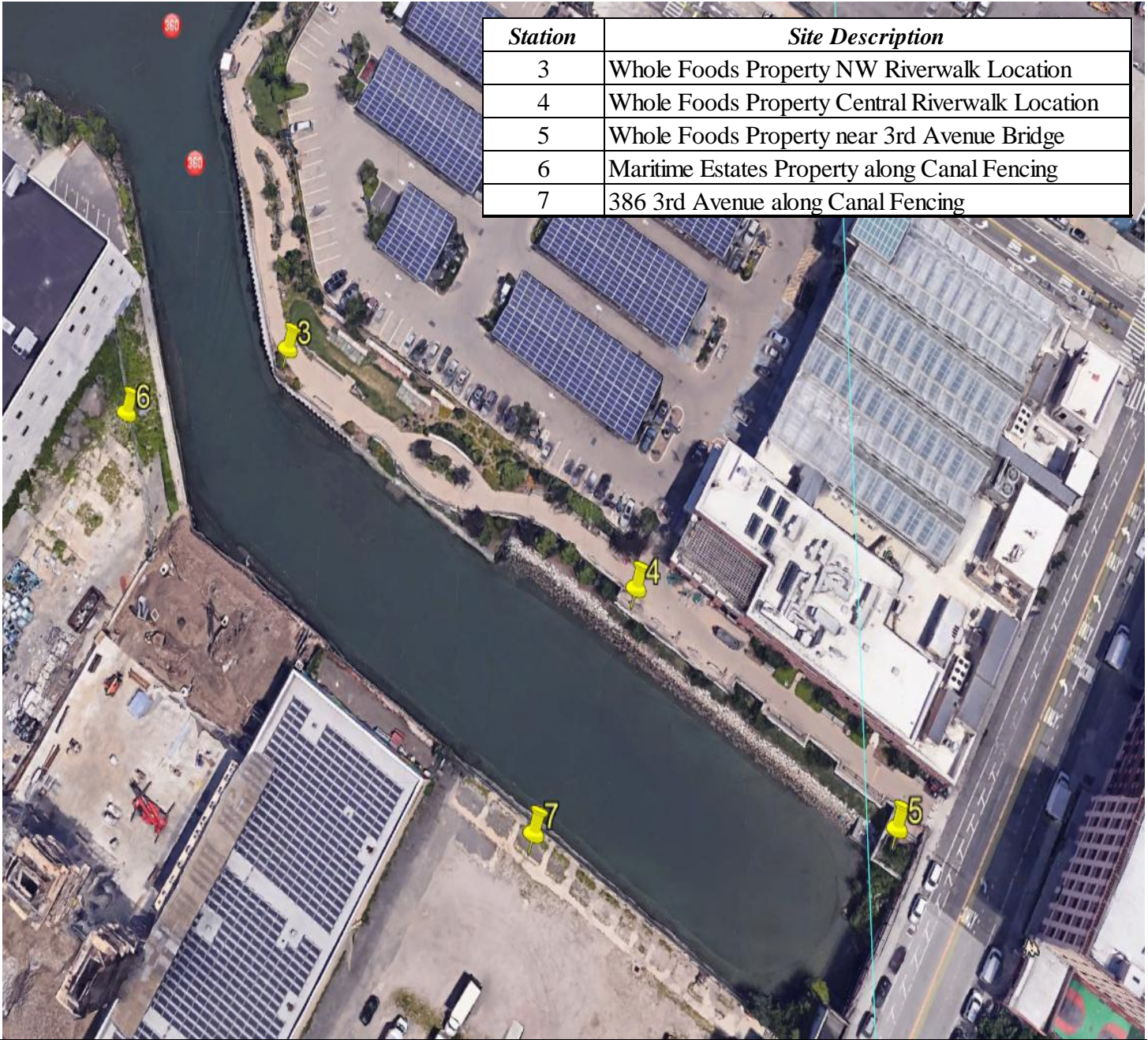


FIGURE 3
Gowanus Canal Superfund Site-TB4
Dredging and Capping Pilot Program

Table 1

Week 50

Summary of Additional Periodic (Daily) Monitoring Data

| September 17 th , 2018 | | | | |
|-----------------------------------|-------|---------------------------|--------------------------------------------|------------------------------------|
| Station Id | Time | Formaldehyde (CHO) (ppb)* | Hydrogen Sulfide (H ₂ S) (ppb)* | Ammonia (NH ₃) (ppm)** |
| ST-1 | 7:30 | <50 | <3 | <1.0 |
| | 14:00 | <50 | <3 | <1.0 |
| ST-2 | 7:35 | <50 | <3 | <1.0 |
| | 14:10 | <50 | <3 | <1.0 |
| ST-3 | 7:45 | <50 | <3 | <1.0 |
| | 15:00 | <50 | <3 | <1.0 |
| ST-4 | 7:50 | <50 | <3 | <1.0 |
| | 15:10 | <50 | <3 | <1.0 |
| ST-5 | 7:55 | <50 | <3 | <1.0 |
| | 15:20 | <50 | <3 | <1.0 |
| ST-6 | 8:10 | <50 | <3 | <1.0 |
| | 15:30 | <50 | <3 | <1.0 |
| ST-7 | 8:30 | <50 | <3 | <1.0 |
| | 16:00 | <50 | <3 | <1.0 |
| September 18 th , 2018 | | | | |
| Station Id | Time | Formaldehyde (CHO) (ppb)* | Hydrogen Sulfide (H ₂ S) (ppb)* | Ammonia (NH ₃) (ppm)** |
| ST-1 | 9:00 | <50 | <3 | <1.0 |
| | 15:00 | <50 | <3 | <1.0 |
| ST-2 | 9:10 | <50 | <3 | <1.0 |
| | 15:05 | <50 | <3 | <1.0 |
| ST-3 | 9:30 | <50 | <3 | <1.0 |
| | 15:15 | <50 | <3 | <1.0 |
| ST-4 | 9:35 | <50 | <3 | <1.0 |
| | 15:20 | <50 | <3 | <1.0 |
| ST-5 | 9:40 | <50 | <3 | <1.0 |
| | 15:25 | <50 | <3 | <1.0 |
| ST-6 | 10:00 | <50 | <3 | <1.0 |
| | 15:40 | <50 | <3 | <1.0 |
| ST-7 | 10:15 | <50 | <3 | <1.0 |
| | 16:00 | <50 | <3 | <1.0 |

Table 1

Week 50

Summary of Additional Periodic (Daily) Monitoring Data

| September 19 th , 2018 | | | | |
|-----------------------------------|-------|---------------------------|--------------------------------------------|------------------------------------|
| Station Id | Time | Formaldehyde (CHO) (ppb)* | Hydrogen Sulfide (H ₂ S) (ppb)* | Ammonia (NH ₃) (ppm)** |
| ST-1 | 7:00 | <50 | <3 | <1.0 |
| | 13:30 | <50 | <3 | <1.0 |
| ST-2 | 7:10 | <50 | <3 | <1.0 |
| | 13:35 | <50 | <3 | <1.0 |
| ST-3 | 7:20 | <50 | <3 | <1.0 |
| | 13:45 | 4.18 | <3 | <1.0 |
| ST-4 | 7:30 | <50 | <3 | <1.0 |
| | 13:50 | 3.76 | <3 | <1.0 |
| ST-5 | 7:40 | <50 | <3 | <1.0 |
| | 13:55 | <50 | <3 | <1.0 |
| ST-6 | 8:00 | <50 | <3 | <1.0 |
| | 14:10 | <50 | <3 | <1.0 |
| ST-7 | 8:20 | <50 | <3 | <1.0 |
| | 14:30 | <50 | <3 | <1.0 |
| September 20 th , 2018 | | | | |
| Station Id | Time | Formaldehyde (CHO) (ppb)* | Hydrogen Sulfide (H ₂ S) (ppb)* | Ammonia (NH ₃) (ppm)** |
| ST-1 | 9:00 | <50 | <3 | <1.0 |
| | 13:30 | <50 | <3 | <1.0 |
| ST-2 | 9:10 | <50 | <3 | <1.0 |
| | 13:40 | <50 | <3 | <1.0 |
| ST-3 | 9:25 | <50 | <3 | <1.0 |
| | 13:55 | <50 | <3 | <1.0 |
| ST-4 | 9:30 | <50 | <3 | <1.0 |
| | 14:10 | <50 | <3 | <1.0 |
| ST-5 | 9:40 | <50 | <3 | <1.0 |
| | 14:20 | <50 | <3 | <1.0 |
| ST-6 | 9:55 | <50 | <3 | <1.0 |
| | 14:35 | <50 | <3 | <1.0 |
| ST-7 | 10:10 | <50 | <3 | <1.0 |
| | 14:45 | <50 | <3 | <1.0 |

Table 1

Week 50

Summary of Additional Periodic (Daily) Monitoring Data

| September 21 st , 2018 | | | | |
|-----------------------------------|-------|---------------------------|--------------------------------------------|------------------------------------|
| Station Id | Time | Formaldehyde (CHO) (ppb)* | Hydrogen Sulfide (H ₂ S) (ppb)* | Ammonia (NH ₃) (ppm)** |
| ST-1 | 9:00 | <50 | <3 | <1.0 |
| | 15:00 | <50 | <3 | <1.0 |
| ST-2 | 9:10 | <50 | <3 | <1.0 |
| | 15:10 | <50 | <3 | <1.0 |
| ST-3 | 9:20 | <50 | <3 | <1.0 |
| | 15:25 | <50 | <3 | <1.0 |
| ST-4 | 9:30 | <50 | <3 | <1.0 |
| | 15:30 | <50 | <3 | <1.0 |
| ST-5 | 9:45 | <50 | <3 | <1.0 |
| | 15:40 | <50 | <3 | <1.0 |
| ST-6 | 10:15 | <50 | <3 | <1.0 |
| | 16:00 | <50 | <3 | <1.0 |
| ST-7 | 10:30 | <50 | <3 | <1.0 |
| | 16:10 | <50 | <3 | <1.0 |

***(ppb) Indicates results reported in parts per billion**

**** (ppm) Indicates results reported in parts per million**



**Gowanus Canal Superfund Site
TB-4 Dredging and Capping Pilot Study
Brooklyn, New York**

Meteorological Summary

September 17th through September 21st, 2018

| September 17th, 2018 * | | |
|------------------------------------------|-------------------------|-------------------------|
| Wind Direction (°) | Wind Speed (mph) | Temperature (°F) |
| NE | 4.69 | 67.5 |

| September 18th, 2018 ** | | |
|-------------------------------------------|-------------------------|-------------------------|
| Wind Direction (°) | Wind Speed (mph) | Temperature (°F) |
| ESE | 2.79 | 67.0 |

| September 19th, 2018 ** | | |
|-------------------------------------------|-------------------------|-------------------------|
| Wind Direction (°) | Wind Speed (mph) | Temperature (°F) |
| ESE | 4.79 | 67.0 |

| September 20th, 2018 ** | | |
|-------------------------------------------|-------------------------|-------------------------|
| Wind Direction (°) | Wind Speed (mph) | Temperature (°F) |
| E | 4.30 | 66.5 |

| September 21st, 2018 ** | | |
|-------------------------------------------|-------------------------|-------------------------|
| Wind Direction (°) | Wind Speed (mph) | Temperature (°F) |
| ESE | 4.00 | 66.0 |

* Monday's meteorological data represents an average for the time period of 06:30 to 23:45.

** Tuesday's, Wednesday's, and Thursday's meteorological data represents averages for the time period of 00:00 to 23:45.

*** Friday's meteorological data represents an average for the time period of 00:00 to 16:00.

WILSON IHRIG WEEKLY NOISE AND VIBRATION MONITORING REPORT





WI #15-081

MEMORANDUM

September 24, 2018

To: William Lee/ de maximis, inc.
Kirsten Meyers / TRC

From: Silas Bensing, Ani Toncheva / Wilson Ihrig

Subject: Gowanus Canal 4th Street Turning Basin Dredging and Capping Pilot Study, Weekly Noise Monitoring Report, 17 September – 21 September, 2018

Noise Monitoring Locations

Figure 1 shows the noise monitoring locations. NM-1 is installed at a light pole on the north side of TB4 and is approximately 25 feet from the north edge of the canal. NM-2 is installed at the existing guard rail on the south side of TB4, approximately 4 feet from the south edge of the canal. Photos 1 and 2 show the recent field conditions at the monitors.

Noise Monitoring Results

Figures 2 through 11 present the hourly Leq noise levels compared with the noise thresholds discussed in the noise monitoring plan¹. Commercial and Industrial land uses are assigned an hourly Leq noise limit of 80 dBA for Daytime and Evening time periods. The average baseline noise measured in the project area in 2015 are also shown for reference².

¹ Wilson Ihrig. *Gowanus Canal 4th Street Turning Basin Dredging and Capping Pilot Study Noise and Vibration Monitoring Plan*. California: prepared for Gowanus Canal Remedial Design Group, DRAFT May 2017

² Wilson Ihrig. *Gowanus Canal Remedial Design Project RTA-1 Noise and Vibration Baseline Report*. California: prepared for Geosyntec Consultants Inc., October 2015.

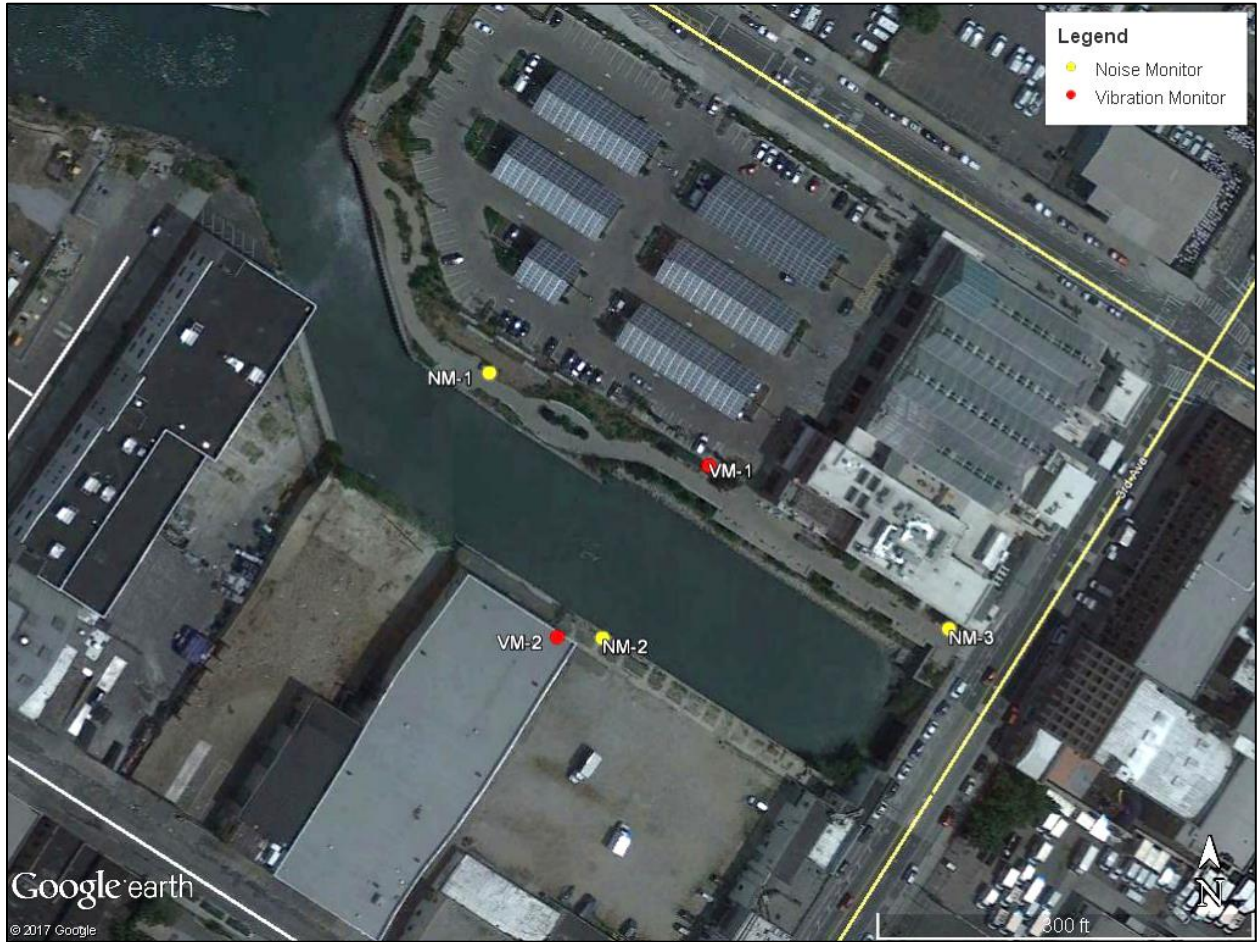
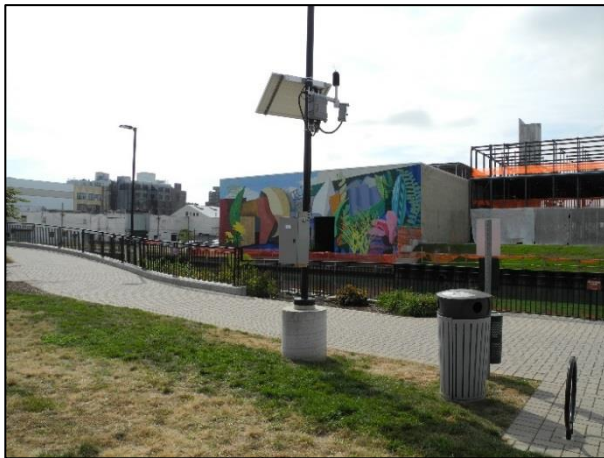


Figure 1: Long-term Noise and Vibration Monitoring Locations for Gowanus TB4 Dredging and Capping Pilot Study



**Photo 1: Noise Monitoring Location NM-1
(26 September 2017)**



**Photo 2: Noise Monitoring Location NM-2
(25 September 2017)**

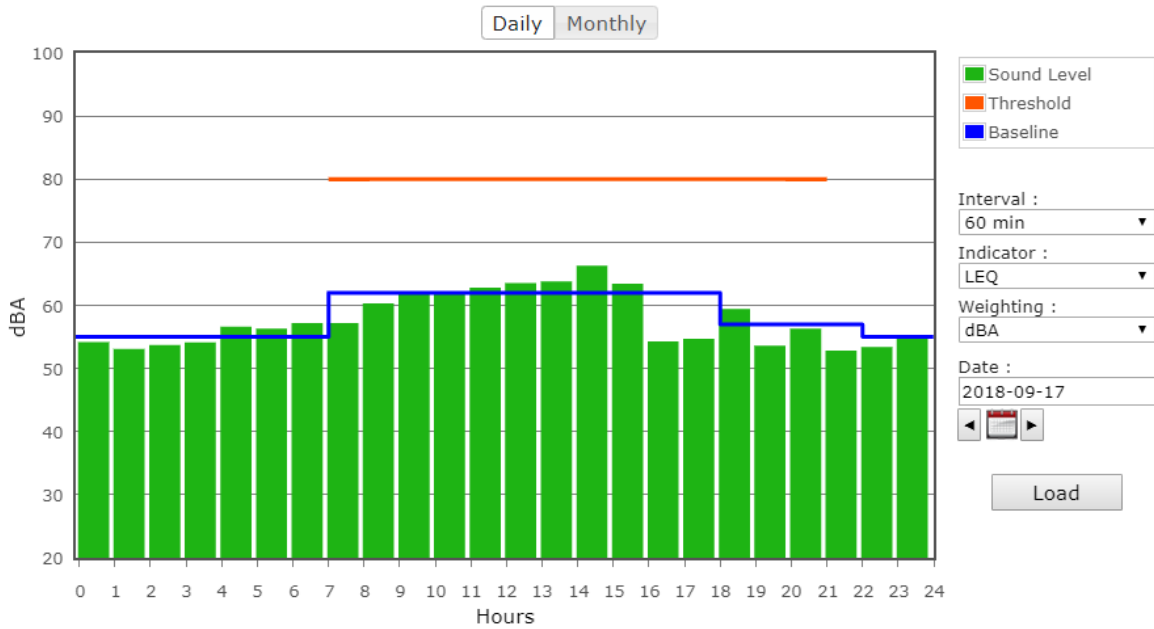


Figure 2: North Monitor NM-1 on Monday

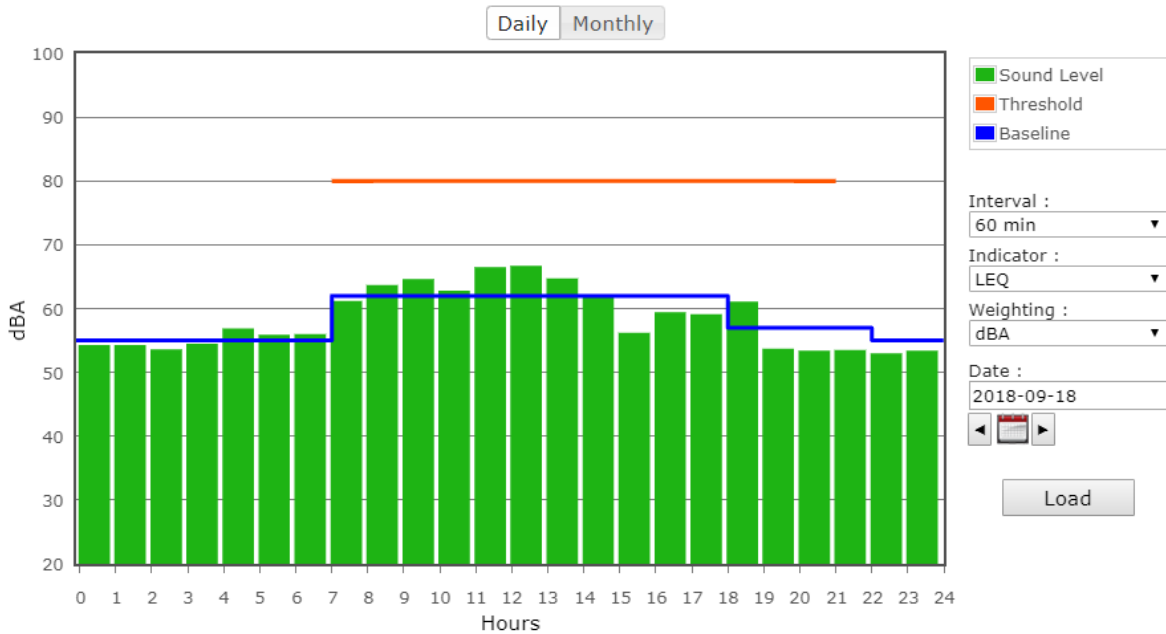


Figure 3: North Monitor NM-1 on Tuesday

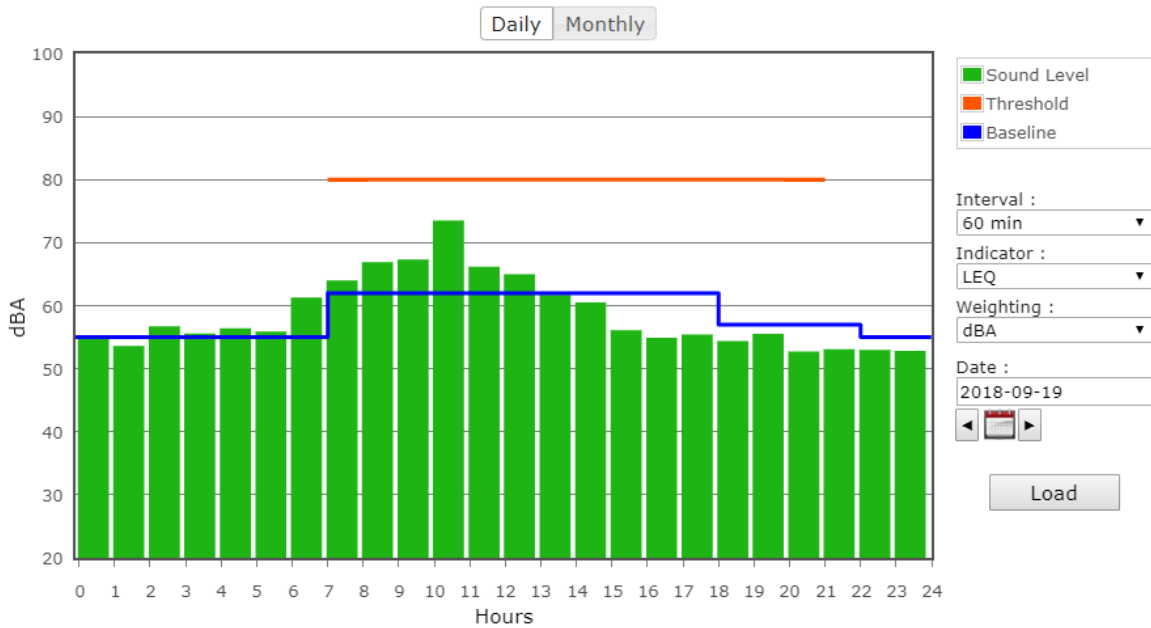


Figure 4: North Monitor NM-1 on Wednesday

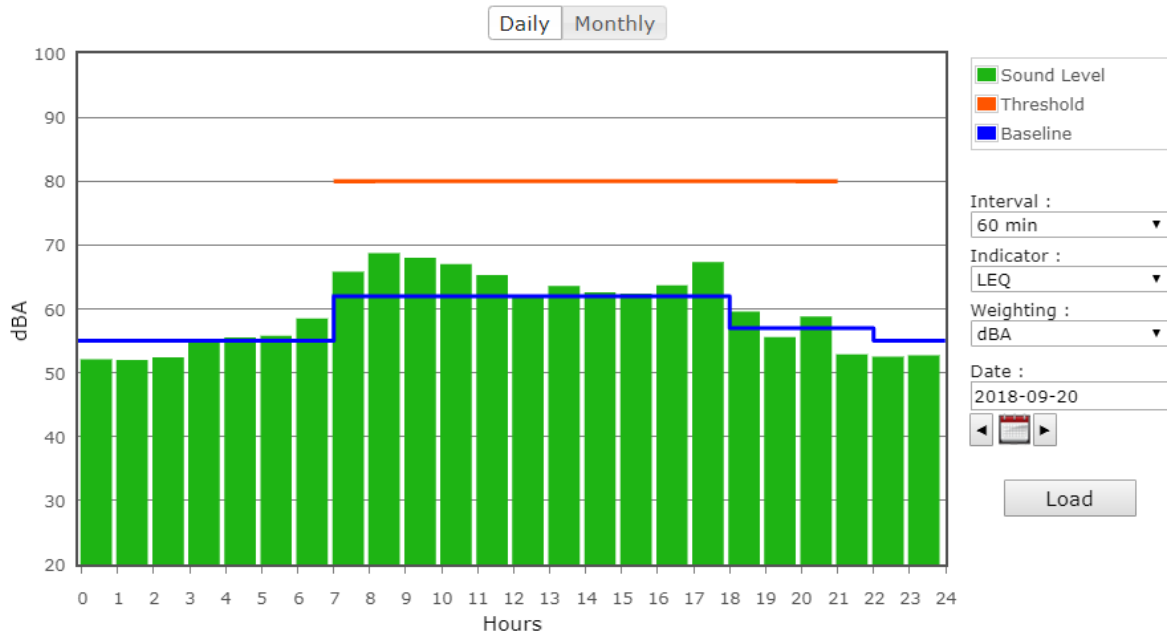


Figure 5: North Monitor NM-1 on Thursday

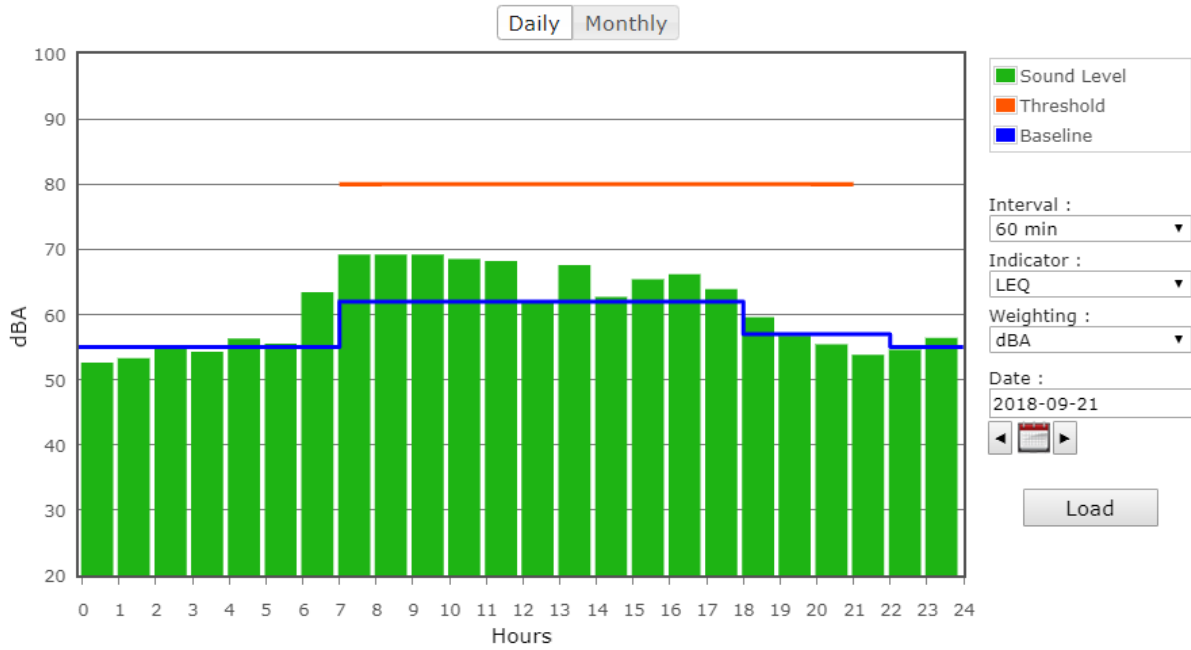


Figure 6: North Monitor NM-1 on Friday

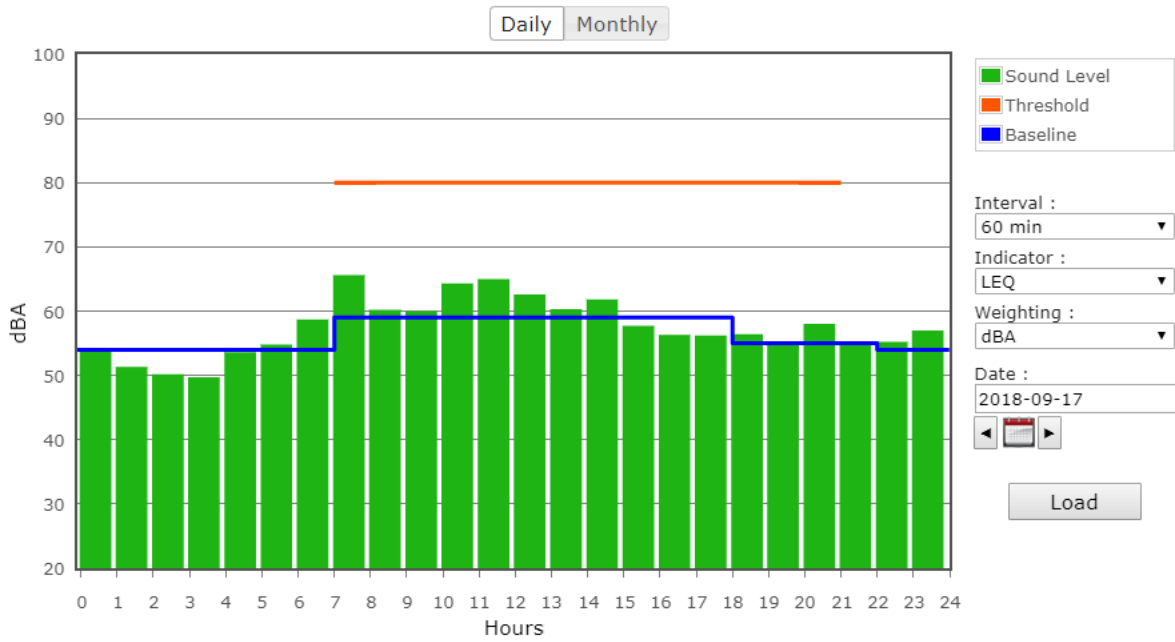


Figure 7: South Monitor NM-2 on Monday

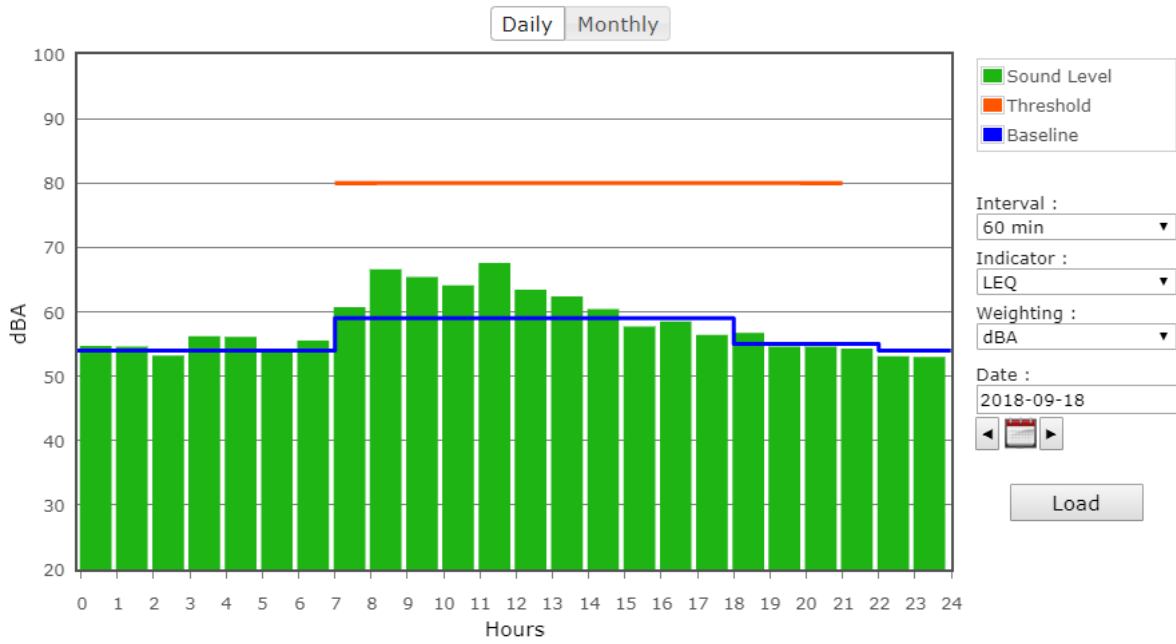


Figure 8: South Monitor NM-2 on Tuesday

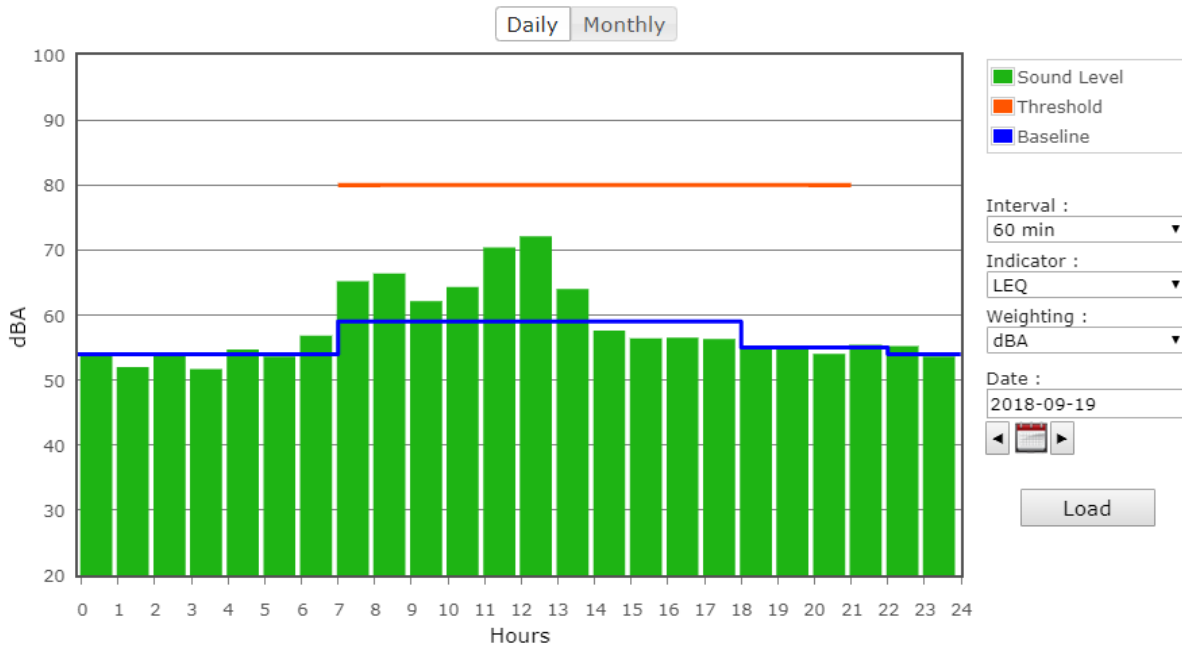


Figure 9: South Monitor NM-2 on Wednesday

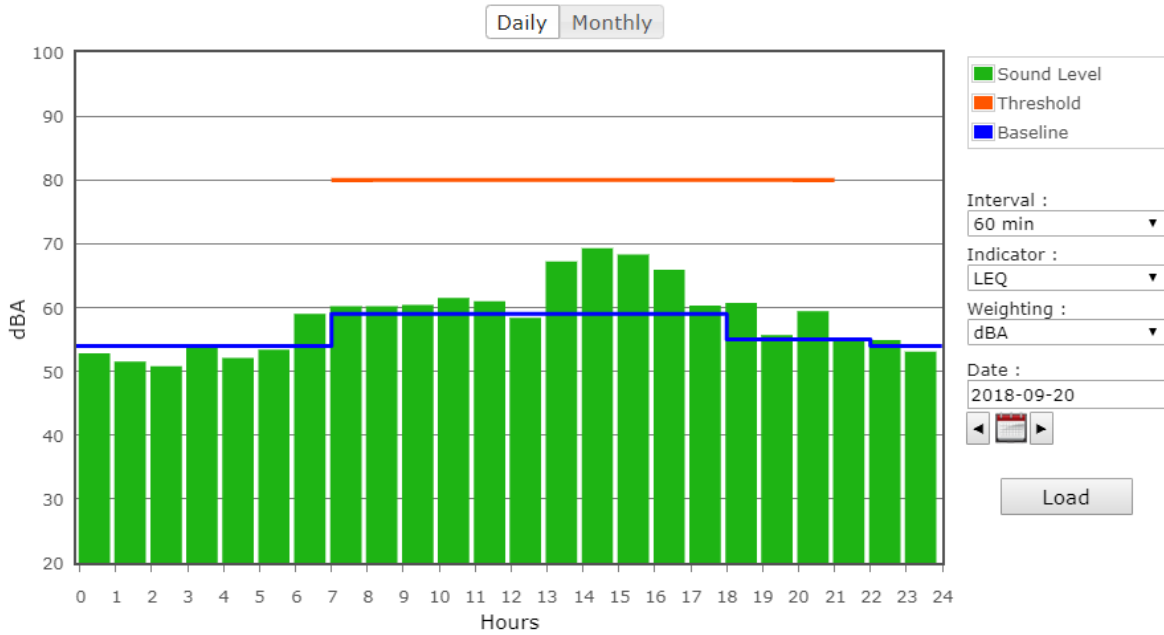


Figure 10: South Monitor NM-2 on Thursday

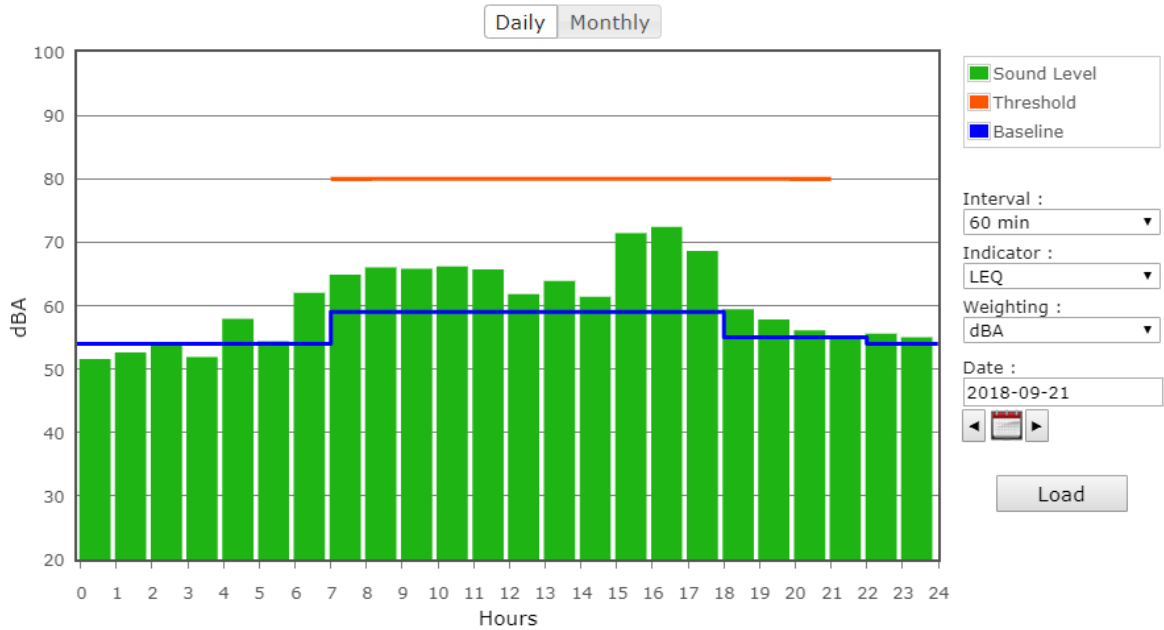


Figure 11: South Monitor NM-2 on Friday

AHRS WEEKLY REPORT
(NO ACTIVITIES DURING WEEK)



**WATER TREATMENT SYSTEM MONITORING LABORATORY ANALYTICAL DATA
(NO ACTIVITIES DURING WEEK)**



**CUMULATIVE DREDGED MATERIAL CHART
(NO ACTIVITIES DURING WEEK)**

