

**MEMORANDUM**

Date: **January 30, 2020**

To: **George Pfeiffer, Honeywell**  
**William Hague, Wood**

From: **Mark Nielsen, P.E., Ramboll US Corporation**  
**Jose Sananes, P.E., Ramboll US Corporation**  
**Tracie Ahneman, Ramboll US Corporation**

Subject: **SA-7 Sediment Remedy Long Term Monitoring – Summary of**  
**Year 6 Activities and Proposed Activities for Year 7**

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As required by the Consent Order on Sediment Remediation and Financial Assurances (Consent Order) entered by the U.S. District Court (District of New Jersey) on May 28, 2008 in the matter of Interfaith Community Organization et al vs. Honeywell International et al, and Riverkeeper, Inc., et al vs. Honeywell International et al (Civil Action Nos. 95-2097 and 06-0022), Honeywell conducted sediment remediation in the Hackensack River in the vicinity of Study Area (SA) 7 (Site) along Route 440 in Jersey City, New Jersey. The Consent Order, as amended in September 2013, set forth the specific components of dredging, capping, and monitored natural recovery (MNR) for the Sediment Remedy.

Ramboll  
101 Carnegie Center  
Suite 200  
Princeton, NJ 08540  
USA

T +1 609 452 9000  
F +1 609 452 0284  
www.ramboll.com

In accordance with the *Long-Term Monitoring Plan* (LTMP; revised April 18, 2012) developed as part of the 100% Design for Study Area 7 (100% Design; Cornerstone/ENVIRON 2012), annual monitoring is conducted to assess the on-going effectiveness of the sediment remedy. This report presents the results of monitoring performed by Ramboll US Corporation (Ramboll) during Year 6 of the LTMP and the monitoring activities proposed for Year 7 are summarized below.

**OVERVIEW OF LTMP**

As summarized on Table 1, the LTMP requires bathymetric surveys, cap integrity monitoring, pore water sampling, biological monitoring, and surface sediment sampling at designated locations in Years 1, 2, and 5 of post-construction of the sediment cap areas. After Year 5, the monitoring program is reduced to conducting a bathymetric survey once every five (5) years. In addition, the LTMP requires continued hydraulic and hydrodynamic monitoring to identify high energy events that trigger additional assessment of cap areas (note that no high energy events were identified during the first five years of post-construction monitoring or in Year 6).

Similar to the cap area monitoring, the LTMP specifies bathymetric surveys and sediment profile imaging (SPI) for monitored natural recovery (MNR) areas in Years 1, 2 and 5 of the post-construction period (see Table 2). After Year 5, the monitoring program is reduced to conducting a bathymetric survey once every

five (5) years. In addition, the LTMP requires continued hydraulic and hydrodynamic monitoring to identify high energy events that trigger additional assessment of MNR areas.

As specified in the LTMP and confirmed in the LTMP Year 5 Implementation Report (Year 5 Report; Ramboll, May 2019), cap integrity monitoring, pore water sampling, biological sampling, surface sediment sampling, and SPI were discontinued after Year 5, as the results of the first five years of post-construction monitoring demonstrated that the remediation areas remain stable relative to constructed conditions.

Bathymetric surveys will be conducted every 5 years. All long term monitoring (LTM) activities can be terminated after 15 years (i.e., 2028) and through two high-energy events, or a total period of 25 years (i.e., 2038), whichever is shorter.

### **SUMMARY OF YEAR 6 ACTIVITIES**

As described in the Year 5 Report, the Year 5 LTM activities were conducted during the period of March through December 2018. During this period, construction of Cap Areas 16 and 22 in Droyers Cove was completed in coordination with the beneficial environmental project (BEP); cap construction was completed at the end of Year 5 (i.e., December 2018). As a result, these two cap areas were not included in the routine monitoring completed in Years 1 through 5 of the LTMP. Therefore, these cap areas were inspected in coordination with the BEP inspection program in Year 6.

- Ramboll completed four visual inspections of the Droyers Cove BEP area in Year 6 to document the establishment of vegetation and functionality of the BEP. Since Cap Area 16 underlies the BEP area and Cap Area 22 is located proximate to the BEP area, these cap areas were also visually inspected four times in Year 6. The inspections were performed at low tide on April 19, July 10, October 10, and October 28, 2019. The results of these inspections were documented in summary logs (see **Attachment A**). Inspection of the Cap Area 16 and 22 long-term monitoring plate locations determined that the long-term monitoring plates were not visible, confirming that the plates have remained buried and no observable loss of cap material has occurred. In fact, some deposition of sediment (up to 3 inches in Cap Area 22) was observed over the caps.
- As required by the LTMP, Ramboll monitored hydraulic and hydrodynamic data during Year 6 to identify high energy events that would trigger additional assessment. The results of hydraulic and hydrodynamic monitoring performed during the first (January through March), second (April through June), third (July through September), and fourth (October through December) quarters of 2019 are attached (**Attachment B**). These monitoring data indicate that no high energy events meeting the defined criteria have occurred during these monitoring periods.

Note that only hydraulic and hydrodynamic monitoring and visual inspections were considered necessary to evaluate the integrity of Cap Areas 16 and 22 in Year 6 given the following factors:

1. The results of five years of post-construction monitoring of the SA-7 sediment remedy area within the main portion of the Hackensack River have documented the relative stability of the cap areas completed in 2013.
2. Cap Areas 16 and 22 are located within Droyers Cove, which exhibits lower currents than the main portion of the Hackensack River.
3. Cap Area 16 is within the BEP shoreline wetland area, which has been vegetated.

In accordance with the LTMP, the next bathymetric surveys of the entire SA-7 sediment remedy area will be conducted in 2023 and 2028 (i.e., 10 and 15 years after completion of the sediment remedy in 2013), unless a high-energy event occurs sooner. These surveys will include Cap Areas 16 and 22.

#### **PROPOSED ACTIVITIES FOR YEAR 7**

Consistent with the requirements of the LTMP, in Year 7 (2020), Ramboll proposes to continue to perform hydraulic and hydrodynamic monitoring on a monthly basis to identify any high-energy events that would trigger additional assessment of the remedy area. Ramboll will prepare quarterly reports summarizing the hydraulic and hydrodynamic monitoring results. If a high-energy event occurs in Year 7, Ramboll will implement LTMP field activities (bathymetric survey, diver-assisted cap integrity monitoring, and SPI survey) over the entire sediment remedy area.

In addition, consistent with activities in Year 6, Ramboll will conduct a minimum of three visual inspections of the BEP Area in Year 7 (April, July, and October 2020) to continue to document the establishment of vegetation and functionality of the BEP. Cap Areas 16 and 22 will be included in these inspections. Following each inspection, summary logs documenting observations will be submitted to Honeywell and after the third inspection, Ramboll will prepare a summary report documenting all Year 7 inspection and monitoring activities.

Please let us know should you have any questions or wish to discuss further.

**TABLES**

Table 1: Summary of Long-Term Monitoring of the Capped Areas								
Monitoring Elements for Capped Areas	YEAR							LTMP Section Reference
	1	2	5	6 to 15	20	25	HEV	
<b>Hydraulic and Hydrodynamic Evaluation</b>								
Routine Monitoring and Analysis	X	X	X					4.1.1
Severe Event Monitoring and Analysis	X	X	X	X			Note 1	4.1.1
Bathymetry	X	X	X	X	X	X	Note 2	4.1.2
Cap Integrity Monitoring	X		X				Note 3	4.1.3
Pore Water Sampling	X	X	X	Note 4, 5				4.2.1
Surface Sediment Sampling			X	Note 5				4.2.2
Sediment Trap Sampling				Note 6				4.2.3
Biological Monitoring	X		X	Note 5				4.3
<p>HEV: Following all High Energy Events</p> <p>Note 1: After 15 years, high-event assessments will be discontinued if the monitoring objectives have been achieved and maintained for 15 years and through at least two high energy events.</p> <p>Note 2: Bathymetric surveys will be conducted following up to two high-energy events (if not encountered in the first five years). No additional surveys will be performed if bathymetric surveys show no negative impacts on overall cap integrity (i.e., cap maintains coverage of target areas) for a period of 15 years and through two high-energy events, or a total period of 25 years, whichever is shorter.</p> <p>Note 3: After Year 5, routine sediment cap integrity monitoring will be discontinued unless data collected during the first five years of monitoring indicate that additional monitoring is warranted. Monitoring will still be conducted following a high-energy event if two such events did not occur within the first five years. Monitoring may also be performed after Year 5 if the bathymetry survey identifies an area of potential erosion warranting further assessment (see Section 4.1.2)</p> <p>Note 4: The first year of pore water sampling is limited to those areas of potential intermediate groundwater plume upwelling identified in the 2007 <i>Final Groundwater Investigation Report, Honeywell Study Area 7 Site</i>; this corresponds to portions of Cap Areas 1, 6, 8, 13, and 18. In Year 2, sampling will be performed in Areas 1, 8, 13 and 18.</p> <p>Note 5: After Year 5, sampling will be discontinued, unless the data collected during the first five years of monitoring indicate further monitoring is warranted.</p> <p>Note 6: If surface sediment sampling of capped areas results in the detection of total chromium concentrations greater than 370 ppm, sediment trap sampling units may be deployed in those areas to further assess site conditions and to evaluate potential contaminant sources.</p>								

Table 2: Summary of Long-Term Monitoring of the MNR Areas								
Monitoring Elements for MNR Areas	YEAR							LTMP Section Reference
	1	2	5	6 to 15	20	25	HEV	
<b>Hydraulic and Hydrodynamic Evaluation</b>								
Routine Monitoring and Analysis	X	X	X					5.1
Severe Event Monitoring and Analysis	X	X	X	X			Note 1	5.1
Bathymetry	X	X	X	X	X	X	Note 2	5.2
Sediment Profile Imaging	X	X	X				Note 3	5.3
Sediment Core Sampling	Note 4							5.2, 7.2
<p>HEV: Following all High Energy Events</p> <p>Note 1: After 15 years, severe event assessments will be discontinued if the monitoring objectives have been achieved and maintained for 15 years and through at least two high energy events.</p> <p>Note 2: Bathymetric surveys will be conducted following up to two high-energy events (if not encountered in the first five years). Following at least two high energy events, bathymetry surveys will be conducted only in MNR areas where erosion may have resulted in more than a 4-inch decrease in the elevation of the sediment surface, based on the results of the hydrodynamic evaluation.</p> <p>Note 3: Following high energy events, SPI surveys will be performed in MNR areas where erosion may have resulted in more than a four-inch decrease in surface sediment elevations based on the hydrodynamic evaluation and measured observations</p> <p>Note 4: In the event that a bathymetric survey identifies an Erosional Area as defined in the LTMP, sampling of top 12-inches sediment for total chromium in Erosion Areas is required to confirm that concentrations in top 12-inches remain below 370 ppm.</p>								



**ATTACHMENT A  
YEAR 6 INSPECTION LOGS**



**ATTACHMENT A.1  
APRIL 19, 2019 INSPECTION LOG**

## SITE INSPECTION LOG

PROJECT NAME:	SA-7 Long-Term Monitoring Year 6	INSPECTION DATE:	April 19, 2019
		WEATHER	SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/>
PROJECT NUMBER:	1690012529	CONDITIONS:	PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/>
PROJECT LOCATION:	SA-7 Droyers Cove BEP	TEMPERATURE (°F):	60-70°F
	City of Jersey City, Hudson County, NJ	PREVAILING WIND:	0-7mph (Varied to South)
INSPECTOR NAME:	Alex Papalian/Owen Zalme	INSPECTOR	
INSPECTOR TITLE:	Senior Consultant	SIGNATURE(S):	

The inspection was conducted at low tide, when Cap Areas 16 and 22 and the entire BEP area (including the shoreline stabilization berm) were fully exposed.

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
16	<ul style="list-style-type: none"> <li>Long-term monitoring plate was not observed (i.e., plate remains buried).</li> <li>On approximately 30% of the cap (in the low marsh planting zone) less than 1 inch of siltation was measured.</li> </ul>	1, 2, 3	• None
22	<ul style="list-style-type: none"> <li>Long-term monitoring plate was not observed (i.e., plate remains buried).</li> <li>On approximately 20% of the cap, and concentrated in areas with minor depressions, up to 3 inches of siltation was measured over the armor layer.</li> </ul>	4 to 8	• None

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
SHORELINE STABILIZATION	<ul style="list-style-type: none"> <li>Shoreline stabilization appeared to be in good condition.</li> </ul>	9 to 14	• None
OUTFALL RIPRAP APRONS	<ul style="list-style-type: none"> <li>Outfall A: 3 to 4 inches of siltation observed on western side of the riprap apron and 2 to 3 inches of siltation of likely BEP fill observed within the outfall pipe outlet.</li> <li>Outfalls B and C: Up to 3 inches of siltation observed. In vicinity of Outfall B, riprap is mostly buried by shoreline fill.</li> <li>Outfall D: Extension piping appears to be in good condition.</li> </ul>	14 to 22	• None

## SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>PLANTING ZONE A – LOW MARSH</b>	<ul style="list-style-type: none"> <li>• Little to no vegetative cover observed.</li> <li>• Approximately 1 to 5% of the plugs were observed, the balance have been pulled out by the tidal current or are buried. Approximately 1 to 2 inches of sediment overlies 25 to 50% of the observed plugs (see Photo 28). Approximately 15 to 25% of the plugs were observed scattered throughout the BEP. Accessible plugs were replanted.                             <ul style="list-style-type: none"> <li>○ Of the remaining plugs, approximately 1% are showing signs of new growth. It is still early in the growing season, so this percentage is expected to increase.</li> <li>○ Up to 2 inches of siltation was observed over the GroSoxx in the area to the west of Outfall A. Approximately 10% of the plugs planted in this area remain. Most plugs are brown with no new signs of growth.</li> <li>○ No invasive species were observed at the time of the inspection.</li> </ul> </li> <li>• Sediment deposition was observed throughout the zone as evidenced by buried plant plugs. The evidence of exposed gravel on the adjoining high marsh area suggests sediment deposition in the low marsh area.</li> <li>• Waterfowl exclusion measures appeared to be in good condition.</li> </ul>	22 to 30	<ul style="list-style-type: none"> <li>• None.                             <ul style="list-style-type: none"> <li>○ Reinspection recommended further into the growing season to allow vegetation more time to establish.</li> <li>○ Mark fenceposts to assess rate of erosion and deposition.</li> </ul> </li> </ul>
<b>PLANTING ZONE B – HIGH MARSH</b>	<ul style="list-style-type: none"> <li>• Little to no vegetative cover observed.</li> <li>• In Sectors 1 and 2, approximately 5 to 10% of the plugs were observed, the balance have been pulled out by the tidal current or are buried. Approximately 1 to 2 inches of sediment overlies 25 to 50% of the observed plugs (see Photo 24). In Sectors 3 and 4, approximately 85% of plugs were observed.                             <ul style="list-style-type: none"> <li>○ Of the remaining plugs, approximately 10% are showing signs of new growth. It is still early in the growing season, so this percentage is expected to rise.</li> <li>○ In the areas where GroSoxx are installed, the GroSoxx do not have any emergent growth and 1 to 5% of plugs remain. However, the GroSoxx, geogrid, and anchors appeared to be in good condition.</li> <li>○ No invasive species were observed at the time of the inspection.</li> </ul> </li> <li>• A large amount of debris (e.g., vegetative waste, plastic, trash, consumables) was observed in the area between Outfall C and approximately 33 feet north of Outfall C. The drift deposit line was observed directly below the bottom row of GroSoxx. A lesser amount of debris was observed throughout the remainder of the BEP area.</li> <li>• The presence of sediment deposition and exposure of gravel on the surface of the shoreline fill material, suggests possible surface erosion due to tidal currents. These currents may be eroding the fines from certain portions of the BEP area, leaving the gravel, and depositing the fines in other sections of the BEP area.</li> <li>• Waterfowl exclusion measures appeared to be in good condition.</li> </ul>	22 to 25, and 30 to 33	<ul style="list-style-type: none"> <li>• Reinstallation of plugs in Sectors 1 and 2 will be required.                             <ul style="list-style-type: none"> <li>○ Reinspection recommended further into the growing season to allow vegetation more time to establish.</li> <li>○ Mark fenceposts to assess rate of erosion and deposition.</li> </ul> </li> </ul>

## SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>PLANTING ZONE C – UPLANDS TRANSITION AREA</b>	<ul style="list-style-type: none"> <li>• Generally, vegetative coverage is significantly better than the other planting zones. The growth that is present is emergent, however, so a percentage of cover cannot be accurately determined at this time.                             <ul style="list-style-type: none"> <li>○ Many young shoots are emerging from the GroSoxx throughout the zone. Approximately 90% of the plugs are present, with 50 to 60% showing new growth.</li> <li>○ GroSoxx, geogrid, anchors, and the ¾-inch stone strip appeared to be in good condition.</li> <li>○ No invasive species were observed at the time of the inspection.</li> </ul> </li> <li>• There was evidence of tidal drift deposits lining the lower extent of the GroSoxx.</li> <li>• Waterfowl exclusion measures appeared to be in good condition.</li> </ul>	22 to 25, 33, and 36 to 38	<ul style="list-style-type: none"> <li>• None.                             <ul style="list-style-type: none"> <li>○ Reinspection recommended further into the growing season to allow vegetation more time to establish.</li> </ul> </li> </ul>

**SITE INSPECTION LOG (CONTINUED)**



**Photo 1:** Northern end of Cap Area 16. Note lack of vegetative growth and accumulation of debris in 8-ft swath (facing south). The surface materials contain a large quantity of gravel, suggesting possible tidal erosion of fines from shoreline fill.



**Photo 2:** Central portion of Cap Area 16. Sedimentation on low marsh areas of lower elevation and exposed gravel on areas of higher elevation, due to tidal erosion of the shoreline fill material (facing west).

### SITE INSPECTION LOG (CONTINUED)



**Photo 3:** Central portion of Cap Area 16. Sedimentation on low marsh areas of lower elevation and exposed gravel on areas of higher elevation, due to tidal erosion of the shoreline fill material. Note accumulation of vegetative and trash debris along the perimeter waterfowl exclusion measures (facing west).



**Photo 4:** Northeastern portion of Cap Area 22. Note that 3/4 -inch stone overlies the 3 to 6 inch armor material in two approximately three-foot-long by two foot wide areas in the northeastern corner of Cap Area 22(facing southwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 5:** Sediment deposition on the eastern portion of Cap Area 22a (facing south).



**Photo 6:** Sediment deposition on the southeastern portion of Cap Area 22a (facing southeast).

SITE INSPECTION LOG (CONTINUED)



Photo 7: Western portion of Cap Area 22 (facing northwest).



Photo 8: Northwestern portion of Cap Area 22 (facing east).

SITE INSPECTION LOG (CONTINUED)



**Photo 9:** Shoreline stabilization berm in the northern portion of the BEP area (facing southwest).



**Photo 10:** Shoreline stabilization berm in the central portion of the BEP area (facing northwest).

SITE INSPECTION LOG (CONTINUED)



Photo 11: Shoreline stabilization berm in the northern portion of the BEP area (facing west).



Photo 12: Shoreline stabilization berm in the southwestern portion of the BEP area (facing northeast).

SITE INSPECTION LOG (CONTINUED)



**Photo 13:** Shoreline stabilization berm in the southwestern portion of the BEP area (facing southwest).



**Photo 14:** Deposition of shoreline fill material in the western portion of the Outfall A riprap apron due to tidal currents (facing north). Note that riprap apron is present under the deposited material.

SITE INSPECTION LOG (CONTINUED)



**Photo 15:** Shoreline fill material deposition within Outfall A (facing south).



**Photo 16:** Outfall B and surrounding area with sediment deposition over the central portion of the riprap apron and accumulated debris along slope (facing southeast).

SITE INSPECTION LOG (CONTINUED)



**Photo 17:** Sediment deposition at Outfall C and surrounding area, and accumulated debris over the riprap surface (facing east).



**Photo 18:** Southern edge of the Outfall B riprap apron that has been mostly buried by shoreline fill material. Note accumulated debris along the slope (facing southwest).

### SITE INSPECTION LOG (CONTINUED)



**Photo 19:** Sediment deposition over the underlying riprap apron of Outfalls B and C (facing west).



**Photo 20:** Riprap apron of Outfalls B and C with sediment deposition over the low marsh planting zone (facing northeast).

SITE INSPECTION LOG (CONTINUED)

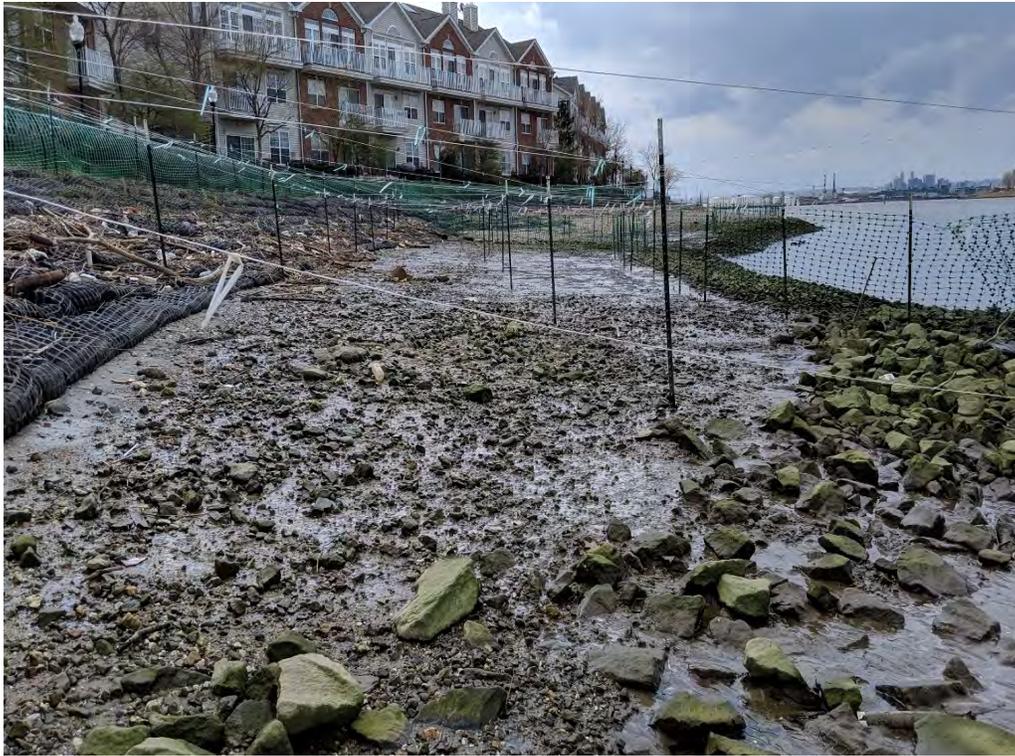


Photo 21: Shoreline stabilization berm and Outfall D extension piping (facing northwest).



Photo 22: Northern portion of the BEP area with accumulated debris along the slope of the GroSoxx areas and the upper portion of the high marsh planting zone (facing southwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 23:** Central portion of the BEP area, east of Outfall A, with sediment deposition over riprap apron of Outfall B and accumulated debris along the slope of the GroSoxx area (facing west).



**Photo 24:** Central portion of the BEP area, west of Outfall A, with sediment deposition on the lower rows of GroSoxx, and 4-foot wide accumulated debris on the high marsh and upland planting zones (facing northwest).

**SITE INSPECTION LOG (CONTINUED)**



**Photo 25:** Central portion of the BEP area, east of Outfall A, with accumulated debris on the high marsh and upland planting zones (facing southeast).



**Photo 26:** Low marsh and high marsh planting zones in the central portion of the BEP area, east of Outfall A, with sediment deposition in the low marsh planting zone and scattered debris along the GroSoxx slope (facing west).

### SITE INSPECTION LOG (CONTINUED)



**Photo 27:** Low marsh planting zone in the central portion of the BEP area, just west of Outfall A, with sediment deposition in the low marsh planting zone and scattered debris over the surface (facing northwest).



**Photo 28:** A partially buried plug in the low marsh planting zone in the central portion of the BEP area, just west of Outfall A.

SITE INSPECTION LOG (CONTINUED)



Photo 29: Example of a loose plug scattered throughout the low marsh planting zone.



Photo 30: Plugs with new growth in the high marsh planting zone on the east side of the BEP area (facing northwest). Note exposed gravel due to tidal erosion of fines, scattered debris throughout the high marsh area, and 2-foot wide accumulated debris on the low marsh and high marsh planting zones.

SITE INSPECTION LOG (CONTINUED)



**Photo 31:** Dormant plugs in the high marsh area on the northwestern side of the BEP area (facing northwest).



**Photo 32:** A dormant plug within the high marsh area, located on the northwestern side of the BEP area.

SITE INSPECTION LOG (CONTINUED)



**Photo 33:** Plugs and vegetation emerging from the upper portion of the GroSoxx in the upland transition area in the northern portion of the BEP area (facing southeast).



**Photo 34:** New growth on plugs within the upland transition area of the BEP area.

### SITE INSPECTION LOG (CONTINUED)



**Photo 35:** Upper and lower extent of the GroSoxx and tidal drift deposit on the GroSoxx in the northern portion of the BEP area, north of Outfall C. Note exposed gravel just below the toe of the GroSoxx, indicating tidal erosion of fines from the shoreline fill material (facing southwest).



**Photo 36:** GroSoxx section below the tidal drift deposit line in the northern portion of the BEP area, just north of Outfall C (facing east). Note scattered debris throughout the area.



**ATTACHMENT A.2  
JULY 10, 2019 INSPECTION LOG**

## SITE INSPECTION LOG

PROJECT NAME:	SA-7 Long-Term Monitoring Year 6	INSPECTION DATE:	July 10, 2019
PROJECT NUMBER:	1690000484	WEATHER	SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/>
PROJECT LOCATION:	SA-7 Droyers Cove BEP	CONDITIONS:	PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/>
	City of Jersey City, Hudson County, NJ	TEMPERATURE (°F):	72-92 °F
INSPECTOR NAME:	Owen Zalme/Lauren Iacobucci	PREVAILING WIND:	0 – 20 mph (Varied to West)
INSPECTOR TITLE:	Senior Consultant/Consultant	INSPECTOR	
		SIGNATURE(S):	

The inspection was conducted at low tide, when Cap Area 16 and the entire BEP area (including the shoreline stabilization berm) were fully exposed. Cap Area 22 was not fully exposed at the time of inspection, which spanned through the predicted low tide at 10:13 am (i.e., low tide was not low enough to expose the entire cap surface).

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
16	<ul style="list-style-type: none"> <li>Long-term monitoring plate was not observed (i.e., plate remains buried).</li> <li>Depth to sediment surface measurements taken at five reference fenceposts indicate an average increase in sediment deposition of 0.2 inch throughout the cap area (with losses up to 0.9 inch in some areas and gains up to 1.0 inch in others) since the last inspection (April 19, 2019).</li> </ul>	1 to 3	<ul style="list-style-type: none"> <li>None</li> </ul>
22	<ul style="list-style-type: none"> <li>Cap area was not fully exposed during period of inspection.</li> <li>Long-term monitoring plate was not observed on the exposed portion of the cap.</li> </ul>	4	<ul style="list-style-type: none"> <li>None</li> </ul>

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
SHORELINE STABILIZATION	<ul style="list-style-type: none"> <li>Shoreline stabilization appears to be in good condition.</li> </ul>	5 to 6	<ul style="list-style-type: none"> <li>None</li> </ul>
OUTFALL RIPRAP APRONS	<ul style="list-style-type: none"> <li>Outfall A: Water exiting the west side of the outfall appears to be bypassing the riprap and scouring surrounding shoreline fill. Displaced shoreline fill was observed on both sides of the scour, with areas of 3 to 5 inches of siltation scattered throughout the riprap apron.</li> <li>Outfall B and C: Some scouring and displacement of shoreline fill (3 to 5 inches) observed throughout the riprap apron, especially in vicinity of both outfalls. Note that the CO required thickness for this area is 12 inches and thickness verification measurements during construction range from 20.4 to 24 inches. Even considering maximum scour and minimum thickness, the existing thickness would be at least 15.4 inches. Water observed in low-lying area near the exit point of Outfall C.</li> <li>Outfall D: Extension piping appears to be in good condition.</li> </ul>	7 to 12	<ul style="list-style-type: none"> <li>Consider placement of additional stone in the transition between the aprons the low marsh shoreline fill and in identified low-lying areas to reduce scouring potential and limit ponding.</li> </ul>

## SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>PLANTING ZONE A – LOW MARSH</b>	<ul style="list-style-type: none"> <li>• Overall total vegetative coverage has generally increased up to approximately 5% relative to April 2019, with slightly higher coverage in areas where plugs are planted in clusters. This increase is mostly the result of the additional plantings performed in May 2019.                             <ul style="list-style-type: none"> <li>○ Few signs of buried or pulled plugs were observed.</li> <li>○ Plugs appear to be in generally good condition and are healthy and green. Several of the plugs previously observed as stressed show signs of emerging growth.</li> <li>○ 1 to 3% of plugs near the armored shoreline appear somewhat stressed, likely due to frequent inundation.</li> <li>○ Consistent with prior observations, up to 2 inches of siltation was observed over a small area of GroSoxx (approximately 2 SF) to the west of Outfall A.</li> <li>○ No invasive species were observed at the time of inspection.</li> </ul> </li> <li>• Based on measurements taken at reference fenceposts, minimal (0.1 inch on average) sediment erosion has occurred since the April 2019 inspection.</li> <li>• Waterfowl exclusion measures appeared to be in good condition.</li> </ul>	13 to 15	<ul style="list-style-type: none"> <li>• Continue monitoring erosional/depositional rates using reference posts during inspections.</li> <li>• Consider planting additional plugs to reduce separation distances and facilitate accelerated coverage.</li> </ul>
<b>PLANTING ZONE B – HIGH MARSH</b>	<ul style="list-style-type: none"> <li>• Overall total vegetative coverage has generally increased to approximately 5 to 10% relative to April 2019, with slightly higher coverage in areas where plugs are planted in clusters. This increase is mostly the result of the additional plantings performed in May 2019.                             <ul style="list-style-type: none"> <li>○ Four uprooted sets of plugs were observed at the time of inspection and were replanted. Two of the four sets consisted of entire plug rows (approximately 5 to 8 plugs).</li> <li>○ Plugs appear to be in generally good condition and are healthy and green. Several of the plugs previously observed as stressed show signs of emerging growth. In the areas where GroSoxx are installed, the GroSoxx do not have any emergent growth, and 1 to 5% of plugs remain. However, the GroSoxx, geogrid, and anchors appear to be in good condition.</li> <li>○ No invasive species were observed at the time of inspection.</li> </ul> </li> <li>• A small amount of debris (e.g. vegetative waste, plastic, trash, consumables) was observed along the drift deposit line below the bottom row of GroSoxx. The amount of debris observed is less than that observed in April 2019 (routine trash removal is now being conducted by Honeywell's landscaping contractor).</li> <li>• Consistent with prior observations, coarse-grained material (sand and gravel) was observed on the surface of the shoreline fill material.</li> <li>• Waterfowl exclusion measures appear to be in good condition.</li> </ul>	15 to 20	<ul style="list-style-type: none"> <li>• Continue monitoring erosional/depositional rates using reference posts during inspections.</li> <li>• Consider planting additional plugs to reduce separation distances and facilitate accelerated coverage.</li> </ul>

### SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>PLANTING ZONE C – UPLANDS TRANSITION AREA</b>	<ul style="list-style-type: none"> <li>• Overall total vegetative coverage is generally between 50 and 75%, with the northeast section of Outfall C closer to 85% coverage. A relative comparison to April 2019 cannot be made as it was not possible to determine a percent coverage in the prior inspection.                             <ul style="list-style-type: none"> <li>○ Many of the emergent shoots of vegetation previously observed have become much more established.</li> <li>○ It does not appear that any additional loss of plugs has occurred and approximately 90% of the planted plugs are still present and growing within the upland transition area.</li> <li>○ GroSoxx, geogrid, anchors, and the ¾-inch stone strip appear to be in good condition.</li> <li>○ Minimal invasive species were observed at the time of inspection. A clump of common reed (<i>Phragmites australis</i>), approximately 2 feet in diameter, observed within the area located northeast of Outfall C.</li> </ul> </li> <li>• There was evidence of tidal drift deposits lining the lower extent of the GroSoxx, at the boundary with the high marsh zone.</li> <li>• Waterfowl exclusion measures appear to be in good condition.</li> </ul>	21 to 24	<ul style="list-style-type: none"> <li>• None</li> </ul>

### SITE INSPECTION LOG (CONTINUED)



**Photo 1:** Northern end of Cap Area 16 and far extent of BEP area. Note healthy vegetative growth, exposed sand and gravel, and intact waterfowl exclusion measures (facing southwest).



**Photo 2:** Western end of Cap Area 16. Note healthy vegetative growth in all three zones and limited debris along drift deposit line (facing west).

SITE INSPECTION LOG (CONTINUED)



**Photo 3:** One of 14 reference poles (marked with pink tape) for assessment of erosion and deposition located in the northeastern section of the BEP area (facing southeast).



**Photo 4:** Partially submerged Cap Area 22 at the time of inspection (facing northwest).

### SITE INSPECTION LOG (CONTINUED)



**Photo 5:** Shoreline stabilization berm in the northern portion of the BEP area (facing southwest).

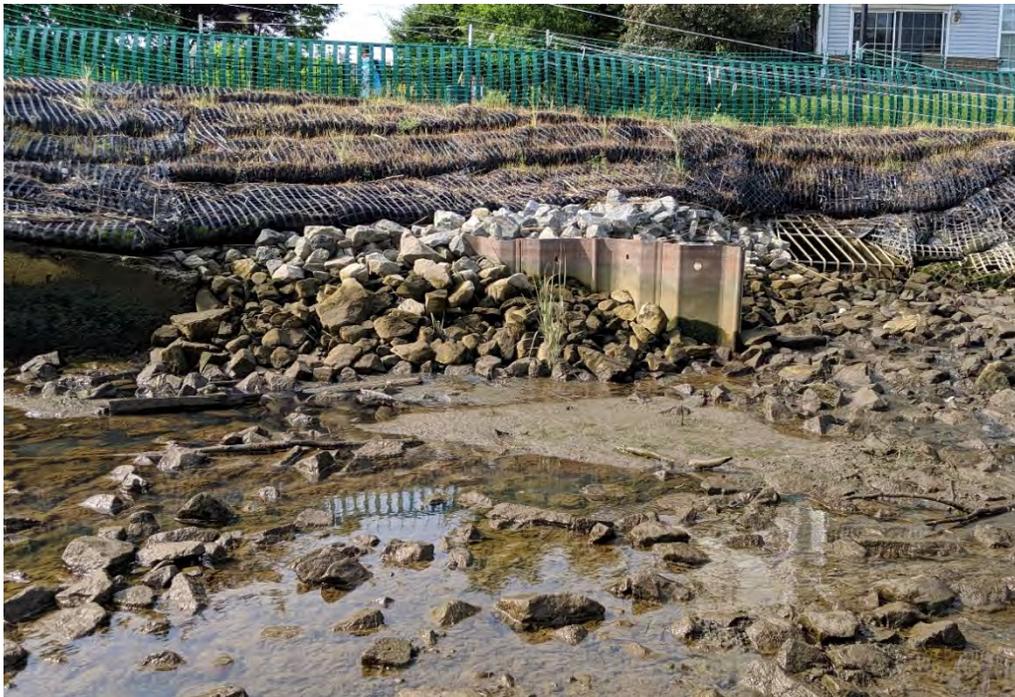


**Photo 6:** Shoreline stabilization berm throughout the BEP area (facing southwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 7:** Water ponding in low-lying area at the discharge of Outfall C (facing south).



**Photo 8:** Shoreline fill material deposition within the riprap apron for Outfalls B and C (facing southwest).

SITE INSPECTION LOG (CONTINUED)

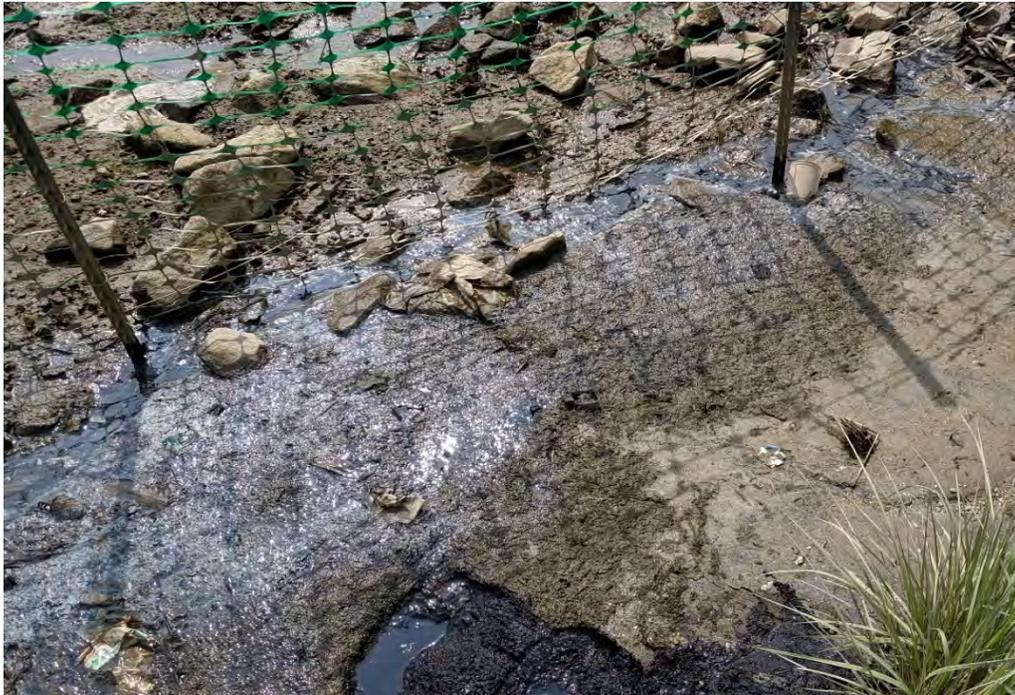


**Photo 9:** Shoreline fill material deposition within the riprap apron for Outfalls B and C (facing east). Note that the riprap is present under the deposited material.



**Photo 10:** Scouring and deposition of shoreline fill material along the western edge of the Outfall A riprap apron (facing south).

SITE INSPECTION LOG (CONTINUED)



**Photo 11:** Scouring and deposition of shoreline fill material along the western edge of the Outfall A riprap apron (facing southeast).



**Photo 12:** Scouring and deposition of shoreline fill material along the western edge of the Outfall A riprap apron (facing north).

SITE INSPECTION LOG (CONTINUED)



**Photo 13:** Healthy plugs and intact waterfowl exclusion measures in the low marsh planting zone in the northeastern BEP area (facing northwest).



**Photo 14:** Somewhat stressed (likely due to frequent inundation) plugs and plug clusters near the armored shoreline in the low marsh planting zone northeast of Outfall C (facing northwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 15:** Healthy plugs in the low marsh and high marsh planting zones in the southwestern BEP area (facing east).



**Photo 16:** Sand, gravel, and limited debris along the tidal drift line in the upper extent of the high marsh zone in the western BEP area (facing northwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 17:** Sand, gravel, and healthy plant plugs in the high marsh zone in the northeastern BEP area (facing southeast).



**Photo 18:** Healthy plugs and plug clusters in the high marsh planting zone in the southwestern BEP area (facing southwest). Note the exposed gravel and drift deposit line noticeable in the upper extent of the high marsh zone.

SITE INSPECTION LOG (CONTINUED)



**Photo 19:** Limited emergent growth of plugs in the GroSoxx in the high marsh zone of the central BEP area (facing southeast).



**Photo 20:** Example of an uprooted row of plugs in the high marsh planting zone in the central BEP area, southwest of Outfall B.

SITE INSPECTION LOG (CONTINUED)



**Photo 21:** Healthy plugs and vegetation emerging from the GroSoxx in the uplands transition area in the western portion of the BEP area (facing southwest).



**Photo 22:** Section of uplands transition area with 85% vegetative coverage located northeast of Outfall C (facing southeast).

SITE INSPECTION LOG (CONTINUED)



**Photo 23:** Invasive species (*Phragmites australis*) present within uplands transition area vegetation located northeast of Outfall C (facing southeast).



**Photo 24:** Healthy vegetation in the GroSoxx in the uplands transition area east of Outfalls B and C (facing south).



**ATTACHMENT A.3  
OCTOBER 10 AND 28, 2019 INSPECTION LOG**

### SITE INSPECTION LOG

PROJECT NAME:	SA-7 Long-Term Monitoring Year 6	INSPECTION DATE:	October 10, 2019 & October 28, 2019
		WEATHER	SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/>
PROJECT NUMBER:	1690000484	CONDITIONS:	PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/>
PROJECT LOCATION:	SA-7 Droyers Cove BEP	TEMPERATURE (°F):	73 °F; 53°F
	City of Jersey City, Hudson County, NJ	PREVAILING WIND:	15 - 20 mph and 7-12 mph (N to NE)
INSPECTOR NAME:	Owen Zalme/Lauren Iacobucci	INSPECTOR	
INSPECTOR TITLE:	Senior Consultant/Consultant	SIGNATURE(S):	

The inspection was conducted at low tide, when Cap Area 16 and the entire BEP area (including the shoreline stabilization berm) were fully exposed. Since Cap Area 22 was not exposed at the time of the October 10, 2019 inspection, a follow-up inspection was conducted at low tide on October 28, 2019. Since the last inspection (July 10, 2019), approximately 10,000 new plugs were planted at approximately 1- to 1.5-foot spacings over the high and low marsh zones of the BEP area by Florence Landscaping Services (Florence). The spacing of new plugs in the area between Outfalls A and B is greater because Florence was running low on plugs, but Wood indicated that additional plugs will be ordered and planted in the spring of 2020.

Prior to the October 28, 2019 inspection, the site was exposed to a nor'easter. Given observations of GroSoxx in some areas having become dislodged, the BEP area was re-inspected on October 28, 2019. In addition, modifications made by ARECON to the existing riprap aprons at each of the outfalls on October 23, 2019 were inspected.

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>16</b>	<ul style="list-style-type: none"> <li>Long-term monitoring plate was not observed (i.e., plate remains buried).</li> <li>Depth to sediment surface measurements taken at five reference fenceposts indicate an average increase in sediment erosion of 0.2 inches throughout the cap area (with losses up to 1.2 inches in some areas and gains up to 0.6 inches in others) since the last inspection (July 10, 2019).                             <ul style="list-style-type: none"> <li>Note that the CO required thickness for this area is 12 inches and thickness verification measurements of the shoreline fill portion of the area during construction range from 25 to 40.8 inches. Even considering maximum erosion and minimum thickness, the existing thickness would be at least 23.8 inches.</li> </ul> </li> </ul>	1 to 4	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>22</b>	<ul style="list-style-type: none"> <li>Cap area was not exposed during inspection on October 10, 2019, so a follow-up inspection was conducted on October 28, 2019. The cap area was exposed at the time of the second site visit.</li> <li>Long-term monitoring plate was not observed (i.e., plate remains buried).</li> <li>As previously observed, on approximately 20% of the cap, and concentrated in depressional areas, 1 to 3 inches of siltation was measured over the armor layer.</li> </ul>	27 to 28	<ul style="list-style-type: none"> <li>None</li> </ul>

## SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
<b>SHORELINE STABILIZATION</b>	<ul style="list-style-type: none"> <li>Shoreline stabilization appears to be in good condition.</li> </ul>	1	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>OUTFALL RIPRAP APRONS</b>	<ul style="list-style-type: none"> <li>Outfall A: Scour observed during the July 2019 inspection appears to have been filled with displaced shoreline fill material and no new scouring was observed during the October 10, 2019 inspection. On October 23, 2019 ARECON modified the transition between the riprap apron and the BEP fill with placement of additional stone (d50 of approximately 6 to 10 inches, with stones as large as 18 inches). However, water continues to bypass the riprap on the west side of the outfall, where scouring had previously occurred. On the surface of the rip rap apron, scattered areas of 3 to 5 inches of siltation were observed.</li> <li>Outfalls B and C: Minor scour observed during the July 2019 inspection appears to have been filled with displaced shoreline fill material and no new scouring was observed. On October 23, 2019 ARECON modified the transition between the riprap apron and the BEP fill with placement of additional stone (d50 of approximately 6 to 10 inches, with stones as large as 18 inches). However, water continues to bypass the riprap on the west side of Outfall B, where scouring had previously occurred. Approximately 3 inches of siltation (likely displaced shoreline fill) were observed throughout the riprap apron, especially in the vicinity of both outfalls. These observations are consistent with the July 2019 inspection.</li> <li>Outfall D: Extension piping appears to be in good condition.</li> </ul>	5 to 7 and 23 to 26	<ul style="list-style-type: none"> <li>Consider (a) using smaller rip-rap stone and in the transition between the apron and BEP fill; (b) increasing plant density along the transition between the outfall and the BEP fill; and (c) and reconfiguring the apron edge to promote drainage within the apron and to reduce erosion and ponding on the edges or transition to the BEP fill.</li> </ul>
<b>PLANTING ZONE A – LOW MARSH</b>	<ul style="list-style-type: none"> <li>Overall total vegetative coverage has significantly increased (relative to July 2019) from 5% to approximately 25%, with slightly higher coverage in areas where plugs are planted in clusters. This increase is mostly the result of the additional plantings performed in September 2019.                             <ul style="list-style-type: none"> <li>Few signs of buried or pulled plugs were observed.</li> <li>Plugs appear to be in generally good condition and are healthy. No signs of emergent growth were observed, which is likely attributable to the impending dormancy season.</li> <li>No stressed plugs were observed.</li> <li>Consistent with the July 2019 observations, approximately 2 to 3 inches of siltation was observed over a small area of GroSoxx (approximately 2 SF) to the west of Outfall A.</li> <li>No invasive species were observed at the time of inspection.</li> </ul> </li> <li>Based on measurements taken at reference fenceposts, minimal (0.1 inches on average) sediment erosion has occurred since the July 2019 inspection.</li> <li>Waterfowl exclusion measures appeared to be in good condition.</li> </ul>	8 to 11	<ul style="list-style-type: none"> <li>Continue monitoring erosional/depositional rates using reference posts during inspections.</li> </ul>

**SITE INSPECTION LOG (CONTINUED)**

<b>TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG</b>			
<b>BEP AREA ELEMENT</b>	<b>OBSERVATIONS</b>	<b>PHOTO(S) TAKEN</b>	<b>CORRECTIVE ACTION(S) REQUIRED</b>
<b>PLANTING ZONE B – HIGH MARSH</b>	<ul style="list-style-type: none"> <li>• Overall total vegetative coverage has significantly increased relative to July 2019 from 5 to 10% to approximately 50%, with slightly higher coverage in areas where plugs are densely planted in clusters. This increase is mostly the result of the additional plantings performed in September 2019.               <ul style="list-style-type: none"> <li>○ At least 8 uprooted plugs were observed during the October 10, 2019 inspection and were replanted. Significantly more uprooted plugs were observed and replanted during the October 28, 2019 inspection. All replanted plugs were the newly planted species.</li> <li>○ Plugs appear to be in generally good condition and are healthy. No signs of emergent growth were observed, which is likely attributable to the impending dormancy season.</li> <li>○ An odor typically associated with an anoxic environment (e.g. bog, wetland, swamp, etc.) was noted when stepping on the GroSoxx on the area adjacent eastern side of Outfall A. In addition, very minimal vegetative growth was observed in the areas of GroSoxx located at the interface of the uplands transition area and high marsh zone, particularly in the portion of the BEP area near the outfalls. During the October 10, 2019 inspection the GroSoxx, geogrid, and anchors appeared to be in good condition. However, during the October 28, 2019 inspection, the following was observed in the areas shown on Drawing 1:                   <ul style="list-style-type: none"> <li>▪ Several GroSoxx were observed outside of the geogrid;</li> <li>▪ There were several areas where ripping/holes or loose geogrid were observed;</li> <li>▪ Several anchors (both the Gripple Rock and Terra-Lock™ Earth anchors) showed signs of significant uplift, though none were fully lifted out of the ground;</li> <li>▪ Significant shifting of GroSoxx underneath the geogrid, with the third row of GroSoxx (from the bottom) appearing to be mostly missing; and</li> <li>▪ Significant siltation observed over the GroSoxx located on the western side of Outfall A, with many of the GroSoxx being completely buried up to the drift line</li> </ul> </li> <li>○ Minimal invasive species were observed at the time of inspection. A few clusters of European mugwort (<i>Artemisia vulgaris</i>) were observed in the central portion of the BEP area, just west of Outfall A.</li> </ul> </li> <li>• A small amount of debris (e.g. vegetative waste, plastic, trash, consumables) was observed along the drift deposit line below the bottom row of GroSoxx, consistent with observations made in July 2019.</li> <li>• Consistent with the July 2019 observations, coarse-grained material (sand and gravel) was observed on the surface of the shoreline fill material.</li> <li>• Waterfowl exclusion measures appear to be in good condition.</li> </ul>	9 to 10, 12 to 15, and 19 to 22	<ul style="list-style-type: none"> <li>• Continue monitoring erosional/depositional rates using reference posts during inspections.</li> <li>• Immediate repair of the GroSoxx and anchoring system to prevent further degradation of slope.</li> <li>• Areas where GroSoxx are installed, particularly in the central and western portions of the BEP area near the outfalls or where GroSoxx repairs are required, should be replanted with plugs of species appropriate for the high marsh environment.</li> </ul>

**SITE INSPECTION LOG (CONTINUED)**

<b>TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG</b>			
<b>BEP AREA ELEMENT</b>	<b>OBSERVATIONS</b>	<b>PHOTO(S) TAKEN</b>	<b>CORRECTIVE ACTION(S) REQUIRED</b>
<b>PLANTING ZONE C – UPLANDS TRANSITION AREA</b>	<ul style="list-style-type: none"> <li>• Overall total vegetative coverage in the portion of the BEP area east of Outfall C is generally 85%. Overall total vegetative coverage west of Outfall C (i.e., in the central and western portions of the BEP area) has increased relative to the July 2019 inspection from 50-75% to 85%. However, coverage in same areas (in particular, between Outfalls A and B) remains around 40-60%.               <ul style="list-style-type: none"> <li>○ Many of the emergent shoots of vegetation previously observed have become much more established.</li> <li>○ It does not appear that any additional loss of plugs has occurred and approximately 90% of the planted plugs are still present and growing within the upland transition area.</li> <li>○ GroSoxx, geogrid, anchors, and the ¾-inch stone strip appear to be in good condition, despite the issues observed in the High Marsh Planting Zone.</li> <li>○ No invasive species were observed at the time of inspection.</li> </ul> </li> <li>• There was evidence of tidal drift deposits lining the lower extent of the GroSoxx, at the boundary with the high marsh zone, consistent with observations made in July 2019.</li> <li>• Waterfowl exclusion measures appear to be in good condition.</li> </ul>	16 to 18	<ul style="list-style-type: none"> <li>• Complete planting of additional plugs in the portion of the BEP area between Outfalls A and B planned for the spring of 2020 to facilitate accelerated coverage.</li> </ul>

### SITE INSPECTION LOG (CONTINUED)



**Photo 1:** Northern end of Cap Area 16. Note healthy vegetation, exposed sand and gravel, shoreline stabilization berm, and intact waterfowl exclusion measures (facing southwest).



**Photo 2:** Western end of Cap Area 16. Note healthy vegetation in all three zones and limited debris along drift deposit line (facing west).

### SITE INSPECTION LOG (CONTINUED)



**Photo 3:** Central and northern BEP areas. Note healthy vegetation in all three zones and limited debris along drift deposit line (facing east).



**Photo 4:** Western BEP area. Note healthy vegetation in all three zones and exposed sand and gravel in the high marsh zone along the drift deposit line (facing southeast).

### SITE INSPECTION LOG (CONTINUED)



**Photo 5:** Areas of shoreline fill material deposition at Outfalls B and C (facing southeast).



**Photo 6:** Displaced shoreline fill along the western edge of Outfall A (facing north).

**SITE INSPECTION LOG (CONTINUED)**



**Photo 7:** Water flow around rip rap along on the western edge of Outfall A (facing southeast).



**Photo 8:** Newly planted vegetation in the low marsh zone (facing northeast)

### SITE INSPECTION LOG (CONTINUED)



**Photo 9:** Healthy, densely planted vegetation in the low and high marsh zones of the northern BEP area (viewing northeast).



**Photo 10:** Healthy, densely planted vegetation in the low and high marsh zones of the western BEP area (viewing east).

SITE INSPECTION LOG (CONTINUED)



**Photo 11:** More widely spaced, healthy vegetation in the low marsh zone between Outfalls A and B (viewing east).



**Photo 12:** Sparsely vegetated high marsh zone, west of Outfall B where GroSoxx were installed (facing west).

**SITE INSPECTION LOG (CONTINUED)**



**Photo 13:** Uprooted plugs in the high marsh zone west of Outfall A, replanted at the time of inspection (viewing east).

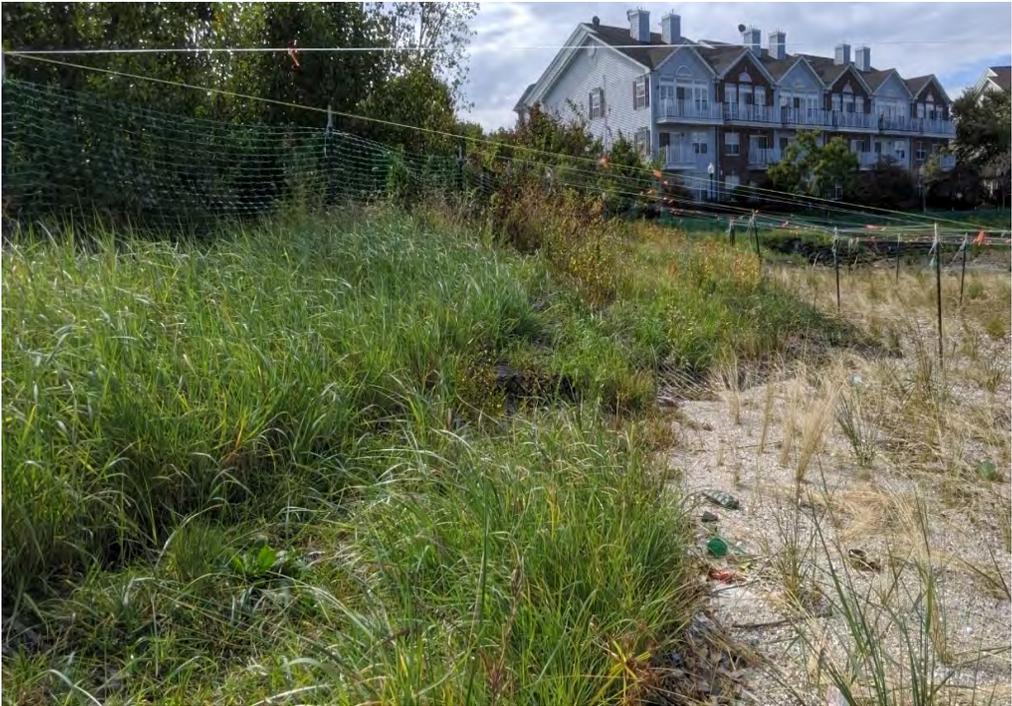


**Photo 14:** Sparsely vegetated high marsh zone, east of Outfall C where GroSoxx were installed (facing southeast).

**SITE INSPECTION LOG (CONTINUED)**



**Photo 15:** Small cluster of invasive species (European mugwort) around erosion measurement Pole 10 (facing west).



**Photo 16:** Upland transition area east of Outfall C meeting 85% total vegetation coverage (facing south).

SITE INSPECTION LOG (CONTINUED)



**Photo 17:** Sparsely vegetated upland transition area and high marsh zone between Outfalls A and B (facing south).



**Photo 18:** Moderately vegetated upland transition area in western BEP area (facing west).

**SITE INSPECTION LOG (CONTINUED)**



**Photo 19:** Loose and ripped geogrid, with GroSoxx either missing or outside of the geogrid east of Outfalls B and C.



**Photo 20:** An uplifted anchor bolt and an emptied GroSoxx observed outside of the geogrid east of Outfalls B and C.

SITE INSPECTION LOG (CONTINUED)



**Photo 21:** Missing row of GroSoxx (third from the bottom) with loose geogrid and GroSoxx outside the geogrid between Outfalls A and B.



**Photo 22:** Partially vegetated high marsh area west of Outfall A. Note siltation on the GroSoxx (facing northwest).

SITE INSPECTION LOG (CONTINUED)



**Photo 23:** Riprap placed by ARECON in the transition of apron and BEP fill of Outfall A (facing southwest).

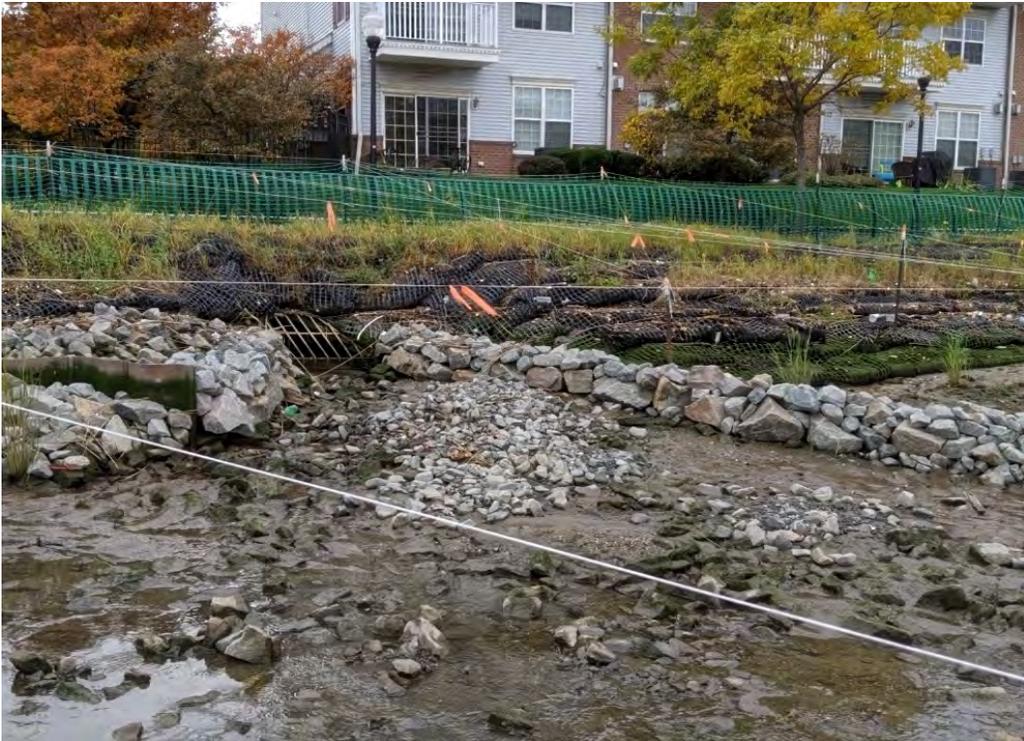


**Photo 24:** Water draining through the riprap apron modification and from underneath the GroSoxx on the west side of Outfall A (facing southeast). Note large size of riprap and riprap leaning on the waterfowl exclusion measures.

SITE INSPECTION LOG (CONTINUED)



**Photo 25:** Scouring along the western side of the riprap apron modification for Outfall A (facing northeast). Note large size of riprap used in modification.



**Photo 26:** Newly placed riprap stone along the transition of the apron and BEP fill of Outfalls B and C (facing southwest). Note large size of riprap used in modification.

**SITE INSPECTION LOG (CONTINUED)**



**Photo 27:** Western portion of Cap Area 22 (facing northwest).



**Photo 28:** Central portion of Cap Area 22 (facing west).

PLANT LIST				
<b>PLANTING ZONE A - LOW MARSH (BELOW ELEV 3.52 FT)</b>				<b>16,700 S.F.</b>
SPACED 4 FEET ON CENTER				
BOTANICAL NAME	SPECIES NAME	PLANTING TYPE	INDICATOR STATUS	QUANTITY
SPARTINA ALTERNIFLORA	SMOOTH CORDGRASS	PLUG OR PEAT POT	OBL	4,175
<b>PLANTING ZONE B - HIGH MARSH (ELEV. 3.52 - 5.00 FT)</b>				<b>7,400 S.F.</b>
SPACED 4 FEET ON CENTER				
BOTANICAL NAME	SPECIES NAME	PLANTING TYPE	INDICATOR STATUS	QUANTITY
SPARTINA PATENS	SALT MEADOW CORDGRASS	PLUG OR PEAT POT	FACW	740
DISTICHILIS SPICATA	SPIKE RUSH	PLUG OR PEAT POT	FACW+	740
JUNCUS GERARDII	SALTMEADOW RUSH	PLUG OR PEAT POT	OBL	185
SOLIDAGO SEMPERVIRENS	SEASIDE GOLDENROD	PLUG OR PEAT POT	FACW	185
<b>PLANTING ZONE C - UPLANDS TRANSITION AREA (ABOVE ELEV. 5.00 FT)</b>				<b>10,300 S.F.</b>
SPACED 4 FEET ON CENTER				
BOTANICAL NAME	SPECIES NAME	PLANTING TYPE	INDICATOR STATUS	QUANTITY
PANICUM AMARUM	COASTAL PANICGRASS	PLUG OR PEAT POT	FAC	860
PANICUM VIRGATUM	SWITCH GRASS	PLUG OR PEAT POT	FAC	860
AMMOPHILA BREVILIGULATA	BEACH GRASS	PLUG OR PEAT POT	UPL	860

NOTE: PLANTINGS WITHIN EACH ZONE ARE ALEATORY TO PROVIDE A MIXED PLANTING OF SPECIES.

LEGEND	
	EXISTING TOPOGRAPHIC AND BATHYMETRIC CONTOUR MAJOR
	EXISTING TOPOGRAPHIC AND BATHYMETRIC CONTOUR MINOR
	LIMIT OF DEED RESTRICTION
	MEAN LOW WATER LINE (-1.7 FT)
	MID TIDE LEVEL (0.91 FT)
	MEAN HIGH WATER LINE (3.52 FT)
	UPLANDS TRANSITION AREA (ABOVE 5.00 FT)
	AS-BUILT CAPPING AREA 7 LIMIT
	BEP FILL AREA (THICKNESS VARIES)
	GROSOXX AREA (18 IN THICK)
	RIPRAP AREA
	STONE BERM
	GEOGRID/GEOTEXTILE AREA
	SEED AREA
	GRAVEL AREA
	ESTIMATED LIMIT OF LOOSE ROCK/DEBRIS
	CAPPING AREA LIMIT REQUIRED BY CONSENT ORDER (12 IN. MIN.)
	AS-BUILT CAPPING AREA LIMIT
	LONG TERM MONITORING PLATE LOCATION
	SECTOR LIMIT
	ZONE A (BELOW 3.52 FT.)
	ZONE B (3.52 FT. TO 5.00 FT.)
	ZONE C (ABOVE 5.00 FT.)

TIDE LEVELS IN NAVD29:  
 3.84 FT - MEAN HIGH HIGH WATER  
 3.52 FT - MEAN HIGH WATER  
 0.91 FT - MID TIDE LEVEL  
 -1.70 FT - MEAN LOW WATER  
 -1.94 FT - MEAN LOW LOW WATER

- NOTES
- TOPOGRAPHY: HORIZONTAL DATUM BASED UPON THE NEW JERSEY STATE PLANE COORDINATE SYSTEM, NAD 83 (NEAR SURFACE DERIVED COORDINATES UTILIZING KEYNET GPS). EXISTING SITE TOPOGRAPHIC INFORMATION AS SHOWN HEREON IS BASED UPON NAVD 29 (NATIONAL GEODETIC VERTICAL DATUM OF 1929. PRIMARY BENCHMARK IS MGS MONUMENT KVO272, ELEV = 36.37' (NGVD 29) ELEV = 35.23' (NAVD 88) DIFFERENCE BETWEEN DATUM IS 1.14'.
  - BATHYMETRY: FOR THE BATHYMETRIC SURVEY, VERTICAL DATA WERE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), AND HORIZONTAL COORDINATES WERE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83) USING THE NEW JERSEY STATE PLANE COORDINATE SYSTEM (NJ STATE PLANE). HORIZONTAL POSITIONING WAS PERFORMED WITH RTK-DGPS USING CORRECTIONS FROM KEYNET VRS. THE ACCURACY OF THE RTK-DGPS POSITIONING WAS VERIFIED BY OCCUPYING CONTROL POINT ASI-PA AVE, LOCATED NEAR THE WESTERN END OF PENNSYLVANIA AVENUE IN KEARNY, NEW JERSEY.
  - TIDE ELEVATION OBTAINED FROM NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, KEARNY POINT, NJ TIDAL BENCHMARK (STATION ID B530772).
  - AS BUILT ELEVATIONS SHOWN HEREON ARE BASED ON FIELD MEASUREMENTS PERFORMED BY KENNON SURVEYING SERVICES INC. THRU 02/07/2019.
  - LANDSIDE TOE OF THE STONE BERM WAS NOT SURVEYED PRIOR TO PLACEMENT OF COVER MATERIAL. THE TOE LOCATION IS SHOWN AS A PROJECTION FROM THE LANDSIDE TOP OF BERM AT A 1.5:1 SLOPE. ELEVATIONS SHOWN IN *ITALICS* (x TOE 1.0) REPRESENT THE TOE OF BERM, NOT THE FINAL GRADE.
  - AS BUILT VERTICAL DATUM IS NAVD29.
  - APPROXIMATE EXTENT OF SOFT SEDIMENTS DEFINED BY SES USING EXCAVATOR BUCKET ON OCTOBER 24, 2018.



REV.	DATE	DR.	CH.	REVISION

**DRAFT**

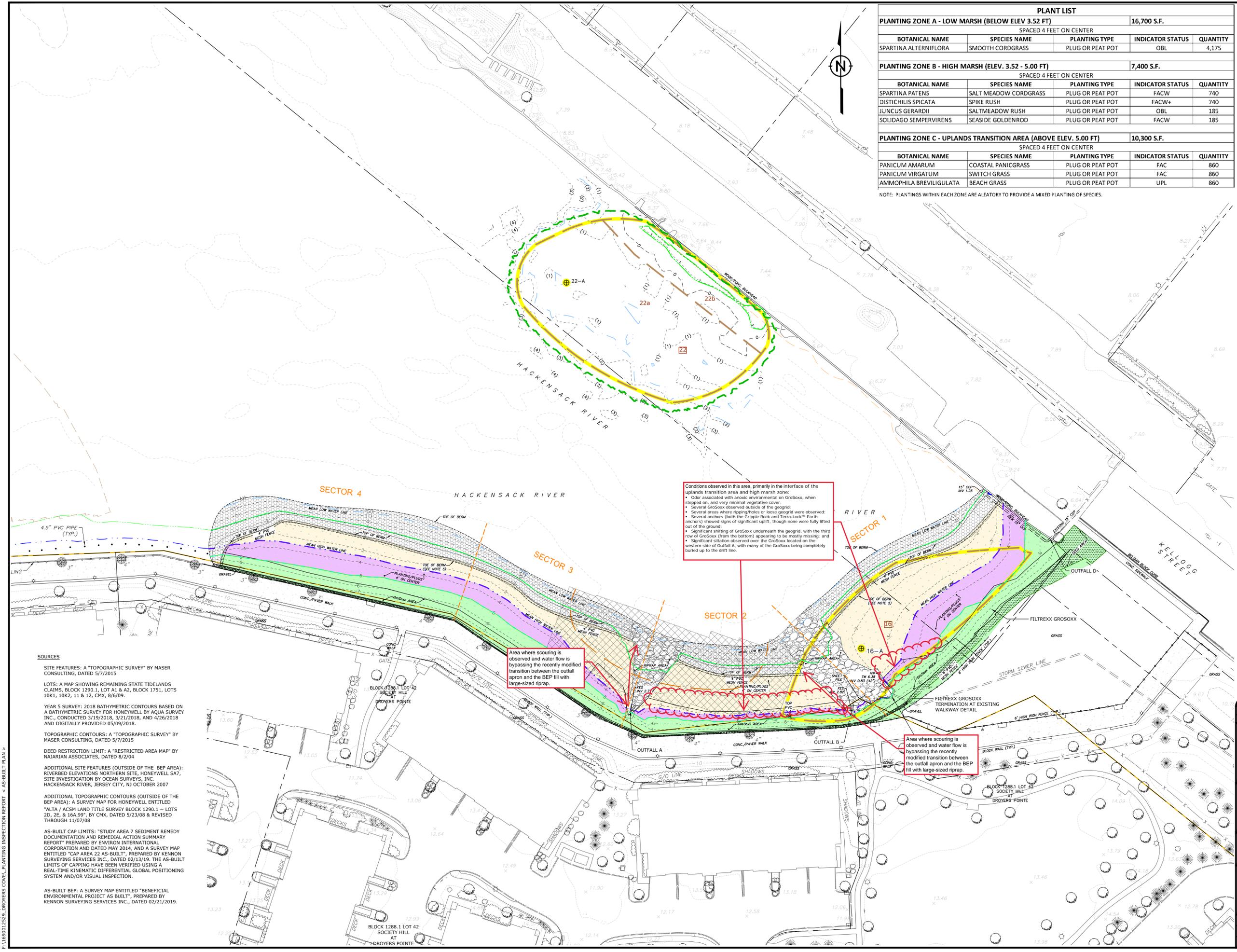
JOSE SANANES SANGROS DATE  
 New Jersey Professional Engineer No. 24GE04286300

**AS-BUILT GRADING PLAN**

HONEYWELL SA-7  
 BENEFICIAL ENVIRONMENTAL PROJECT  
 CITY OF JERSEY CITY  
 HUDSON COUNTY, NEW JERSEY



PREPARED BY: AP	DATE: 05/13/2019	DRAWING
DRAFTED BY: BSC	SCALE: 1" = 30'	<b>1</b>
APPROVED BY: JS/JMN	PROJECT: 1690012529	



Conditions observed in this area, primarily in the interface of the uplands transition area and high marsh zone:

- Odor associated with anoxic environmental on Grosoxx, when stepped on, and very minimal vegetative cover.
- Several Grosoxx observed outside of the geogrid.
- Several areas where rippings/holes or loose geogrid were observed.
- Several anchors (both the Gripple Rock and Terra-Lock™ Earth anchors) showed signs of significant uplift, though none were fully lifted out of the ground.
- Significant shifting of Grosoxx underneath the geogrid, with the third row of Grosoxx (from the bottom) appearing to be mostly missing; and
- Significant siltation observed over the Grosoxx located on the western side of Outfall A, with many of the Grosoxx being completely buried up to the drift line.

Area where scouring is observed and water flow is bypassing the recently modified transition between the outfall apron and the BEP fill with large-sized riprap.

Area where scouring is observed and water flow is bypassing the recently modified transition between the outfall apron and the BEP fill with large-sized riprap.

- SOURCES
- SITE FEATURES: A "TOPOGRAPHIC SURVEY" BY MASER CONSULTING, DATED 5/7/2015
  - LOTS: A MAP SHOWING REMAINING STATE TIDELANDS CLAIMS, BLOCK 1290.1, LOT A1 & A2, BLOCK 1751, LOTS 10K1, 10K2, 11 & 12, CMX, 8/6/09.
  - YEAR 5 SURVEY: 2018 BATHYMETRIC CONTOURS BASED ON A BATHYMETRIC SURVEY FOR HONEYWELL BY AQUA SURVEY INC., CONDUCTED 3/19/2018, 3/21/2018, AND 4/26/2018 AND DIGITALLY PROVIDED 05/09/2018.
  - TOPOGRAPHIC CONTOURS: A "TOPOGRAPHIC SURVEY" BY MASER CONSULTING, DATED 5/7/2015
  - DEED RESTRICTION LIMIT: A "RESTRICTED AREA MAP" BY NAJARIAN ASSOCIATES, DATED 8/2/04
  - ADDITIONAL SITE FEATURES (OUTSIDE OF THE BEP AREA): RIVERBED ELEVATIONS NORTHERN SITE, HONEYWELL SA7, SITE INVESTIGATION BY OCEAN SURVEYS, INC. HACKENSACK RIVER, JERSEY CITY, NJ OCTOBER 2007
  - ADDITIONAL TOPOGRAPHIC CONTOURS (OUTSIDE OF THE BEP AREA): A SURVEY MAP FOR HONEYWELL ENTITLED "ALTA / ACSM LAND TITLE SURVEY BLOCK 1290.1 ~ LOTS 2D, 2E, & 16A.99" BY CMX, DATED 5/23/08 & REVISED THROUGH 11/07/08
  - AS-BUILT CAP LIMITS: "STUDY AREA 7 SEDIMENT REMEDY DOCUMENTATION AND REMEDIAL ACTION SUMMARY REPORT" PREPARED BY ENVIRON INTERNATIONAL CORPORATION AND DATED MAY 2014, AND A SURVEY MAP ENTITLED "CAP AREA 22 AS-BUILT", PREPARED BY KENNON SURVEYING SERVICES INC., DATED 02/13/19. THE AS-BUILT LIMITS OF CAPPING HAVE BEEN VERIFIED USING A REAL-TIME KINEMATIC DIFFERENTIAL GLOBAL POSITIONING SYSTEM AND/OR VISUAL INSPECTION.
  - AS-BUILT BEP: A SURVEY MAP ENTITLED "BENEFICIAL ENVIRONMENTAL PROJECT AS BUILT", PREPARED BY KENNON SURVEYING SERVICES INC., DATED 02/21/2019.

BOARD/RE 5/13/19 FILED/02/29/2019 DROVERS POINT PLANTING INSPECTION REPORT - AS-BUILT PLAN

**ATTACHMENT B  
YEAR 6 HYDRAULIC AND HYDRODYNAMIC  
EVALUATION SUMMARIES**

**ATTACHMENT B.1  
Q1 2019 HYDRAULIC AND HYDRODYNAMIC  
EVALUATION SUMMARIES**

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>January      2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.07      Date:      1/20/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.661      Date:      1/20/2019      Time:      8:00 Exceeds event trigger criteria?      YES  Max Tide Gauge Reading (m):      1.498      Date:      1/20/2019      Time:      12:00 Exceeds event trigger criteria?      YES  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      40      Date:      1/30/2019 Exceeds trigger criteria?      YES Wind direction over 6-hr period:      W      OK  <u>Note:</u> (1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

# Summary

Temperature (° F)	Max	Average	Min	Sum	▲
Max Temperature	59	49	41	-	
Avg Temperature	39	32	24	-	
Min Temperature	15	10	2	-	
Precipitation (Inches)	Max	Average	Min	Sum	▲
Precipitation	1.07	0.16	0	3.59	
Dew Point (° F)	Max	Average	Min	Sum	▲
Dew Point	57	19	-18	-	

## Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)		
Jan	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	58	49	40	54	41	25	100	-	50	31	-	0	30.17	-	29.6	-	0.08	-
2	41	38	35	31	24	21	64	-	48	17	-	0	30.36	-	30.08	-	0.00	-
3	45	39	32	37	31	23	82	-	45	22	-	0	30.08	-	29.88	-	0.00	-
4	46	38	29	38	30	24	78	-	53	20	-	0	30.03	-	29.76	-	0.00	-
5	47	44	41	44	42	32	100	-	70	22	-	5	29.73	-	29.39	-	0.61	-
6	51	41	31	37	27	13	76	-	36	30	-	6	30.31	-	29.74	-	0.00	-
7	34	30	25	20	8	4	50	-	29	25	-	4	30.55	-	30.27	-	0.00	-
8	44	39	34	41	37	21	100	-	56	15	-	0	30.27	-	29.56	-	0.15	-
9	46	40	34	41	26	15	100	-	34	33	-	6	29.66	-	29.54	-	0.04	-
10	36	33	29	23	16	12	72	-	43	33	-	13	29.99	-	29.63	-	0.00	-
11	33	27	21	12	4	-1	55	-	25	26	-	7	30.44	-	30.02	-	0.00	-
12	35	28	20	12	6	2	57	-	28	13	-	0	30.56	-	30.46	-	0.00	-
13	33	28	23	15	10	7	74	-	33	18	-	6	30.47	-	30.29	-	0.00	-
14	34	27	20	14	11	8	68	-	35	18	-	5	30.3	-	30.14	-	0.00	-
15	38	29	20	18	14	12	71	-	40	13	-	0	30.18	-	30.1	-	0.00	-
16	39	31	23	24	20	13	75	-	47	18	-	4	30.24	-	30.05	-	0.00	-
17	34	29	24	20	11	3	63	-	36	21	-	0	30.43	-	30.22	-	0.00	-
18	38	33	27	33	28	22	92	-	69	12	-	0	30.21	-	30.04	-	0.02	-
19	38	33	28	35	26	19	92	-	56	18	-	0	30.27	-	29.83	-	0.45	-
20	41	27	13	39	26	0	100	-	53	33	-	5	29.8	-	29.24	-	1.07	-
21	15	10	4	-2	-7	-12	58	-	40	36	-	12	30.43	-	29.83	-	0.00	-
22	32	23	13	9	2	-2	61	-	27	25	-	0	30.67	-	30.44	-	0.00	-
23	49	38	27	41	24	8	71	-	42	15	-	0	30.53	-	29.92	-	0.00	-
24	59	47	35	57	47	22	93	-	56	29	-	7	29.88	-	29.25	-	0.98	-
25	40	34	27	23	13	-1	61	-	26	30	-	5	30.21	-	29.82	-	0.00	-
26	36	29	21	19	7	-1	58	-	32	17	-	0	30.28	-	30.21	-	0.00	-
27	51	39	26	32	24	19	81	-	34	29	-	0	30.2	-	29.92	-	0.00	-
28	38	30	22	16	9	5	50	-	32	18	-	7	30.15	-	30.03	-	0.00	-
29	42	31	20	39	27	10	93	-	54	20	-	5	30.06	-	29.77	-	0.19	-
30	34	20	5	26	6	-16	75	-	32	40	-	8	30.27	-	29.78	-	0.00	-
31	17	10	2	-7	-12	-18	49	-	30	24	-	7	30.44	-	30.27	-	0.00	-

<https://www.wunderground.com/history/monthly/us/nj/newark/KEWR/date/2019-01>

# Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
12:51 PM	31 ° F	8 ° F	40 %	SSW	18 mph	24 mph	29.8 in	0.0 in	0.0 in	Fair
1:51 PM	32 ° F	9 ° F	38 %	SSW	22 mph	30 mph	29.8 in	0.0 in	0.0 in	Mostly Cloudy / Windy
2:51 PM	33 ° F	11 ° F	40 %	SW	26 mph	32 mph	29.8 in	0.0 in	0.0 in	Mostly Cloudy / Windy
3:09 PM	31 ° F	15 ° F	52 %	WSW	31 mph	39 mph	29.8 in	0.0 in	0.0 in	Light Snow / Windy
3:18 PM	29 ° F	19 ° F	67 %	WSW	28 mph	39 mph	29.8 in	0.0 in	0.0 in	Light Snow / Windy
3:22 PM	29 ° F	20 ° F	68 %	WSW	25 mph	38 mph	29.8 in	0.0 in	0.0 in	Snow / Windy
3:33 PM	27 ° F	22 ° F	81 %	W	30 mph	48 mph	29.8 in	0.0 in	0.0 in	Heavy Snow / Windy
3:46 PM	21 ° F	18 ° F	86 %	W	38 mph	49 mph	29.9 in	0.0 in	0.0 in	Light Snow / Windy
3:49 PM	21 ° F	16 ° F	80 %	W	31 mph	46 mph	29.9 in	0.0 in	0.0 in	Cloudy / Windy
3:51 PM	22 ° F	15 ° F	75 %	W	29 mph	46 mph	29.9 in	0.0 in	0.0 in	Cloudy / Windy
4:26 PM	22 ° F	10 ° F	60 %	W	25 mph	38 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy / Windy
4:35 PM	22 ° F	11 ° F	63 %	W	28 mph	37 mph	29.9 in	0.0 in	0.0 in	Light Snow / Windy
4:51 PM	21 ° F	8 ° F	57 %	W	24 mph	38 mph	29.9 in	0.0 in	0.0 in	Light Snow / Windy
5:04 PM	20 ° F	4 ° F	50 %	W	29 mph	43 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy / Windy
5:51 PM	15 ° F	-8 ° F	39 %	WNW	24 mph	33 mph	30.0 in	0.0 in	0.0 in	Fair / Windy
6:51 PM	11 ° F	-13 ° F	33 %	W	21 mph	35 mph	30.1 in	0.0 in	0.0 in	Fair / Windy

Averaged wind speed over the 6-hour period = 27 mph

<https://www.wunderground.com/history/airport/KEWR/2019/1/30/DailyHistory.html>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190101&edate=20190201&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<b>Monitoring Period:</b> <b>February    2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      0.85      Date:    2/20/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.706      Date:    2/12/2019      Time:      23:00 Exceeds event trigger criteria?      YES  Max Tide Gauge Reading (m):      1.306      Date:      2/18/2019      Time:      12:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      46      Date:    2/25/2019 Exceeds trigger criteria?      YES Wind direction over 6-hr period:      W      OK  <u>Note:</u> (1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.	NO

**CRITERIA FROM LTMP:**

“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:

- i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;
  - See <http://www.wunderground.com/history/>
- ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or
  - Note: Hurricane events are defined by NOAA.
  - See <http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750>
- iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”
  - See <http://www.wunderground.com/history/>

CHECKED BY: TEA

# Summary

Temperature (° F)			Max	Average	Min	Sum	▲
Max Temperature			68	53	40	-	
Avg Temperature			44	36	28	-	
Min Temperature			22	16	10	-	
Precipitation (Inches)			Max	Average	Min	Sum	▲
Precipitation			0.85	0.15	0	3.89	
Dew Point (° F)			Max	Average	Min	Sum	▲
Dew Point			45	22	-10	-	

# Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)		
	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
Feb 1	22	16	10	3	-5	-10	49	-	28	13	-	4	30.48	-	30.35	-	0.00	-
2	35	25	14	21	11	-1	69	-	41	23	-	0	30.4	-	30.09	-	0.00	-
3	53	39	24	33	27	20	81	-	45	12	-	4	30.18	-	30.09	-	0.00	-
4	61	47	32	38	33	28	89	-	42	12	-	0	30.11	-	29.99	-	0.00	-
5	68	53	37	45	39	35	92	-	44	23	-	0	30.11	-	29.91	-	0.00	-
6	47	41	34	40	32	25	93	-	45	16	-	0	30.25	-	30.07	-	0.53	-
7	45	42	39	41	40	38	100	-	83	16	-	0	30.11	-	29.99	-	0.07	-
8	56	44	32	45	32	8	100	-	28	33	-	0	30.29	-	29.87	-	0.46	-
9	34	29	24	9	6	1	46	-	29	32	-	8	30.74	-	30.32	-	0.00	-
10	37	30	22	13	9	6	57	-	29	14	-	4	30.71	-	30.38	-	0.00	-
11	38	34	29	25	20	12	85	-	41	14	-	0	30.4	-	30.28	-	0.00	-
12	36	31	26	34	23	8	100	-	35	18	-	7	30.4	-	29.66	-	0.81	-
13	42	38	33	35	28	18	100	-	47	32	-	5	29.87	-	29.56	-	0.06	-
14	46	39	32	23	20	17	61	-	31	24	-	0	30.06	-	29.89	-	0.00	-
15	63	52	40	40	36	24	82	-	39	22	-	0	29.99	-	29.6	-	0.00	-
16	49	40	31	25	18	15	54	-	31	20	-	8	30.06	-	29.73	-	0.00	-
17	36	29	22	32	20	14	69	-	43	18	-	0	30.19	-	29.96	-	0.05	-
18	44	35	26	36	29	10	100	-	46	30	-	0	30.36	-	29.8	-	0.09	-
19	37	30	23	10	7	3	55	-	24	21	-	7	30.6	-	30.39	-	0.00	-
20	33	30	26	31	21	7	92	-	39	15	-	0	30.62	-	30.11	-	0.85	-
21	52	42	32	37	33	28	100	-	49	20	-	4	30.16	-	29.91	-	0.12	-
22	45	41	36	24	22	20	53	-	37	22	-	7	30.46	-	30.18	-	0.00	-
23	40	36	31	36	27	22	85	-	50	13	-	4	30.5	-	30.17	-	0.02	-
24	47	42	37	45	39	19	100	-	41	43	-	0	30.16	-	29.36	-	0.81	-
25	43	36	28	19	11	6	40	-	25	46	-	17	30.22	-	29.52	-	0.00	-
26	40	33	25	8	6	3	46	-	25	25	-	14	30.47	-	30.25	-	0.00	-
27	31	28	24	27	12	1	78	-	36	20	-	0	30.47	-	30.01	-	0.00	-
28	38	33	27	29	20	8	92	-	32	24	-	0	30.28	-	29.98	-	0.02	-

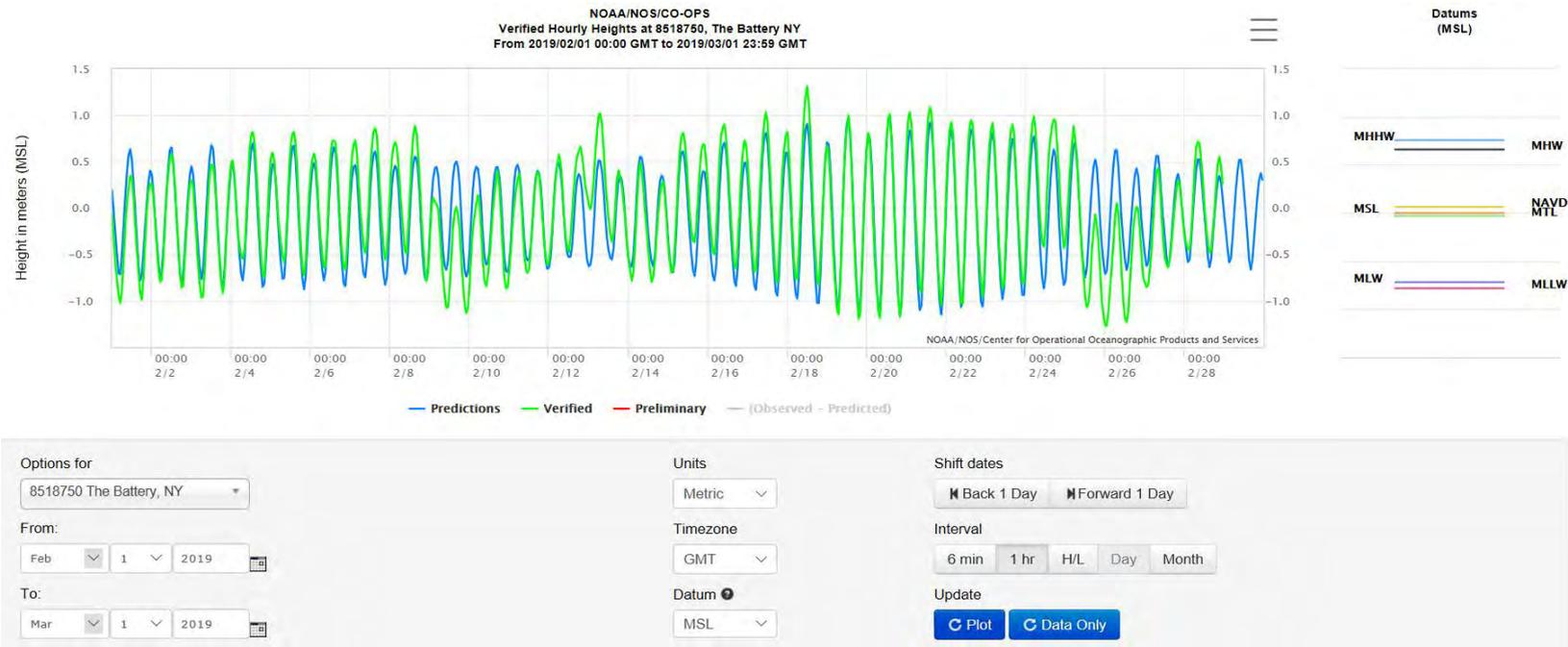
<https://www.wunderground.com/history/monthly/us/nj/newark/KEWR/date/2019-02>

# Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
1:51 AM	37 ° F	13 ° F	37 %	W	24 mph	39 mph	29.6 in	0.0 in	0.0 in	Partly Cloudy / Windy
2:51 AM	37 ° F	14 ° F	39 %	W	28 mph	46 mph	29.6 in	0.0 in	0.2 in	Mostly Cloudy / Windy
3:51 AM	37 ° F	12 ° F	36 %	W	30 mph	46 mph	29.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
4:51 AM	38 ° F	11 ° F	33 %	W	37 mph	54 mph	29.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
5:51 AM	38 ° F	11 ° F	33 %	W	38 mph	56 mph	29.7 in	0.0 in	0.0 in	Mostly Cloudy / Windy
6:51 AM	39 ° F	11 ° F	32 %	W	41 mph	55 mph	29.8 in	0.0 in	0.0 in	Partly Cloudy / Windy
7:51 AM	40 ° F	11 ° F	31 %	W	39 mph	48 mph	29.8 in	0.0 in	0.0 in	Partly Cloudy / Windy
8:51 AM	41 ° F	10 ° F	28 %	W	32 mph	49 mph	29.8 in	0.0 in	0.0 in	Partly Cloudy / Windy
9:51 AM	42 ° F	10 ° F	27 %	W	40 mph	51 mph	29.8 in	0.0 in	0.0 in	Partly Cloudy / Windy
10:51 AM	41 ° F	10 ° F	28 %	WNW	32 mph	47 mph	29.9 in	0.0 in	0.0 in	Fair / Windy
11:51 AM	41 ° F	10 ° F	28 %	W	29 mph	46 mph	29.9 in	0.0 in	0.0 in	Fair / Windy
12:51 PM	40 ° F	9 ° F	28 %	WNW	29 mph	40 mph	29.9 in	0.0 in	0.0 in	Fair / Windy
1:51 PM	39 ° F	7 ° F	27 %	WNW	22 mph	41 mph	30.0 in	0.0 in	0.0 in	Fair / Windy
2:51 PM	37 ° F	7 ° F	29 %	WNW	17 mph	32 mph	30.1 in	0.0 in	0.0 in	Fair

Averaged wind speed over the 6-hour period = 36 mph

<https://www.wunderground.com/history/airport/KEWR/2019/2/25/DailyHistory.html>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190201&edate=20190301&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>March</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.00      Date:      3/21/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.571      Date:      3/22/2019      Time:      8:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.405      Date:      3/22/2019      Time:      2:00 Exceeds event trigger criteria?      YES  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      35      Date:      3/22/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      W      OK  <u>Note:</u> (1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

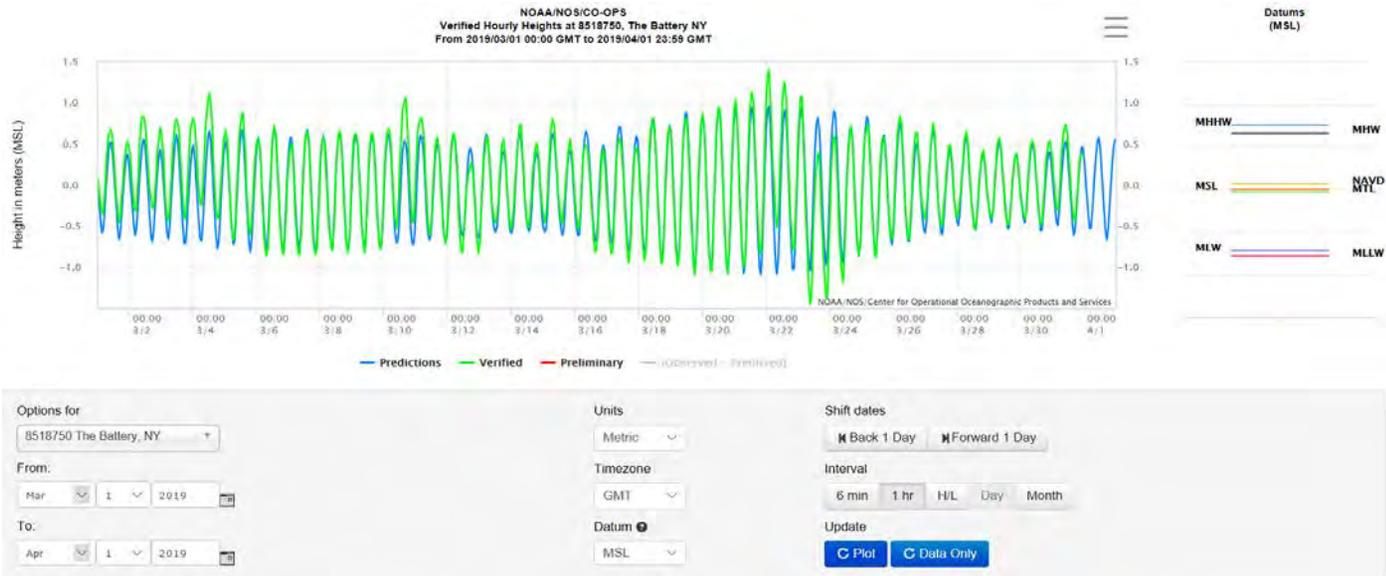
# Summary

Temperature (° F)	Max	Average	Min	Sum
Max Temperature	77	61	50	-
Avg Temperature	49	41	33	-
Min Temperature	27	23	15	-
Precipitation (Inches)	Max	Average	Min	Sum
Precipitation	1	0.17	0	4.2
Dew Point (° F)	Max	Average	Min	Sum
Dew Point	58	24	-6	-

# Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)		
	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	36	31	25	28	24	10	92	-	39	15	-	5	30.35	-	30.14	-	0.05	-
2	41	36	30	31	30	29	100	-	65	16	-	4	30.13	-	30.01	-	0.51	-
3	42	38	32	32	28	22	96	-	45	14	-	0	30.16	-	29.82	-	0.66	-
4	39	34	29	32	25	11	100	-	44	22	-	7	30.02	-	29.66	-	0.23	-
5	31	26	21	13	9	5	57	-	39	21	-	5	30.12	-	29.94	-	0.00	-
6	27	23	18	13	5	1	65	-	33	25	-	8	30.3	-	30.03	-	0.00	-
7	32	24	15	15	7	-1	54	-	42	23	-	5	30.39	-	30.25	-	0.00	-
8	39	30	20	23	15	8	62	-	40	12	-	0	30.43	-	30.23	-	0.00	-
9	49	41	33	29	23	17	70	-	29	12	-	0	30.36	-	30.22	-	0.00	-
10	42	39	36	41	37	31	96	-	64	20	-	0	30.32	-	29.91	-	0.77	-
11	55	47	39	40	27	18	93	-	26	32	-	6	30.07	-	29.98	-	0.00	-
12	45	40	34	20	17	15	48	-	33	25	-	7	30.32	-	30.09	-	0.00	-
13	47	38	28	30	23	16	65	-	36	14	-	0	30.4	-	30.27	-	0.00	-
14	54	48	42	42	34	25	80	-	49	13	-	0	30.28	-	30.01	-	0.00	-
15	77	61	45	58	53	42	86	-	50	28	-	0	29.98	-	29.6	-	0.52	-
16	56	47	37	37	24	14	58	-	24	30	-	12	30.15	-	29.77	-	0.00	-
17	46	38	30	18	12	7	47	-	22	20	-	5	30.24	-	30.12	-	0.00	-
18	47	39	30	25	13	11	59	-	23	15	-	0	30.33	-	30.24	-	0.00	-
19	51	40	29	25	17	10	64	-	21	18	-	0	30.45	-	30.34	-	0.00	-
20	52	43	34	35	28	20	82	-	28	16	-	0	30.42	-	30.27	-	0.00	-
21	48	45	42	45	41	35	93	-	70	22	-	0	30.26	-	29.6	-	1.00	-
22	50	44	38	43	36	27	100	-	42	35	-	13	29.55	-	29.3	-	0.43	-
23	50	42	34	24	16	7	59	-	18	32	-	8	30.15	-	29.57	-	0.00	-
24	62	47	31	22	14	9	45	-	14	22	-	4	30.23	-	30.01	-	0.00	-
25	54	48	42	31	24	2	46	-	15	21	-	4	30.09	-	29.99	-	0.00	-
26	50	41	32	8	2	-6	36	-	11	24	-	10	30.39	-	30.12	-	0.00	-
27	46	38	30	24	14	4	64	-	20	17	-	0	30.56	-	30.4	-	0.00	-
28	52	42	32	36	30	25	75	-	38	17	-	0	30.51	-	30.24	-	0.00	-
29	58	52	46	46	41	36	71	-	59	14	-	0	30.22	-	30.06	-	0.00	-
30	71	61	50	46	43	39	80	-	37	20	-	0	30.12	-	29.83	-	0.00	-
31	65	52	39	53	40	23	83	-	45	28	-	5	29.95	-	29.66	-	0.03	-

<https://www.wunderground.com/history/monthly/us/ni/newark/KEWR/date/2019-03>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190301&edate=20190401&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.2  
Q2 2019 HYDRAULIC AND HYDRODYNAMIC  
EVALUATION SUMMARIES**

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>April</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.00      Date: 4/15/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.593      Date: 4/27/2019      Time: 0:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.318      Date: 4/19/2019      Time: 1:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      38      Date: 4/15/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      W      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• See <a href="http://www.wunderground.com/history/">http://www.wunderground.com/history/</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

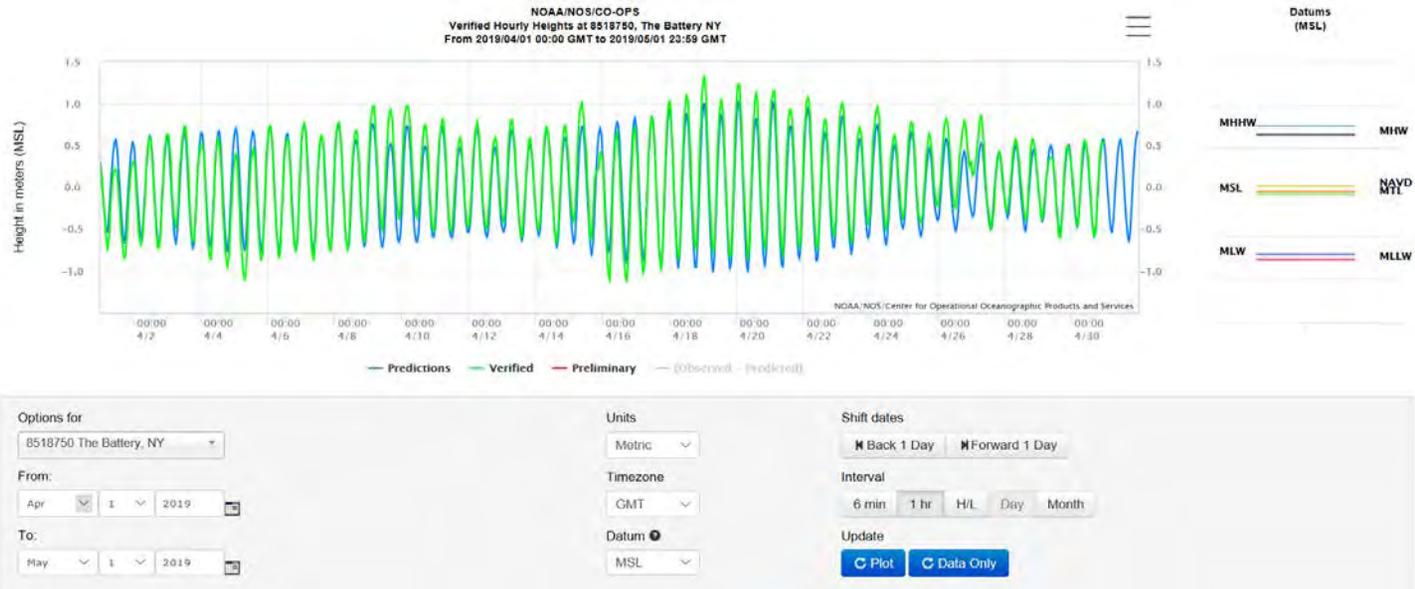
# Summary

Temperature (° F)	Max	Average	Min	Sum	▲
Max Temperature	80	72	63	-	
Avg Temperature	64	56	47	-	
Min Temperature	43	40	32	-	
Precipitation (Inches)	Max	Average	Min	Sum	▲
Precipitation	1	0.17	0	3.77	
Dew Point (° F)	Max	Average	Min	Sum	▲
Dew Point	65	40	3	-	

# Daily Observations

Time	Temperature (° F)			Dew Point (° F)			Humidity (%)			Wind Speed (mph)			Pressure (Hg)			Precipitation (in)		
	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min
1	48	40	32	20	13	8	54	-	21	28	-	4	30.39	-	29.97	-	0.00	-
2	50	43	35	35	26	13	76	-	33	18	-	0	30.42	-	30.09	-	0.00	-
3	67	54	40	36	25	9	76	-	12	36	-	7	30.24	-	29.93	-	0.00	-
4	62	52	41	21	16	11	31	-	17	23	-	6	30.44	-	30.26	-	0.00	-
5	43	41	39	39	24	3	100	-	18	16	-	4	30.51	-	30.27	-	0.17	-
6	69	54	39	45	40	36	100	-	32	20	-	0	30.25	-	30.14	-	0.00	-
7	63	55	46	45	41	37	77	-	39	15	-	0	30.3	-	30.07	-	0.00	-
8	80	66	51	58	52	45	100	-	38	24	-	0	30.04	-	29.69	-	0.26	-
9	52	49	45	46	45	42	93	-	77	14	-	0	29.75	-	29.57	-	0.02	-
10	61	53	44	45	32	24	93	-	28	23	-	0	30.08	-	29.72	-	0.00	-
11	52	45	38	30	22	16	54	-	24	17	-	0	30.29	-	30.08	-	0.00	-
12	70	58	46	59	45	23	97	-	36	22	-	4	30.29	-	30.11	-	0.57	-
13	79	70	61	61	58	44	100	-	31	21	-	5	30.08	-	29.97	-	0.17	-
14	72	64	56	61	58	55	100	-	68	14	-	0	29.99	-	29.49	-	0.02	-
15	70	58	46	64	49	27	90	-	40	38	-	4	29.85	-	29.3	-	1.00	-
16	67	52	37	37	22	11	59	-	12	25	-	7	30.07	-	29.88	-	0.00	-
17	60	55	49	40	32	23	61	-	25	15	-	4	30.21	-	30.06	-	0.00	-
18	64	58	51	56	46	38	86	-	59	14	-	0	30.21	-	29.85	-	0.00	-
19	80	72	63	65	60	56	84	-	54	25	-	7	29.84	-	29.72	-	0.07	-
20	69	61	53	65	59	49	100	-	67	26	-	5	29.87	-	29.7	-	0.51	-
21	64	58	52	53	49	45	89	-	52	16	-	4	30.09	-	29.87	-	0.00	-
22	65	58	50	57	51	45	90	-	63	21	-	4	30.09	-	29.97	-	0.08	-
23	78	67	56	55	50	48	86	-	36	17	-	0	30.01	-	29.75	-	0.01	-
24	71	63	55	52	42	35	67	-	27	24	-	4	29.89	-	29.68	-	0.00	-
25	63	55	46	50	42	37	89	-	43	14	-	0	29.98	-	29.91	-	0.02	-
26	62	57	52	58	54	46	100	-	72	25	-	0	29.89	-	29.32	-	0.81	-
27	63	55	47	46	33	21	77	-	26	37	-	7	29.89	-	29.37	-	0.02	-
28	56	51	45	43	38	33	66	-	52	20	-	4	30.27	-	29.92	-	0.00	-
29	59	48	37	44	31	21	70	-	25	16	-	4	30.44	-	30.25	-	0.01	-
30	64	57	49	52	49	46	100	-	67	12	-	0	30.4	-	30.14	-	0.02	-

<https://www.wunderground.com/history/monthly/us/nj/newark/KEWR/date/2019-04>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190401&edate=20190501&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>May</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.53      Date:      5/5/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.609      Date:      5/12/2019      Time:      15:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.262      Date:      5/6/2019      Time:      2:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      33      Date:      5/24/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      NW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

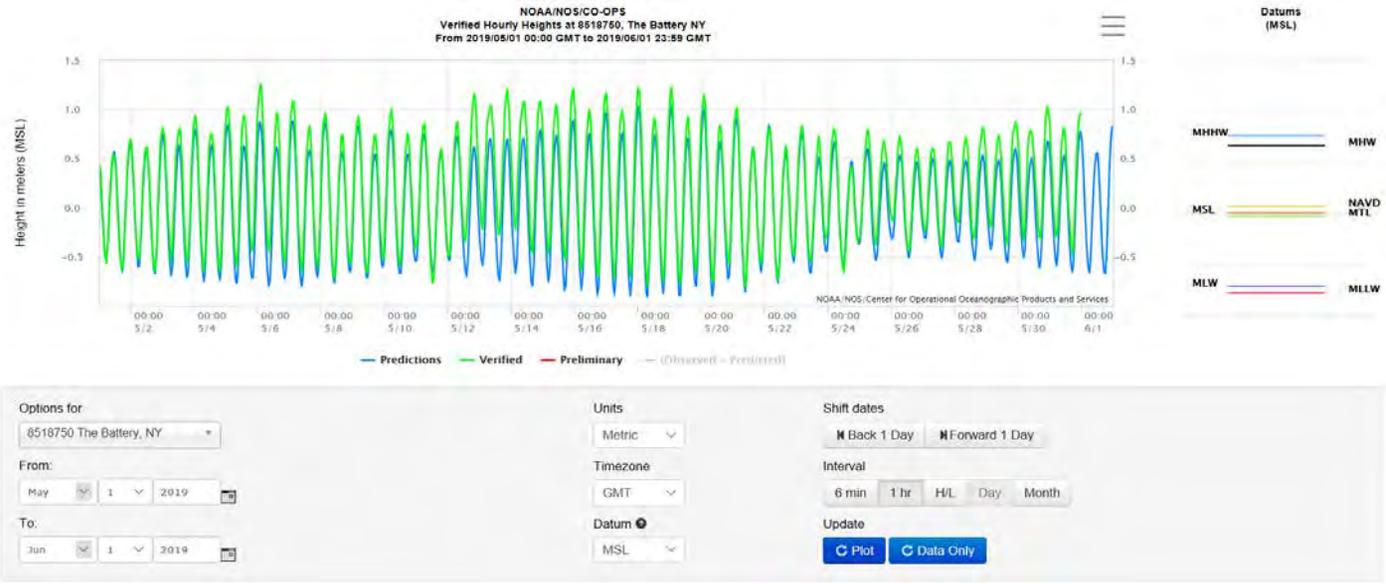
<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

000  
 CXUS51 KOKX 010703  
 CF6EWR  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: MAY  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
=====																		
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
=====																		
1	55	50	53	-5	12	0	0.01	0.0	0	6.1	13	120	M	M	10	1	21	110
2	78	51	65	7	0	0	0.14	0.0	0	6.4	18	100	M	M	9	18	24	140
3	57	50	54	-5	11	0	0.01	0.0	0	4.2	10	60	M	M	10	138	13	90
4	70	54	62	3	3	0	0.07	0.0	0	4.0	13	130	M	M	9	138	17	130
5	58	52	55	-4	10	0	1.53	0.0	0	9.8	20	40	M	M	10	1	26	40
6	72	52	62	2	3	0	0.00	0.0	0	7.8	18	40	M	M	7		24	30
7	75	54	65	5	0	0	0.18	0.0	0	6.6	18	10	M	M	7	13	22	10
8	71	56	64	4	1	0	0.00	0.0	0	7.7	18	10	M	M	7		22	10
9	59	55	57	-3	8	0	0.00	0.0	0	10.1	17	90	M	M	9		23	100
10	79	55	67	6	0	2	0.03	0.0	0	9.0	23	220	M	M	9	1	27	230
11	71	57	64	3	1	0	0.03	0.0	0	9.2	21	340	M	M	7		25	310
12	59	44	52	-9	13	0	1.48	0.0	0	12.7	23	70	M	M	10	1	30	60
13	50	43	47	-15	18	0	0.84	0.0	0	9.0	18	70	M	M	10	1	23	70
14	52	44	48	-14	17	0	0.28	0.0	0	6.5	16	310	M	M	10	1	21	310
15	72	45	59	-3	6	0	0.01	0.0	0	10.6	20	260	M	M	5		27	300
16	75	52	64	1	1	0	0.04	0.0	0	6.4	18	270	M	M	6		22	270
17	80	56	68	5	0	3	0.02	0.0	0	10.8	20	220	M	M	7		24	220
18	78	58	68	5	0	3	0.00	0.0	0	8.3	18	330	M	M	6		24	320
19	84	59	72	8	0	7	0.06	0.0	0	8.7	21	190	M	M	7	3	26	190
20	89	68	79	15	0	14	T	0.0	0	14.0	32	240	M	M	6	3	39	260
21	74	58	66	2	0	1	0.00	0.0	0	17.5	31	330	M	M	4		39	320
22	77	55	66	2	0	1	0.00	0.0	0	7.9	17	350	M	M	6		24	310
23	75	56	66	1	0	1	0.51	0.0	0	9.4	23	300	M	M	8	13	27	300
24	78	60	69	4	0	4	0.00	0.0	0	17.6	33	320	M	M	4		46	320
25	70	57	64	-2	1	0	0.00	0.0	0	9.7	18	160	M	M	6		24	150
26	90	61	76	10	0	11	0.20	0.0	0	10.4	26	230	M	M	8		33	230
27	82	64	73	7	0	8	0.00	0.0	0	8.5	21	320	M	M	4		26	320
28	76	63	70	4	0	5	0.77	0.0	0	5.4	22	200	M	M	9	13	27	210
29	75	58	67	0	0	2	0.58	0.0	0	7.2	16	30	M	M	9	13	19	100
30	68	58	63	-4	2	0	0.52	0.0	0	5.5	14	120	M	M	10	123	18	120
31	83	63	73	5	0	8	T	0.0	0	8.3	16	240	M	M	4	1	20	250
=====																		
SM	2232	1708			107	70	7.31		0.0	275.3			M		233			
=====																		
AV	72.0	55.1								8.9	FASTST	M	M	8		MAX(MPH)		
=====																		
										MISC	---->	#	33	320		#	46	320
=====																		

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190501&edate=20190601&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>June</b> <b>2019</b>	<b>Assessment Required?</b>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.23              Date: 6/18/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.378              Date: 6/13/2019              Time: 16:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.259              Date: 6/13/2019              Time: 22:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      46              Date: 6/29/2019 Exceeds trigger criteria?      YES Wind direction over 6-hr period:      WSW              OK  <u>Note:</u> (1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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 CXUS51 KOKX 010703  
 CF6EWR  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: JUNE  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	79	63	71	3	0	6	0.00	0.0	0	5.8	14	160	M	M	7		18	160
2	83	64	74	6	0	9	0.39	0.0	0	8.5	32	240	M	M	7	13	42	230
3	73	57	65	-3	0	0	0.00	0.0	0	12.7	25	320	M	M	4		31	340
4	74	52	63	-6	2	0	0.00	0.0	0	9.2	20	250	M	M	4		27	260
5	84	63	74	5	0	9	T	0.0	0	12.3	22	210	M	M	9	1	29	200
6	87	70	79	9	0	14	0.13	0.0	0	10.4	22	220	M	M	8	1	29	230
7	81	65	73	3	0	8	0.00	0.0	0	5.8	13	170	M	M	7		16	170
8	81	63	72	2	0	7	0.00	0.0	0	8.3	18	40	M	M	8		25	40
9	77	58	68	-2	0	3	0.00	0.0	0	9.8	17	110	M	M	7		23	140
10	69	60	65	-6	0	0	0.79	0.0	0	7.7	14	50	M	M	10	12	17	50
11	80	65	73	2	0	8	0.18	0.0	0	13.8	28	330	M	M	6	1	36	330
12	74	58	66	-6	0	1	0.00	0.0	0	9.0	16	160	M	M	7		25	160
13	68	57	63	-9	2	0	0.65	0.0	0	9.1	22	50	M	M	9	1	30	50
14	77	59	68	-4	0	3	0.00	0.0	0	13.9	29	260	M	M	5		34	250
15	84	56	70	-2	0	5	T	0.0	0	11.9	25	230	M	M	7		39	200
16	84	68	76	3	0	11	T	0.0	0	10.0	22	230	M	M	8		27	240
17	77	69	73	0	0	8	0.01	0.0	0	4.5	15	10	M	M	9		18	360
18	76	68	72	-1	0	7	1.23	0.0	0	3.9	10	350	M	M	10	13	13	350
19	71	67	69	-5	0	4	0.13	0.0	0	5.3	9	110	M	M	10	1	13	100
20	81	66	74	0	0	9	0.76	0.0	0	5.7	12	240	M	M	10	138	16	250
21	81	66	74	0	0	9	0.67	0.0	0	12.7	25	330	M	M	7	1	34	340
22	83	62	73	-1	0	8	0.00	0.0	0	14.8	25	310	M	M	5		35	280
23	87	61	74	-1	0	9	0.00	0.0	0	10.3	21	260	M	M	3		26	300
24	87	62	75	0	0	10	0.00	0.0	0	5.8	16	230	M	M	6		19	230
25	88	71	80	5	0	15	0.74	0.0	0	7.5	16	260	M	M	8	13	20	260
26	91	70	81	6	0	16	0.00	0.0	0	8.6	16	260	M	M	4		23	280
27	91	71	81	5	0	16	0.00	0.0	0	6.9	17	320	M	M	5		25	310
28	90	71	81	5	0	16	T	0.0	0	6.5	13	200	M	M	6		16	170
29	93	71	82	6	0	17	0.32	0.0	0	10.3	46	250	M	M	7	13	54	240
30	87	70	79	3	0	14	0.00	0.0	0	15.9	36	350	M	M	5		42	340
SM	2438	1923			4	242	6.00	0.0	276.9				M		208			
AV	81.3	64.1							9.2	FASTST	M	M	7		MAX(MPH)			
								MISC	----	# 46	250				# 54	240		

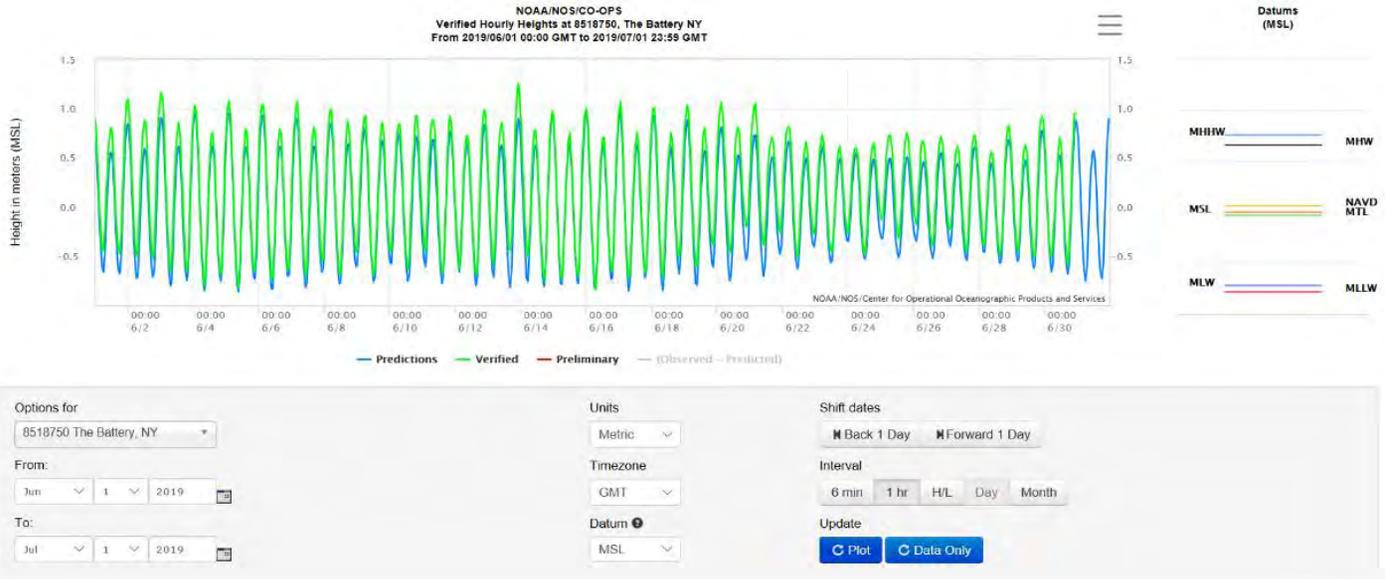
<https://w2.weather.gov/climate/index.php?wfo=okx>

# Daily Observations

Time	Temperature	Dew Point	Humidity	Wind	Wind Speed	Wind Gust	Pressure	Precip.	Precip Accum	Condition
9:51 AM	92 ° F	65 ° F	41 %	W	13 mph	17 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy
10:51 AM	93 ° F	65 ° F	39 %	WSW	13 mph	20 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy
11:51 AM	91 ° F	67 ° F	45 %	WSW	16 mph	0 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy
12:28 PM	91 ° F	66 ° F	43 %	W	10 mph	0 mph	29.8 in	0.0 in	0.0 in	Thunder
12:51 PM	90 ° F	65 ° F	43 %	W	16 mph	0 mph	29.9 in	0.0 in	0.0 in	Thunder
1:21 PM	88 ° F	66 ° F	48 %	WSW	40 mph	51 mph	29.9 in	0.0 in	0.0 in	Light Rain with Thunder
1:28 PM	74 ° F	66 ° F	76 %	WSW	36 mph	54 mph	29.9 in	0.0 in	0.0 in	Light Rain with Thunder
1:31 PM	72 ° F	66 ° F	81 %	W	29 mph	54 mph	29.9 in	0.0 in	0.0 in	T-Storm / Windy
1:37 PM	72 ° F	68 ° F	87 %	W	26 mph	44 mph	29.9 in	0.0 in	0.0 in	T-Storm / Windy
1:48 PM	75 ° F	68 ° F	78 %	N	5 mph	0 mph	29.8 in	0.3 in	0.0 in	Heavy T-Storm
1:51 PM	75 ° F	70 ° F	84 %	SW	15 mph	21 mph	29.8 in	0.3 in	0.0 in	Heavy T-Storm
2:03 PM	75 ° F	68 ° F	79 %	WSW	7 mph	0 mph	29.8 in	0.0 in	0.0 in	Light Rain with Thunder
2:20 PM	76 ° F	68 ° F	76 %	WNW	9 mph	0 mph	29.8 in	0.0 in	0.0 in	Mostly Cloudy
2:51 PM	76 ° F	68 ° F	76 %	SW	13 mph	0 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy
3:51 PM	75 ° F	68 ° F	79 %	SW	13 mph	0 mph	29.9 in	0.0 in	0.0 in	Mostly Cloudy
4:51 PM	75 ° F	67 ° F	76 %	SW	16 mph	23 mph	29.9 in	0.0 in	0.0 in	Cloudy
5:51 PM	74 ° F	67 ° F	79 %	SW	10 mph	0 mph	29.9 in	0.0 in	0.0 in	Cloudy

Averaged wind speed over the 6-hour period = 18 mph

<https://www.wunderground.com/history/airport/KEWR/2019/6/29/DailyHistory.html>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190601&edate=20190701&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.3  
Q3 2019 HYDRAULIC AND HYDRODYNAMIC  
EVALUATION SUMMARIES**

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>July</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.78      Date: 7/22/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.371      Date: 7/23/2019      Time: 13:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.22      Date: 7/4/2019      Time: 1:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      38      Date: 7/17/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      NW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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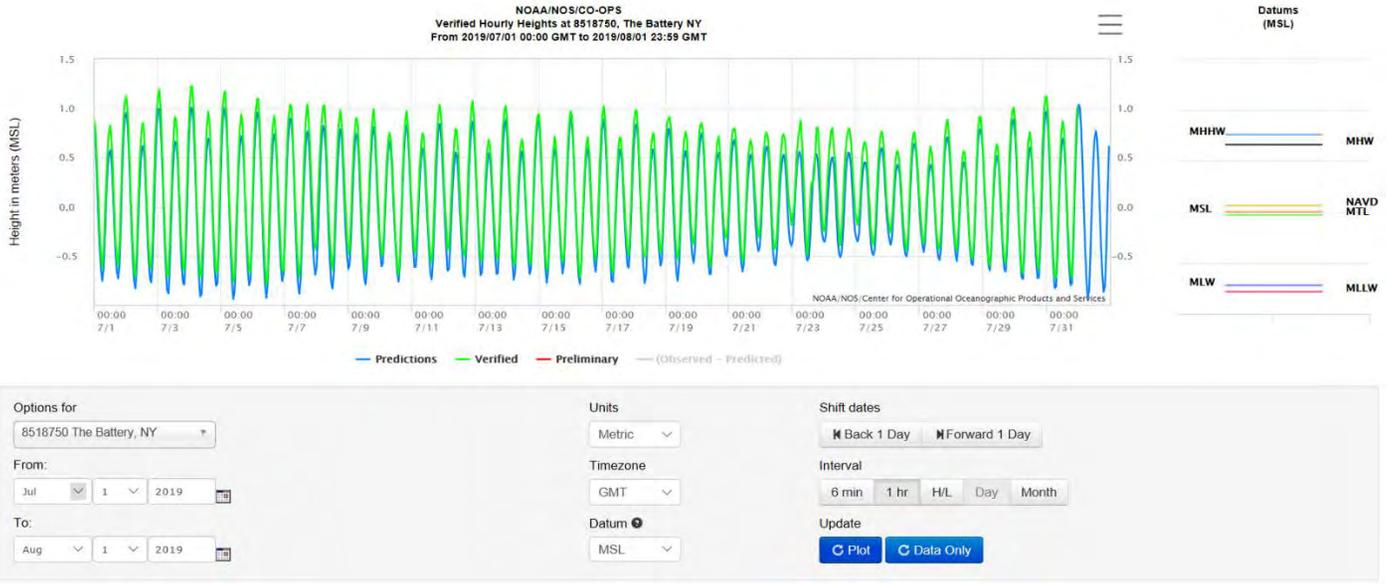
CF6EWR

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: JULY  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND							
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
12Z AVG MX 2MIN																			
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
1	88	66	77	1	0	12	0.00	0.0	0	9.6	17	240	M	M	3		25	270	
2	90	67	79	3	0	14	T	0.0	0	8.8	17	260	M	M	7		23	270	
3	87	77	82	5	0	17	T	0.0	0	4.4	12	330	M	M	8		14	330	
4	89	74	82	5	0	17	0.00	0.0	0	5.8	14	160	M	M	5		19	160	
5	83	74	79	2	0	14	0.00	0.0	0	6.5	15	160	M	M	8		19	170	
6	92	77	85	8	0	20	0.03	0.0	0	8.2	25	230	M	M	8	3	32	230	
7	87	72	80	3	0	15	0.00	0.0	0	9.1	17	130	M	M	7		23	140	
8	80	69	75	-2	0	10	0.03	0.0	0	4.4	10	200	M	M	7	1	13	270	
9	91	67	79	2	0	14	0.00	0.0	0	7.6	16	290	M	M	3		20	250	
10	92	72	82	5	0	17	0.00	0.0	0	8.1	17	200	M	M	7		22	270	
11	86	72	79	2	0	14	1.48	0.0	0	7.9	15	160	M	M	8	13	23	160	
12	90	71	81	3	0	16	0.00	0.0	0	11.0	22	330	M	M	5		29	320	
13	89	71	80	2	0	15	0.00	0.0	0	9.0	16	260	M	M	2		23	260	
14	92	72	82	4	0	17	0.00	0.0	0	11.5	20	280	M	M	4		27	280	
15	89	70	80	2	0	15	0.00	0.0	0	8.5	16	260	M	M	7		22	280	
16	93	72	83	5	0	18	0.00	0.0	0	8.9	18	250	M	M	7	8	23	250	
17	97	74	86	8	0	21	0.96	0.0	0	8.7	38	310	M	M	8	13	47	320	
18	84	72	78	0	0	13	0.33	0.0	0	6.7	14	30	M	M	10	13	16	30	
19	95	72	84	6	0	19	0.00	0.0	0	8.6	20	250	M	M	7		25	250	
20	98	80	89	11	0	24	0.00	0.0	0	10.2	21	240	M	M	6		30	230	
21	99	80	90	12	0	25	T	0.0	0	11.9	21	290	M	M	6	3	28	240	
22	89	73	81	3	0	16	1.78	0.0	0	6.8	22	20	M	M	8	13	25	360	
23	76	67	72	-6	0	7	0.60	0.0	0	9.4	18	350	M	M	10	1	22	350	
24	86	68	77	-1	0	12	0.01	0.0	0	6.8	14	20	M	M	6		18	50	
25	87	69	78	0	0	13	T	0.0	0	6.7	15	290	M	M	3		20	290	
26	87	67	77	-1	0	12	0.00	0.0	0	5.9	12	170	M	M	3		15	170	
27	88	71	80	2	0	15	0.00	0.0	0	6.2	17	200	M	M	3		22	200	
28	92	71	82	5	0	17	T	0.0	0	9.4	25	300	M	M	4	3	33	290	
29	94	72	83	6	0	18	0.00	0.0	0	7.7	18	250	M	M	4		23	250	
30	95	75	85	8	0	20	0.00	0.0	0	8.7	21	100	M	M	3	3	27	100	
31	89	70	80	3	0	15	1.60	0.0	0	4.9	12	230	M	M	8	13	38	190	
SM	2774	2224			0	492	6.82		0.0	247.9			M		185				
AV	89.5	71.7								8.0	FASTST		M	M	6		MAX(MPH)		
											MISC	---->	#	38	310		#	47	320

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190701&edate=20190801&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>August</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.69      Date:      8/14/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      0.482      Date:      8/26/2019      Time:      4:00 Exceeds event trigger criteria?      NO  Max Tide Gauge Reading (m):      1.22      Date:      8/30/2019      Time:      0:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      38      Date:      8/21/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      WSW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

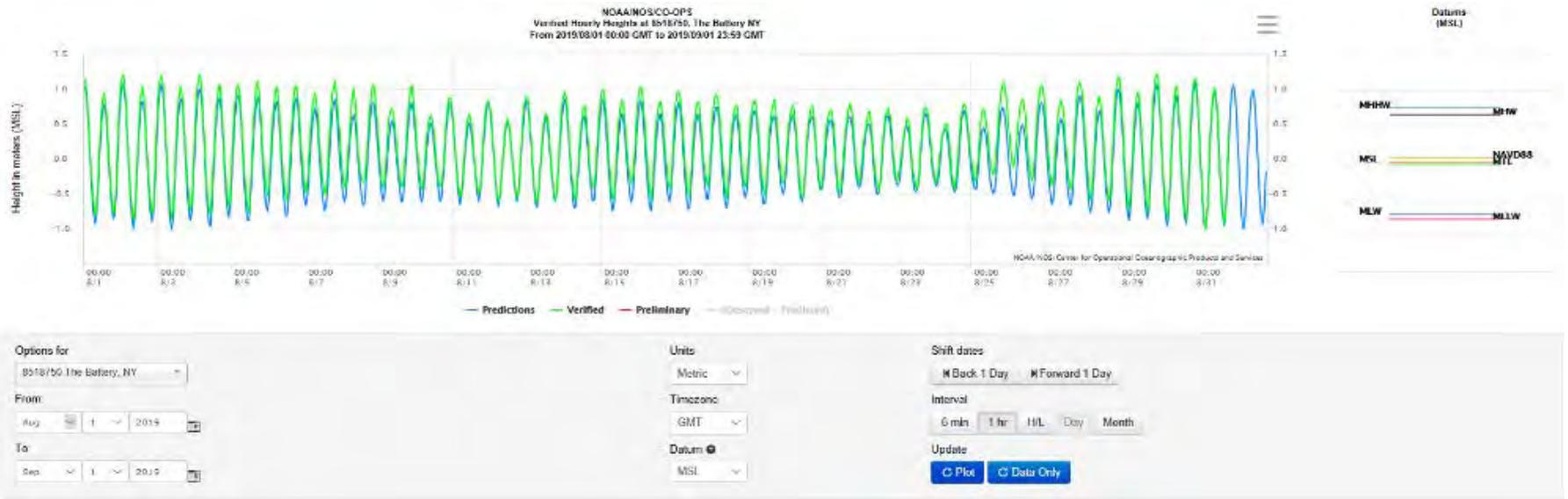
<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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 CXUS51 KOKX 010703  
 CF6EWR  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: AUGUST  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND																					
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18															
DY MAX		MIN		AVG		DEP		HDD		CDD		WTR		SNW		DPTH		SPD		DIR		MIN		PSBL		S-S		WX		SPD		DR	
1	89	70	80	3	0	15	0.00	0.0	0	6.0	13	30	M	M	7			15	20														
2	85	73	79	2	0	14	0.00	0.0	0	6.4	13	160	M	M	7			17	150														
3	85	71	78	1	0	13	0.23	0.0	0	6.1	33	20	M	M	6	13		45	20														
4	91	70	81	4	0	16	0.50	0.0	0	6.2	33	360	M	M	7	13		41	360														
5	81	69	75	-2	0	10	0.00	0.0	0	6.8	14	10	M	M	7			17	360														
6	82	72	77	0	0	12	0.31	0.0	0	6.0	14	150	M	M	8	138		19	150														
7	84	69	77	0	0	12	1.54	0.0	0	6.9	25	110	M	M	9	13		44	120														
8	87	68	78	1	0	13	T	0.0	0	9.4213	330		M	M	7	3		40	320														
9	86	67	77	0	0	12	T	0.0	0	8.2	25	320	M	M	4	3		30	320														
10	84	65	75	-2	0	10	0.00	0.0	0	11.4	25	280	M	M	3			34	280														
11	82	63	73	-4	0	8	0.00	0.0	0	7.8	17	240	M	M	4			27	270														
12	88	64	76	0	0	11	0.00	0.0	0	7.7	18	230	M	M	3			22	260														
13	81	73	77	1	0	12	T	0.0	0	7.6	17	200	M	M	10			23	230														
14	84	72	78	2	0	13	1.69	0.0	0	4.3	13	30	M	M	8	123		16	140														
15	83	72	78	2	0	13	0.00	0.0	0	6.8	14	140	M	M	7			18	150														
16	83	70	77	1	0	12	0.00	0.0	0	5.9	13	150	M	M	8			17	60														
17	88	75	82	6	0	17	0.00	0.0	0	5.3	13	140	M	M	7			17	150														
18	90	74	82	6	0	17	T	0.0	0	6.0	25	310	M	M	8	3		31	310														
19	94	73	84	8	0	19	0.00	0.0	0	7.2	16	260	M	M	6	3		23	250														
20	87	74	81	5	0	16	0.00	0.0	0	6.7	14	180	M	M	7			18	150														
21	89	74	82	7	0	17	0.51	0.0	0	7.4	38	260	M	M	7	3		44	260														
22	92	71	82	7	0	17	1.13	0.0	0	8.5	35	320	M	M	7	13		44	330														
23	75	65	70	-5	0	5	0.01	0.0	0	7.1	16	340	M	M	8			20	340														
24	78	63	71	-4	0	6	0.00	0.0	0	10.4	18	350	M	M	4			24	310														
25	77	62	70	-5	0	5	0.00	0.0	0	11.9	20	20	M	M	7			28	30														
26	75	59	67	-7	0	2	0.00	0.0	0	9.3	16	40	M	M	5			22	30														
27	74	60	67	-7	0	2	0.00	0.0	0	6.2	12	160	M	M	7			16	160														
28	77	67	72	-2	0	7	0.02	0.0	0	5.3	10	320	M	M	8	18		15	320														
29	84	66	75	1	0	10	0.00	0.0	0	10.7	23	300	M	M	3			35	290														
30	89	61	75	1	0	10	0.00	0.0	0	10.5	22	250	M	M	2			27	260														
31	83	67	75	2	0	10	0.00	0.0	0	7.5	15	360	M	M	7			22	320														
SM	2607	2119			0	356	5.94		0.0	233.5			M		198																		
AV	84.1	68.4								7.5	FASTST		M	M	6			MAX(MPH)															
										MISC	---->	#213	330					#	45	20													

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190801&edate=20190901&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

Monitoring Period:      **September 2019***Assessment  
Required?*Rainfall Event Data:Max Rainfall (in): 1.19      Date: 9/2/2019  
50-Year, 24-Hr event? NO

NO

Storm Surge Event Data:Max Increase Above Predicted Normal Tidal Cycling (m): 0.551      Date: 9/7/2019      Time: 2:00  
Exceeds event trigger criteria? NOMax Tide Gauge Reading (m): 1.281      Date: 9/30/2019      Time: 14:00  
Exceeds event trigger criteria? NO

10-year storm surge event defined as a hurricane? NO

NO

Wind Event Data:Max Wind (mph): 24      Date: 9/24/2019  
Exceeds trigger criteria? NO  
Wind direction over 6-hr period: WNW      OK

NO

**CRITERIA FROM LTMP:**

“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:

- i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;
  - See <https://w2.weather.gov/climate/index.php?wfo=okx>
- ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or
  - Note: Hurricane events are defined by NOAA.
  - See <http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750>
- iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”
  - <https://w2.weather.gov/climate/index.php?wfo=okx>

CHECKED BY: TEA

https://w2.weather.gov/climate/getclimate.php?wfo=okx

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 CXUS51 KOKX 010703  
 CF6EWR  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: SEPTEMBER  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
=====																		
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
=====																		
1	77	62	70	-3	0	5	0.00	0.0	0	9.3	16	120	M	M	7		20	130
2	77	70	74	1	0	9	1.19	0.0	0	6.5	20	240	M	M	8	13	24	250
3	82	66	74	1	0	9	0.00	0.0	0	6.8	12	160	M	M	3		16	330
4	90	67	79	7	0	14	T	0.0	0	10.6	21	360	M	M	6	3	27	250
5	75	64	70	-2	0	5	0.00	0.0	0	7.1	20	30	M	M	8		24	10
6	68	59	64	-8	1	0	0.32	0.0	0	14.2	23	10	M	M	9	1	31	40
7	79	57	68	-3	0	3	T	0.0	0	11.0	21	280	M	M	4		26	280
8	80	59	70	-1	0	5	0.00	0.0	0	6.6	15	20	M	M	7		19	270
9	78	64	71	0	0	6	0.00	0.0	0	8.0	17	30	M	M	7		21	20
10	78	68	73	3	0	8	T	0.0	0	6.4	13	210	M	M	8		17	180
11	91	68	80	10	0	15	0.00	0.0	0	11.6	20	250	M	M	7		24	250
12	81	63	72	2	0	7	0.04	0.0	0	11.1	20	20	M	M	9	1	24	20
13	71	57	64	-5	1	0	0.00	0.0	0	10.8	17	120	M	M	7		23	130
14	77	65	71	2	0	6	0.00	0.0	0	7.6	16	190	M	M	9		20	200
15	84	67	76	7	0	11	0.00	0.0	0	6.6	15	290	M	M	7		19	290
16	80	67	74	6	0	9	T	0.0	0	3.7	10	60	M	M	8		14	50
17	79	59	69	1	0	4	0.00	0.0	0	9.5	18	40	M	M	2		22	40
18	71	56	64	-3	1	0	0.00	0.0	0	9.4	16	360	M	M	4		20	360
19	72	49	61	-6	4	0	0.00	0.0	0	6.9	12	40	M	M	2		17	80
20	80	50	65	-2	0	0	0.00	0.0	0	7.4	20	280	M	M	5		24	280
21	86	55	71	5	0	6	0.00	0.0	0	3.5	9	220	M	M	3		15	270
22	89	60	75	9	0	10	0.00	0.0	0	7.3	16	230	M	M	4		22	200
23	93	70	82	17	0	17	0.05	0.0	0	11.2	23	270	M	M	6		28	270
24	79	63	71	6	0	6	0.00	0.0	0	11.6	24	280	M	M	4		32	290
25	81	58	70	5	0	5	0.00	0.0	0	6.6	16	290	M	M	2		21	290
26	86	59	73	9	0	8	T	0.0	0	8.4	23	320	M	M	4		30	300
27	79	58	69	5	0	4	0.00	0.0	0	5.7	15	160	M	M	3		20	140
28	86	60	73	10	0	8	0.00	0.0	0	7.7	17	230	M	M	7		25	220
29	81	64	73	10	0	8	0.00	0.0	0	11.2	21	10	M	M	6		25	20
30	70	61	66	4	0	1	T	0.0	0	9.2	14	20	M	M	9		16	20
=====																		
SM	2400	1845			7	189	1.60		0.0	253.5			M		175			
=====																		
AV	80.0	61.5								8.4	FASTST		M	M	6		MAX(MPH)	
										MISC	---->	# 24	280				# 32	290
=====																		

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20190901&edate=20191001&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.4  
Q4 2019 HYDRAULIC AND HYDRODYNAMIC  
EVALUATION SUMMARIES**

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>October</b> <b>2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in): 2.13      Date: 10/16/2019 50-Year, 24-Hr event? NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.944      Date: 10/11/2019      Time: 5:00 Exceeds event trigger criteria? YES  Max Tide Gauge Reading (m): 1.486      Date: 10/12/2019      Time: 0:00 Exceeds event trigger criteria? YES  10-year storm surge event defined as a hurricane? NO	NO
<u>Wind Event Data:</u> Max Wind (mph): 38      Date: 10/17/2019 Exceeds trigger criteria? NO Wind direction over 6-hr period: WSW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY: <u>TEA</u></p>	

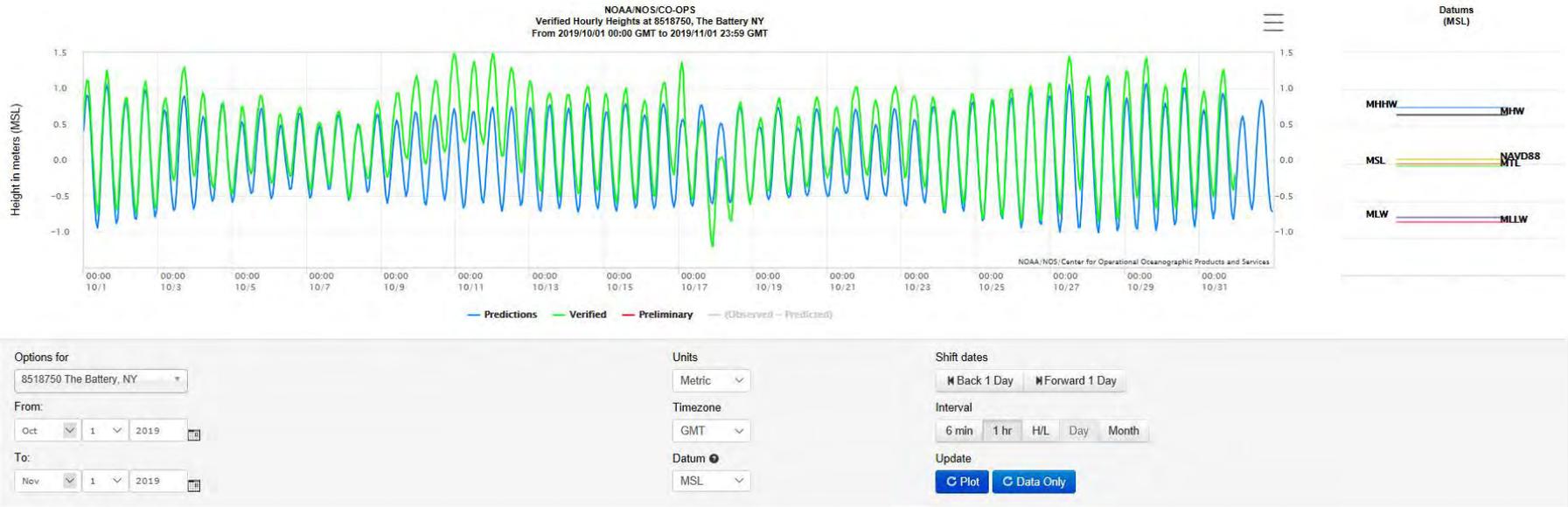
<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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 CXUS51 KOKX 010703  
 CF6EWR  
 PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: OCTOBER  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND						
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
12Z AVG MX 2MIN																		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	84	63	74	12	0	9	0.00	0.0	0	10.9	20	230	M	M	8		26	220
2	96	67	82	20	0	17	0.58	0.0	0	13.7	25	270	M	M	7	1	32	260
3	67	55	61	0	4	0	0.49	0.0	0	9.8	22	10	M	M	10	1	25	10
4	68	49	59	-2	6	0	T	0.0	0	14.1	32	320	M	M	5	1	40	320
5	60	43	52	-8	13	0	0.00	0.0	0	7.8	17	360	M	M	3		23	350
6	71	59	65	5	0	0	T	0.0	0	8.8	16	200	M	M	10		22	200
7	80	59	70	10	0	5	0.29	0.0	0	12.5	23	200	M	M	9	1	33	200
8	65	58	62	3	3	0	0.03	0.0	0	13.1	21	20	M	M	9	1	25	20
9	59	52	56	-3	9	0	0.26	0.0	0	15.4	23	360	M	M	10	1	29	40
10	73	53	63	4	2	0	T	0.0	0	17.4	26	30	M	M	7		33	350
11	65	54	60	2	5	0	T	0.0	0	16.3	26	20	M	M	7		37	40
12	70	55	63	5	2	0	0.00	0.0	0	7.3	14	10	M	M	7		24	270
13	67	52	60	2	5	0	0.00	0.0	0	6.0	12	30	M	M	6		16	300
14	75	58	67	10	0	2	0.00	0.0	0	7.6	20	270	M	M	5		25	270
15	66	51	59	2	6	0	0.00	0.0	0	5.6	14	360	M	M	3		18	360
16	66	50	58	2	7	0	2.13	0.0	0	11.9	38	290	M	M	8	1	49	270
17	60	51	56	0	9	0	0.00	0.0	0	22.5	38	260	M	M	8		52	280
18	61	47	54	-2	11	0	0.00	0.0	0	14.1	25	330	M	M	5		33	300
19	63	40	52	-4	13	0	0.00	0.0	0	4.9	13	230	M	M	4		17	270
20	58	44	51	-4	14	0	0.66	0.0	0	3.8	7	60	M	M	9	1	7	60
21	69	49	59	4	6	0	T	0.0	0	5.6	15	20	M	M	4		18	10
22	64	53	59	5	6	0	0.51	0.0	0	8.9	17	100	M	M	10	1	23	110
23	68	50	59	5	6	0	0.01	0.0	0	9.7	23	310	M	M	3	1	30	310
24	69	45	57	3	8	0	0.00	0.0	0	5.6	12	230	M	M	1		17	250
25	67	46	57	3	8	0	0.00	0.0	0	4.6	14	230	M	M	7		17	210
26	63	50	57	4	8	0	0.01	0.0	0	6.5	15	10	M	M	7		19	20
27	70	57	64	11	1	0	1.38	0.0	0	10.1	21	120	M	M	7	1	32	120
28	63	55	59	6	6	0	0.01	0.0	0	7.0	15	330	M	M	7	1	20	320
29	60	55	58	6	7	0	0.16	0.0	0	6.4	12	60	M	M	9	1	14	80
30	65	58	62	10	3	0	0.15	0.0	0	5.5	10	10	M	M	9	1	13	30
31	74	62	68	16	0	3	0.59	0.0	0	11.8	28	200	M	M	10	1	43	270
SM	2106	1640			168	36	7.26		0.0	305.2			M		214			
AV	67.9	52.9								9.8	FASTST		M	M	7		MAX(MPH)	
										MISC	---->	# 38	290				# 52	280

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20191001&edate=20191101&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>November 2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in): 0.71      Date: 11/24/2019 50-Year, 24-Hr event? NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.669      Date: 11/18/2019      Time: 18:00 Exceeds event trigger criteria? YES  Max Tide Gauge Reading (m): 1.317      Date: 11/18/2019      Time: 18:00 Exceeds event trigger criteria? NO  10-year storm surge event defined as a hurricane? NO	NO
<u>Wind Event Data:</u> Max Wind (mph): 36      Date: 11/28/2019 Exceeds trigger criteria? NO Wind direction over 6-hr period: WNW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY: <u>TEA</u></p>	

<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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CXUS51 KOKX 010703

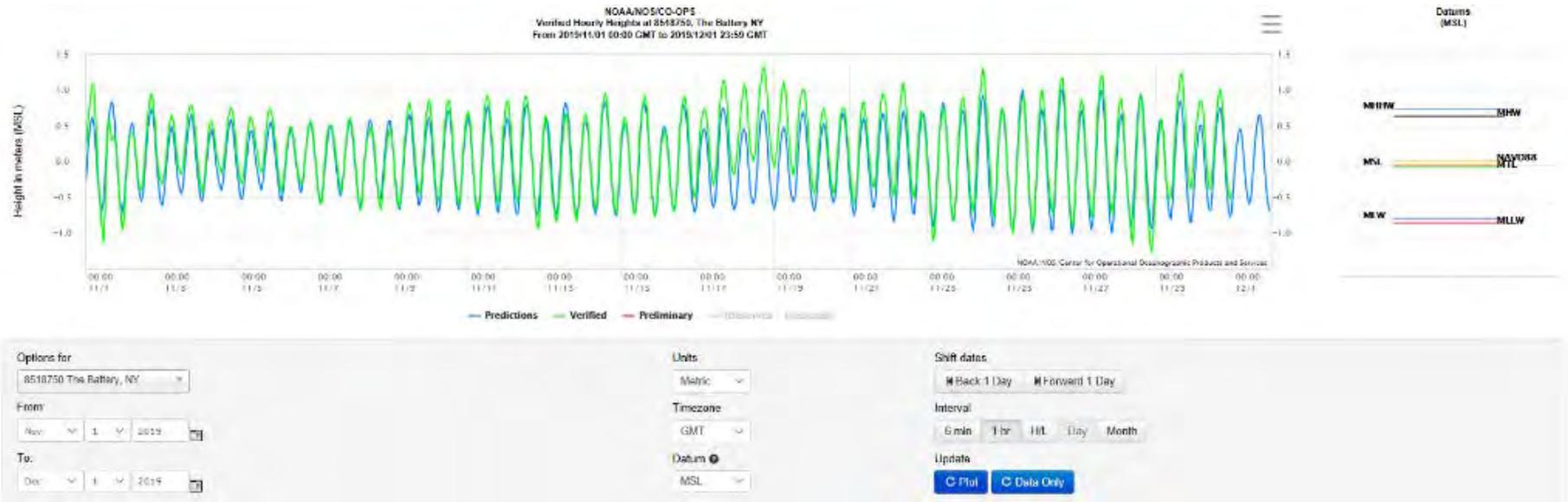
CF6EWR

PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: NOVEMBER  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND							
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
12Z AVG MX 2MIN																			
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
1	62	43	53	1	12	0	0.02	0.0	0	14.5	28	280	M	M	3	1	44	290	
2	53	36	45	-6	20	0	0.00	0.0	0	6.4	12	280	M	M	3		16	270	
3	55	36	46	-5	19	0	0.00	0.0	0	9.7	18	280	M	M	3		23	310	
4	57	35	46	-5	19	0	0.00	0.0	0	6.8	16	170	M	M	5		24	170	
5	61	45	53	3	12	0	T	0.0	0	5.5	14	230	M	M	8		18	230	
6	56	42	49	-1	16	0	0.00	0.0	0	7.9	17	270	M	M	2		21	280	
7	59	40	50	0	15	0	0.08	0.0	0	10.1	21	340	M	M	9	1	28	320	
8	41	29	35	-14	30	0	0.00	0.0	0	15.6	28	310	M	M	3		37	320	
9	41	25	33	-16	32	0	0.00	0.0	0	5.1	13	220	M	M	4		16	170	
10	53	33	43	-6	22	0	0.00	0.0	0	6.5	16	230	M	M	8		20	230	
11	61	42	52	4	13	0	0.00	0.0	0	3.2	7	170	M	M	8		10	170	
12	55	25	40	-8	25	0	0.03	T	0	14.0	28	320	M	M	7	1	35	310	
13	35	22	29	-19	36	0	0.00	0.0	0	12.5	24	330	M	M	3		31	310	
14	46	24	35	-12	30	0	0.00	0.0	0	6.7	17	190	M	M	8		21	200	
15	52	28	40	-7	25	0	0.00	0.0	0	8.5	20	330	M	M	6		27	330	
16	43	29	36	-11	29	0	0.00	0.0	0	14.7	24	20	M	M	3		32	20	
17	43	28	36	-10	29	0	0.00	0.0	0	16.3	22	30	M	M	8		28	30	
18	43	37	40	-6	25	0	0.35	0.0	0	10.7	20	30	M	M	10	1	23	30	
19	50	41	46	0	19	0	0.19	0.0	0	7.2	16	350	M	M	9	1	21	340	
20	51	40	46	1	19	0	0.00	0.0	0	13.5	21	330	M	M	8		29	300	
21	55	39	47	2	18	0	T	0.0	0	8.8	16	210	M	M	5		21	210	
22	53	38	46	1	19	0	0.07	0.0	0	13.5	28	290	M	M	8	1	37	310	
23	46	30	38	-6	27	0	0.03	0.0	0	5.7	16	320	M	M	6	1	21	340	
24	45	38	42	-2	23	0	0.71	0.0	0	13.6	25	310	M	M	8	1	37	300	
25	54	35	45	1	20	0	0.00	0.0	0	6.9	14	270	M	M	5		18	250	
26	62	36	49	6	16	0	0.00	0.0	0	5.0	15	230	M	M	6		18	240	
27	60	44	52	9	13	0	0.01	0.0	0	8.9	31	290	M	M	9	8	42	280	
28	53	37	45	3	20	0	T	0.0	0	20.1	36	280	M	M	6		50	320	
29	42	30	36	-6	29	0	0.00	0.0	0	13.3	23	320	M	M	6		28	320	
30	46	30	38	-4	27	0	0.00	0.0	0	8.8	16	360	M	M	7		20	330	
SM	1533	1037			659	0	1.49	T		300.0			M		184				
AV	51.1	34.6								10.0	FASTST		M	M	6		MAX(MPH)		
								MISC	----	#	36	280					#	50	320

<https://w2.weather.gov/climate/index.php?wfo=okx>



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20191101&edate=20191201&timezone=GMT&datum=MSL&interval=h&action=>

**SA-7 Sediment Remedy**

Long-Term Monitoring Program

Hydrologic Data Review

<u>Monitoring Period:</u> <b>December 2019</b>	<i>Assessment Required?</i>
<u>Rainfall Event Data:</u> Max Rainfall (in):      1.49      Date: 12/9/2019 50-Year, 24-Hr event?      NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m):      1.112      Date: 12/30/2019      Time: 22:00 Exceeds event trigger criteria?      YES  Max Tide Gauge Reading (m):      1.345      Date: 12/30/2019      Time: 16:00 Exceeds event trigger criteria?      NO  10-year storm surge event defined as a hurricane?      NO	NO
<u>Wind Event Data:</u> Max Wind (mph):      37      Date: 12/15/2019 Exceeds trigger criteria?      NO Wind direction over 6-hr period:      WSW      OK	NO
<p><b><u>CRITERIA FROM LTMP:</u></b></p> <p>“Post-High Energy Event Monitoring Activities” will take place promptly following High Energy Events. The Consent Order defines “High Energy Events” as follows:</p> <p>i. “A 50-year rainfall event defined by the National Weather Service as a 24-hour period of rainfall exceeding the maximum 50-year/24-hour accumulation (i.e., 7.2 inches of rainfall over a 24-hour period), as recorded at Newark Airport;</p> <ul style="list-style-type: none"> <li>• See <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p>ii. A 10-year storm surge event defined as a hurricane event (not a “nor’easter”) resulting in an increase in ocean level of either 0.64 meters above normal tidal cycling at the Battery Park tide gauge or 1.40 meters above mean sea level (MSL); or</p> <ul style="list-style-type: none"> <li>• Note: Hurricane events are defined by NOAA.</li> <li>• See <a href="http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750">http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750</a></li> </ul> <p>iii. A wind event achieving 34 to 40 knots (39.13 to 46.03 mph), coming from the south through the west, averaged over 6 hours, as recorded at Newark Airport.”</p> <ul style="list-style-type: none"> <li>• <a href="https://w2.weather.gov/climate/index.php?wfo=okx">https://w2.weather.gov/climate/index.php?wfo=okx</a></li> </ul> <p style="text-align: right;">CHECKED BY:      <u>TEA</u></p>	

<https://w2.weather.gov/climate/getclimate.php?wfo=okx>

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PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: NEWARK NJ  
 MONTH: DECEMBER  
 YEAR: 2019  
 LATITUDE: 40 42 N  
 LONGITUDE: 74 10 W

TEMPERATURE IN F:		:PCPN:		SNOW:		WIND		:SUNSHINE:		SKY		:PK WND							
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
12Z AVG MX 2MIN																			
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
1	37	28	33	-8	32	0	0.69	0.1	0	13.5	26	30	M	M	10	146	34	30	
2	37	32	35	-6	30	0	0.32	2.1	0	15.5	24	350	M	M	10	14	32	350	
3	38	31	35	-6	30	0	0.01	0.3	1	13.1	29	300	M	M	6	1	39	320	
4	39	30	35	-5	30	0	T	T	0	9.5	15	240	M	M	10	18	22	280	
5	44	35	40	0	25	0	T	0.0	0	15.6	30	310	M	M	7		45	320	
6	50	32	41	1	24	0	T	0.0	0	11.9	28	320	M	M	8		35	330	
7	40	27	34	-5	31	0	0.00	0.0	0	12.0	23	320	M	M	3		29	310	
8	42	23	33	-6	32	0	0.00	0.0	0	4.8	13	210	M	M	6		17	180	
9	55	39	47	9	18	0	1.49	0.0	0	7.9	23	220	M	M	10	1	31	210	
10	58	40	49	11	16	0	0.10	0.0	0	12.6	26	270	M	M	10	1	35	280	
11	40	31	36	-2	29	0	0.16	0.7	T	10.2	21	270	M	M	6	1	27	260	
12	36	26	31	-7	34	0	0.00	0.0	0	6.8	17	10	M	M	5		23	290	
13	49	30	40	3	25	0	0.77	0.0	0	8.1	16	20	M	M	9	18	18	20	
14	57	44	51	14	14	0	0.72	0.0	0	12.5	32	260	M	M	10	1	39	250	
15	49	37	43	6	22	0	0.00	0.0	0	17.7	37	260	M	M	7		47	250	
16	37	33	35	-1	30	0	0.15	T	0	5.1	16	290	M	M	9	146	22	290	
17	36	33	35	-1	30	0	1.03	T	0	10.9	20	50	M	M	10	146	23	310	
18	37	20	29	-7	36	0	0.08	1.0	0	15.2	35	300	M	M	4	1	45	300	
19	27	16	22	-13	43	0	0.00	0.0	1	14.9	32	290	M	M	3		44	290	
20	34	21	28	-7	37	0	0.00	0.0	T	9.2	16	310	M	M	3		24	330	
21	35	19	27	-8	38	0	0.00	0.0	0	5.2	13	10	M	M	7		15	360	
22	48	22	35	0	30	0	0.00	0.0	0	7.9	16	250	M	M	2		22	260	
23	57	31	44	10	21	0	0.00	0.0	0	8.8	18	230	M	M	4	8	23	230	
24	50	31	41	7	24	0	0.00	0.0	0	10.7	20	20	M	M	4		24	20	
25	48	27	38	4	27	0	0.00	0.0	0	3.8	10	240	M	M	6		14	210	
26	47	31	39	5	26	0	0.00	0.0	0	7.2	13	30	M	M	8	18	16	10	
27	54	45	50	17	15	0	0.00	0.0	0	8.0	18	230	M	M	9		23	230	
28	53	38	46	13	19	0	0.00	0.0	0	6.8	16	310	M	M	7	1	22	310	
29	45	35	40	7	25	0	0.32	0.0	0	4.8	9	30	M	M	8	1	12	60	
30	43	37	40	7	25	0	0.65	0.0	0	14.0	25	40	M	M	10	1	35	50	
31	46	38	42	9	23	0	T	0.0	0	10.1	15	280	M	M	9	1	23	250	
SM	1368	962			841	0	6.49		4.2	314.3			M		220				
AV	44.1	31.0								10.1	FASTST		M	M	7	MAX(MPH)			
										MISC	---->	# 37	260			# 47	250		

<https://w2.weather.gov/climate/index.php?wfo=okx>

