

MEMORANDUM

Date: **July 1, 2024**

To: **George Pfeiffer, Honeywell**
Eric Christodoulatos, Honeywell

From: **Jose Sananes, P.E., Ramboll**

Subject: **SA-7 Sediment Remedy Long-Term Monitoring**
Summary of Year 10 Monitoring & Proposed Year 11
Program

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.

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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 Americas Engineering Solutions, Inc. (Ramboll) during Year 10 of the LTMP and the monitoring activities proposed for Year 11.

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 areas¹ (note that no high energy events were identified during the first five years of post-construction monitoring or in Years 6, 7, 9, and 10).²

¹ High Energy Events are defined by the Consent Order as summarized on Tables 1 and 2

² A high energy event occurred on September 1, 2021 (Year 8) caused by the remnants of hurricane Ida.

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 10 ACTIVITIES

As described in the Year 5 Report, construction of Cap Areas 16 and 22 in Droyers Cove was completed in 2018 in coordination with the beneficial environmental project (BEP) implementation. 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 Years 6 through 10.³

The specific scope of inspections and monitoring conducted in Year 10 were as follows:

- Ramboll completed three visual inspections of the Droyers Cove BEP area to document the continued 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 three times in Year 10.⁴ The inspections were performed at low tide on May 17, August 30, and November 13, 2023. The results of these inspections were documented in summary logs (see **Attachment A**). Inspection of the Cap Area 16⁵ long-term monitoring plate location determined that the long-term monitoring plate was not visible, confirming that the plate has remained buried and no observable loss of cap material has occurred. In fact, some deposition of sediment (up to 2.4 inches) was observed over Cap Area 16.
- As required by the LTMP, Ramboll monitored hydraulic and hydrodynamic data 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

³ The Year 6, 7, 8 and 9 inspections and monitoring activities were documented in memoranda dated January 30, 2020, February 26, 2021, May 10, 2022, and February 20, 2023, respectively.

⁴ Cap Area 22 was not fully exposed at the time of inspection on May 17, August 30 and November 13, 2023 (i.e., low tide was not low enough to fully expose the cap surface).

⁵ The location of the long-term monitoring plate for Cap Area 22 was submerged at the time of inspections and, thus, could not be inspected.

of 2023 are attached (**Attachment B**). These monitoring data indicate that no high energy events meeting the defined criteria have occurred during these monitoring periods.

- A baseline high-resolution multibeam bathymetric survey was conducted in Year 1 in September 2014 (refer to Drawing 1 in **Attachment C**)⁶. The Year 10 survey was conducted by Aqua Survey, Inc. (ASI) on November 16, 2023. The survey was completed over the 70-acre remedy area using a survey boat, R2 Sonic 2022 multibeam sonar, SMG Navsight Apogee INS system, Hemisphere VS 330 GNSS RTK satellite compass, YSI Castaway CTD, and AML surface sound velocity sensor. For intertidal areas, where the bathymetric survey could not be performed due to insufficient draft, an unmanned aerial vehicle (UAV) was used to collect LiDAR data across the shoreline during low tide to complement the bathymetric survey. The bathymetry for the remedy area is provided on Drawing 2 in **Attachment C**. The results of the Year 10 survey were compared with the results of the baseline bathymetric survey completed in Year 1 to identify any evidence of erosion of cap materials or native sediments in the MNR areas. In accordance with the 100% Design Report and the Implementation Plan, a loss-fill analysis was performed to estimate the differences between the bed elevations established by the two surveys over ¼-acre subareas. As shown in Drawing 3 in **Attachment C**, separate grids of ¼-acre subareas were used to assess the sediment cap areas and the MNR areas independently.
 - Of the 175 sediment cap subareas, only three subareas (i.e., subareas 16-1, 22-1, and 22-2) showed a net decrease in the bed elevation (i.e., net loss). In subarea 16-1, a net loss of 0.19 inches was observed, which is less than the 4-inch threshold established in the 100% Design and, thus, does not require action at this time. In subareas 22-1 and 22-2 (which encompass the entirety of Cap Area 22), net losses of 6.95 and 7.42 inches, respectively, were observed relative to the as-built surface of February 2019, which exceed the 4-inch sediment loss threshold established in the 100% Design for classifying an area as an “Erosional Area”. However, when comparing the 2023 bathymetric survey to the post-high energy event bathymetry of October 2021 (where similar losses were documented)⁷, net losses of only 0.5 and 2.37 inches were observed since 2021. As discussed in Ramboll’s February 2022 Report, continuous video inspection of Cap Area 22 with the Deep Trekker DTG3 Expert ROV indicated that:
 - a) *“in sediment cap subareas 22-1 and 22-2, where the bathymetric survey showed a net decrease in the bed elevation, the UAV video inspection did not observe the long-term monitoring plate and actually documented an accumulation of silty sediment throughout the cap area”;*
 - b) *“in the transects and areal surveys in Cap Areas 22 and 24, sediment accumulation (rather than observable loss of cap material) was observed;”* and
 - c) *“evidence of biological activity and submerged aquatic vegetation was observed”.*

⁶ For Cap Areas 16 and 22, the as-built survey completed in the November 2019 Droyers Cove Beneficial Environmental Project Construction Completion Report (Ramboll 2019) was used as the baseline survey.

⁷ Long Term Monitoring Program Post-High Energy Event Report prepared by Ramboll and dated February 2022.

Therefore, based on the similarities between the current and 2021 bathymetric surveys and inspections subsequent to the high energy event of 2021⁸, the observed sediment losses do not require action at this time in the sediment cap subareas.

- Of the 141 MNR subareas, only one subarea (subarea 72 MNR) showed net loss in the bed elevation. In this MNR subarea, a net loss of 0.36 inches was observed, which is less than the 4-inch threshold established in the 100% Design and, thus, does not require action at this time.

Consistent with Years 6, 7, 8, and 9, only hydraulic and hydrodynamic monitoring and visual inspections were considered necessary to evaluate the integrity of Cap Areas 16 and 22 in Year 10 given the following factors:

1. The results of nine 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 survey of the entire SA-7 sediment remedy area will be conducted in 2028, (i.e., 15 years after completion of the sediment remedy in 2013). If a second high-energy event does not occur before 2038 (i.e., 25 years after completion of the sediment remedy), bathymetric surveys will also be conducted in 2033 and 2038, (i.e., 20 and 25 years after completion of the sediment remedy). These surveys will include Cap Areas 16 and 22.

PROPOSED ACTIVITIES FOR YEAR 11

Repairs and enhancements to limited portions of the BEP area to address erosional and vegetation damage caused by the remnants of hurricane Ida will be completed in 2024. The repairs will consist of (a) placing geocells to reinforce the easternmost area of the BEP where surface flow from Kellogg Street currently discharges, (b) placing sandy fill material and planting additional plugs in select low marsh and high marsh areas and potentially fowl exclusion measures, and (c) installing a 1-foot-high stone sill at the edge of the planting zone in the easternmost enhancement area of the BEP. Permit applications were submitted to the New Jersey Department of Environmental Protection (NJDEP) Division of Land Resource Protection (DLRP) and the US Army Corps of Engineers (USACE) on February 1, 2024. On June 12, 2024, NJDEP DLRP authorized the proposed enhancements under a Coastal Zone Management General Permit 24. Similarly, on June 20, 2024, USACE approved the proposed work under a Nationwide General Permit 54.

Consistent with the requirements of the LTMP, in Year 11 (2024), 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

⁸ The Post-high Energy Event monitoring demonstrated that the capped and MNR areas remained stable relative to constructed conditions and no further actions were warranted.

occurs in Year 11, Ramboll will implement LTMP field activities (bathymetric survey, ROV cap integrity monitoring, and SPI survey) over the entire sediment remedy area.

In addition, consistent with activities in Years 6 through 10, Ramboll will conduct a minimum of three visual inspections of the BEP Area in Year 11 (around May⁹, July, and October 2024) 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 11 inspection and monitoring activities.

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

⁹ Spring inspection took place on May 6, 2024.

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	
Hydraulic and Hydrodynamic Evaluation								
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 Final Groundwater Investigation Report, Honeywell Study Area 7 Site; 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	
Hydraulic and Hydrodynamic Evaluation								
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 10 INSPECTION LOGS**

ATTACHMENT A.1
MAY 17, 2023 INSPECTION LOG

SITE INSPECTION LOG

PROJECT NAME:	SA-7 Long-Term Monitoring Year 10	INSPECTION DATE:	May 17, 2023
		WEATHER	SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/>
PROJECT NUMBER:	1690025609	CONDITIONS:	PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/>
PROJECT LOCATION:	SA-7 Droyers Cove BEP	TEMPERATURE (°F):	60°F (High 65°F)
	City of Jersey City, Hudson County, NJ	PREVAILING WIND:	18 - 21 mph (NW)
INSPECTOR NAME:	Owen Zalme/Kori Golding	INSPECTOR	
INSPECTOR TITLE:	Managing Consultant/Consultant 2	SIGNATURE(S):	

The inspection was conducted on May 17, 2023 around the predicted low tide at 13:47, when Cap Area 16 and the entire BEP area (including the shoreline stabilization berm) were exposed. Cap Area 22 was partially exposed at the time of the inspection. **Figure 1** presents the location of the as-built BEP and cap areas described in the tables that follow. The observations described in the following tables are compared to those made in the Spring inspection of May 2022, unless otherwise noted.

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
16	<ul style="list-style-type: none"> Long-term monitoring plate was not observed (i.e., plate remains buried). Depth to sediment surface measurements taken at 4 of the 12 reference posts installed on May 25, 2022 indicate no gain or loss of sediment throughout the cap area (with losses of 0.2 inches in some areas and gains of up to 0.5 inch in others) since the May 2022 baseline measurements¹. 	1 to 3	<ul style="list-style-type: none"> None
22	<ul style="list-style-type: none"> Cap Area was not exposed at low tide. The long-term monitoring plate was not accessible. Sub-aquatic vegetation was visible across portions of the cap area. 	4 to 5	<ul style="list-style-type: none"> None

¹ Monitoring stake #4 was reset during this inspection. Observations around monitoring stake #4 during the May 2023 inspection did not suggest any significant deposition or loss of material.

SITE INSPECTION LOG (CONTINUED)

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"> Shoreline stabilization appeared to be in good condition. Several areas of exposed geofabric were observed between the BEP fill material and the shoreline stabilization berm west of Outfall A. 	6 to 7	<ul style="list-style-type: none"> Cut exposed geofabric or cover it with stone.
OUTFALL RIPRAP APRONS	<ul style="list-style-type: none"> Outfall A: Appeared in good condition. Siltation within the rip rap apron ranged from approximately 1 to 3 inches, especially in the vicinity of the outfall. Outfalls B and C: Appeared in good condition. Consistent with prior observations, approximately 1 to 3 inches of siltation was observed throughout the rip rap apron, especially in the vicinity of both outfalls. Outfall D: Appeared in good condition. The previously observed minor flow channel at the discharge of Outfall D was partially filled with displaced stone. Other than at Outfall D, drift deposits were observed in front of the outfalls; however, water was actively flowing at the time of the inspection. 	8 to 12	<ul style="list-style-type: none"> Monitor drift deposits and debris at the Outfalls; if persistent, arrange for removal.
PLANTING ZONE A – LOW MARSH	<ul style="list-style-type: none"> The overall total vegetative coverage in the upper portion of the low marsh area was 70-80% (consistent with the May 2022 inspection). Similarly, total vegetative coverage observed within the low marsh zone remained at less than 5% coverage. Vegetation appeared to still be emerging from the dormant season and vegetative cover is expected to increase as the growing season progresses. <ul style="list-style-type: none"> Significant new growth was observed on the established specimens present within the low marsh planting zone. Vegetation appeared healthy and vibrant in the highest elevation of the low marsh zone. Lower elevation areas appeared as mudflats with limited to no vegetation. Limited new growth was observed along the southern boundary of vegetation located in the upper portion of the low marsh. Vegetation remains tall, healthy, and vibrant. On the eastern side of the BEP near Outfall D, some of the low marsh plants remain partially uprooted. Consistent with the last inspection (November 2022), a gap in low marsh plantings was observed on the easternmost side of the BEP. Consistent with prior 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. The GroSoxx in this area are mostly covered by silt with only a small section of the geogrid exposed. No invasive species were observed at the time of inspection. The presence of algae resembling sea lettuce (<i>Ulva intestinalis</i>) was observed throughout the low marsh planting zone. While the extent of algae observed has increased since the November 2022 inspection, its coverage is similar to that observed during the May 2022 inspection. Depth to sediment surface measurements taken at 7 of the 12 reference posts installed on May 25, 2022 within the low marsh zone indicate an average increase of 0.3 inches (with losses of up to 0.2 inches in some areas and gains of up to 0.8 inches in others) since the May 2022 baseline measurements. 	13 to 19	<ul style="list-style-type: none"> Continue monitoring erosional/depositional rates using reference posts during inspections. Monitor area where planted plugs were uprooted or lost, primarily in the eroded area on the eastern side of the BEP, for signs of recovery. Consider planting additional plugs in the low marsh areas where establishment remains low. In low elevation areas, consider clumping, or using larger plugs for increased stability and to improve resistance to tidal energy.

SITE INSPECTION LOG (CONTINUED)

<p>PLANTING ZONE B – HIGH MARSH</p>	<ul style="list-style-type: none"> • Between Outfalls A and B, primarily in the area of GroSoxxs, total vegetative coverage ranged from 10 to 20% (slightly lower than the 20 to 30% vegetative cover observed during the May 2022 inspection). Elsewhere, total vegetative cover ranged from 50 to 60% (consistent with May 2022 inspection). Vegetation appeared vibrant and healthy. At the time of the inspection, vegetation appeared to still be emerging from the dormant season; therefore, vegetative cover is expected to increase as the growing season progresses. <ul style="list-style-type: none"> ○ Consistent with observations since October 2019, an odor typically associated with an anoxic environment (e.g., bog, wetland, swamp, etc.) was noted when stepping on the GroSoxx on the central portion of the BEP area, east of Outfall A. Limited vegetative growth was observed at this location. ○ Consistent with the prior inspections, vegetative growth observed throughout the areas of GroSoxx located at the interface of the uplands transition area and high marsh zone, particularly near the outfalls ranged from 75 to 85% total cover. Limited signs of new colonization were observed. ○ As stated in the previous inspection reports, some of the planted plugs on the eastern most side of the BEP area remain partially uprooted and/or have exposed roots. ○ Very few high marsh plantings were observed between Outfalls A and B. However, vegetative cover remains high due to colonization from low marsh plantings. • Observations regarding the condition of the GroSoxx, geogrid, and anchors were consistent with those made since October 2019: <ul style="list-style-type: none"> ○ Empty GroSoxx sleeves were observed outside of the geogrid. ○ There were several areas where ripping/holes or loose geogrid were observed. ○ Several anchors (both the Gripple Rock and Terra-Lock™ Earth anchors) were exposed at the time of inspection (possibly due to the deflation of the underlying GroSoxx). ○ Significant shifting of GroSoxx underneath the geogrid occurred, and the third row of GroSoxx (from the bottom) appeared to be mostly missing. ○ Significant siltation was observed over the GroSoxx located on the western side of Outfall A, with many of the GroSoxx completely buried up to the drift line. ○ Significant displacement and lifting of geogrid within the vicinity of Outfalls B and C. Geogrid observed to be hanging over the ledge of the Outfall B structure, as shown in Photo 22. • Observations regarding the condition of the RockSoxx installed along the interface of the upland transition area and high marsh zone in the central portion of the BEP area (between Outfalls A and B, and just north of Outfall C) were consistent with those made during prior inspections: <ul style="list-style-type: none"> ○ Some of the RockSoxx showed signs of wear and tear, with holes on the surface that could potentially result in loss of the material within. ○ Large cuts/openings were observed in several RockSoxx in the central portion of the BEP area, primarily between Outfalls A and B. • No invasive species were observed at the time of inspection. • Large amounts of debris (e.g., vegetative waste, plastic, trash, consumables) was observed along the drift deposit line (i.e., the transition zone between high marsh and uplands) below the bottom row of GroSoxx, especially on the eastern side of the BEP. • Depth to sediment surface measurements taken at 5 of the 12 reference posts installed on May 25, 2022 within the high marsh zone indicate that an average loss of 0.2 inches of sediment (with losses of up to 0.7 inches and gains of up to 0.1 inches in others) since the May 2022 baseline. 	<p>20 to 24</p>	<ul style="list-style-type: none"> • Continue monitoring erosional/depositional rates using reference posts during inspections. • Monitor area where plugs were uprooted or lost, primarily in the eroded area on the eastern side of the BEP, for signs of recovery. • Repair or replace the damaged RockSoxx. • Consider planting plugs in the areas with exposed geogrid, where soil has filled in over previously installed GroSoxx to increase rate of colonization. • Consider implementing options to repair the high marsh zone (generally within the drift line) where vegetation is not successfully establishing and the GroSoxx appear to be saturated and in some cases “emptying out”.
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SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
PLANTING ZONE C – UPLANDS TRANSITION AREA	<ul style="list-style-type: none"> • Total vegetative cover within the upland portion of the BEP was 70 to 80% (slightly lower than the 80-95% vegetative cover observed during May 2022 inspection). <ul style="list-style-type: none"> ○ Observations from the May 2023 inspection indicate that the 5 to 7-ft wide strip, which was previously mowed to a height of approximately 1 to 3 inches is reestablishing and should continue to improve as the season progresses. ○ GroSoxx, geogrid, and anchors, and the ¾-inch stone strip along the fence line appeared to be in good condition. • Invasive species cover throughout the upland zone ranges from 50 to 60%, which is consistent with last spring's inspection. The highest density of invasive species was observed in the central and western areas of the BEP. The dominant species included common mugwort (<i>Artemisia vulgaris</i>), hairy vetch (<i>Vicia villosa</i>), and curly dock (<i>Rumex crispus</i>). Japanese siltgrass (<i>Microstegium vimineum</i>), observed in prior inspections, has experienced significant die back. Consistent with previous inspections, a small amount of common reed (<i>Phragmites australis</i>) was observed on the eastern side of the BEP. The shoots of common reed previously observed on the western side of the BEP and east of Outfall C in the GroSoxx, which were impacted by the previously reported mowing activities, do not appear to have reestablished. Additional observed invasive species included White mulberry (<i>Morus alba</i>). • With the increase in invasive species cover, native species no longer make up the predominant vegetative cover within the uplands area. The following notable native species were observed: <ul style="list-style-type: none"> ○ Switchgrass (<i>Panicum virgatum</i>) ○ Black locust (<i>Robinia pseudoacacia</i>) 	25 to 28	<ul style="list-style-type: none"> • Continue to monitor non-native plant density, particularly common reed within the recently mowed area.

SITE INSPECTION LOG (CONTINUED)



Photo 1: Northern end of Cap Area 16 (facing west). Note vibrant and healthy vegetation present in high marsh planting and upland zones.



Photo 2: Central portion of Cap Area 16 (facing west). Note algae resembling sea lettuce (*Ulva intestinalis*) throughout the low marsh planting zone and reference posts used to assess sediment surface changes.

SITE INSPECTION LOG (CONTINUED)



Photo 3: Western end of Cap Area 16 (facing east). Note the vibrant and healthy vegetation in the low and high marsh planting zones.



Photo 4: Siltation and aquatic plants observed within Cap Area 22.

SITE INSPECTION LOG (CONTINUED)



Photo 5: Partially exposed edge of Cap Area 22 during low tide (facing west).



Photo 6: Central portion of the BEP, between Outfalls A and B (facing east). Note algae throughout the low marsh planting zone.

SITE INSPECTION LOG (CONTINUED)



Photo 7: Exposed geotextile fabric between the shoreline stabilization berm and the BEP fill material west of Outfall A.



Photo 8: Outfall A and surrounding armor stone (facing southwest). Note drift deposits in front of the outlet.

SITE INSPECTION LOG (CONTINUED)



Photo 9: Outfall B and surrounding armor stone (facing south). Note drift deposits in front of the outlet.



Photo 10: Outfall C and surrounding armor stone (facing southeast).

SITE INSPECTION LOG (CONTINUED)



Photo 11: Outfall D discharge area where previously observed minor flow channel is overlain by displaced stone (facing east).



Photo 12: Area beyond the shoreline stabilization berm near Outfall D with Cap Area 22 in the background (facing north).

SITE INSPECTION LOG (CONTINUED)



Photo 13: Low marsh zone in the eastern corner of the BEP near Outfall D (facing southeast). Note algae throughout the low marsh planting zone.



Photo 14: Transition from upland to low marsh zone in the easternmost corner of the BEP area (facing west).

SITE INSPECTION LOG (CONTINUED)

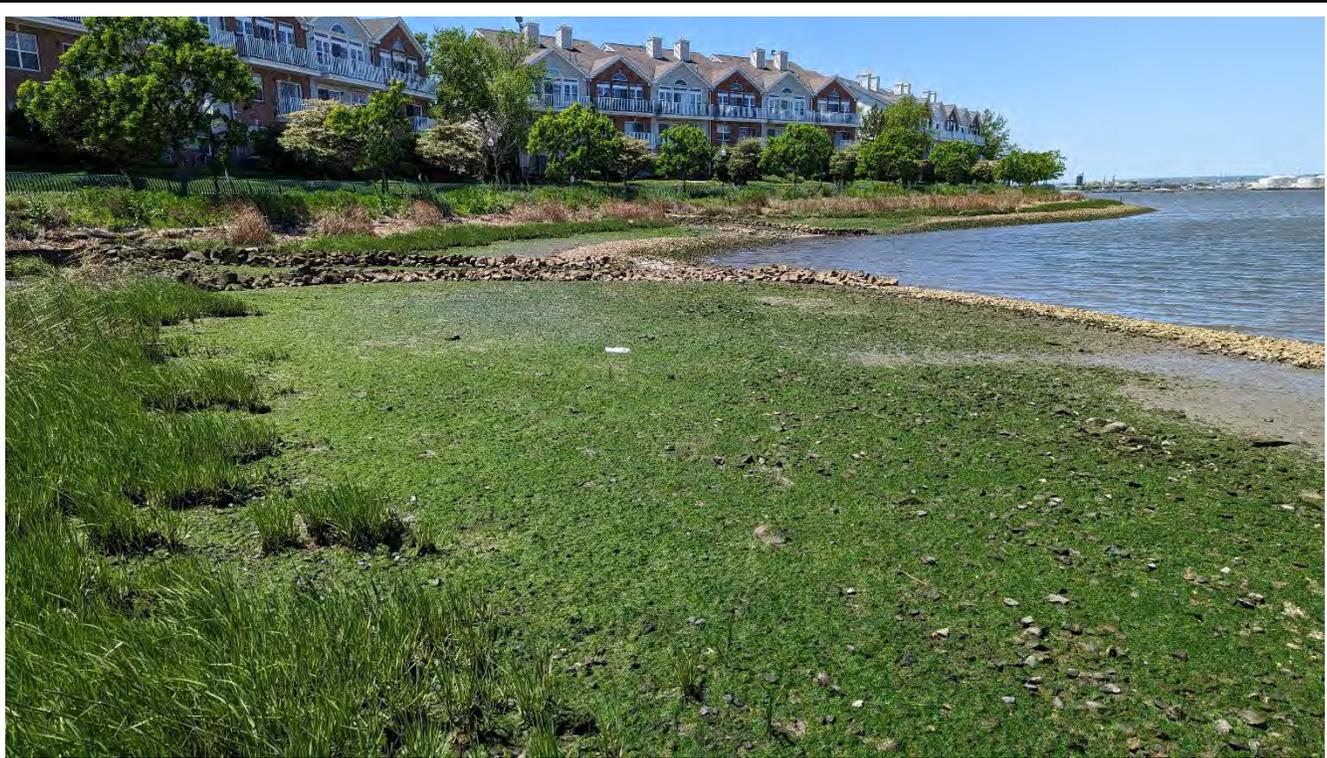


Photo 15: Low marsh planting zone on the eastern side of the BEP (facing west). Note algae throughout the low marsh planting zone.



Photo 16: Transition area between low marsh planting zone and high marsh planting zone within the eastern side of the BEP (facing southeast). Note the low marsh vegetation appears vibrant and healthy.

SITE INSPECTION LOG (CONTINUED)



Photo 17: Low marsh planting zone within eastern portion of the BEP (facing northeast). Note the algae throughout the low marsh area.



Photo 18: Low marsh planting zone between Outfalls A and B (facing west). Note the vibrant and healthy vegetation in the higher elevations of the low marsh area and algae in the lower elevations.

SITE INSPECTION LOG (CONTINUED)



Photo 19: Vibrant and healthy vegetation in the higher elevations of the low marsh zone and high marsh zones, and algae in the lower elevations of the low marsh zone in the eastern BEP area (facing southeast).



Photo 20: Vibrant and healthy vegetation in the high marsh zone in the area west of Outfall A (facing north). Note partially exposed geogrid in the low marsh planting area.

SITE INSPECTION LOG (CONTINUED)



Photo 21: Vibrant and healthy low and high marsh zones west of Outfall A (facing southwest). Note the exposed geogrid and absence of GroSoxx at the bottom of the high marsh zone and algae on the low marsh zone.



Photo 22: Exposed geogrid over and around the Outfall C structure and within the high marsh planting zone (facing south).

SITE INSPECTION LOG (CONTINUED)



Photo 23: Healthy low and high marsh vegetation west of Outfall A (facing southeast). Note the heavy presence of tidal drift deposits and debris within the high marsh areas.



Photo 24: Healthy vegetation in the upland transition area and interface between the low and high marsh between Outfalls A and B (facing east). Note the heavy amount of tidal drift deposits and debris within the high marsh areas.

SITE INSPECTION LOG (CONTINUED)



Photo 25: Area of exposed GroSoxx and geogrid located within the upper edge of the upland transitional area east of Outfall A (facing southeast).



Photo 26: Previously mowed section of the upland planting area in the western portion of the BEP (facing west).

SITE INSPECTION LOG (CONTINUED)



Photo 27: Damaged RockSox in upland transition area east of Outfall A.



Photo 28: Previously mowed section of the upland planting area in the western portion of the BEP between Outfalls A and B (facing east).

**ATTACHMENT A.2
AUGUST 30, 2023 INSPECTION LOG**

SITE INSPECTION LOG

PROJECT NAME:	<u>SA-7 Long-Term Monitoring Year 10</u>	INSPECTION DATE:	<u>August 30, 2023</u>
		WEATHER	SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/>
PROJECT NUMBER:	<u>1690025609_Conv</u>	CONDITIONS:	PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/>
PROJECT LOCATION:	<u>SA-7 Droyers Cove BEP</u>	TEMPERATURE (°F):	<u>77°F (High 87°F)</u>
	<u>City of Jersey City, Hudson County, NJ</u>	PREVAILING WIND:	<u>9 - 13 mph (WNW)</u>
INSPECTOR NAME:	<u>Bart Bancewicz/Miles Trumbull</u>	INSPECTOR	
INSPECTOR TITLE:	<u>Consultant 3/Staff Scientist</u>	SIGNATURE(s):	

The inspection was conducted on August 30, 2023 around the predicted low tide at 14:51, when Cap Area 16 and the entire BEP area (including the shoreline stabilization berm) were exposed. Cap Area 22 was partially exposed at the time of the inspection. **Figure 1** presents the location of the as-built BEP and cap areas described in the tables that follow. The observations described in the following tables are compared to those made in the Summer inspection of July 2022, unless otherwise noted.

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
16	<ul style="list-style-type: none"> Long-term monitoring plate was not observed (i.e., plate remains buried). Depth to sediment surface measurements taken at 4 of the 12 reference posts installed on May 25, 2022 indicate an average gain of 1.1 inches of sediment throughout the cap area (with gains ranging from 0.6 to 1.4 inches) since the May 2022 baseline measurements¹. 	1 to 3	<ul style="list-style-type: none"> None
22	<ul style="list-style-type: none"> Cap Area was partially exposed at low tide. The long-term monitoring plate was not accessible. Water in the Hackensack River was more turbid than during the May 2022 inspection so sub-aquatic vegetation was not visible. 	4 to 5	<ul style="list-style-type: none"> None

¹ Monitoring stake #4 was reset during the May 2023 inspection.

SITE INSPECTION LOG (CONTINUED)

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"> • Shoreline stabilization appeared to be in good condition. • Several areas of exposed geofabric were observed between the BEP fill material and the shoreline stabilization berm west of Outfall A. 	6 to 7	<ul style="list-style-type: none"> • Cut exposed geofabric or cover it with stone.
OUTFALL RIPRAP APRONS	<ul style="list-style-type: none"> • Outfall A: Appeared in good condition. Siltation within the rip rap apron ranged from approximately 1 to 3 inches, especially in the vicinity of the outfall. • Outfalls B and C: Appeared in good condition. Consistent with prior observations, approximately 1 to 3 inches of siltation was observed throughout the rip rap apron, especially in the vicinity of both outfalls. • Outfall D: Appeared in good condition. The previously observed minor flow channel at the discharge of Outfall D continues to be partially filled with displaced stone. 	8 to 12	<ul style="list-style-type: none"> • None.
PLANTING ZONE A – LOW MARSH	<ul style="list-style-type: none"> • The overall total vegetative coverage in the upper portion of the low marsh area was greater than 95% (consistent with the July 2022 inspection). Similarly, total vegetative coverage observed within the low marsh zone remained at less than 5% coverage. <ul style="list-style-type: none"> ○ Significant new growth was observed on the established specimens present within the low marsh planting zone. Vegetation appeared healthy and vibrant in the highest elevation of the low marsh zone. Lower elevation areas appeared as mudflats with limited to no vegetation. ○ Significant new growth was observed along the southern boundary of vegetation located in the upper portion of the low marsh. Vegetation remains tall, healthy, and vibrant. ○ Unlike the November 2022 and May 2023 inspections, when some of the low marsh plantings appeared partially uprooted in the eastern side of the BEP near Outfall D, no uprooted plants were observed in the low marsh plantings of the BEP. ○ Consistent with prior 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. The GroSoxx in this area are mostly covered by silt with only a small section of the geogrid exposed. ○ No invasive species were observed at the time of inspection. ○ Unlike the November 2022 and May 2023 inspections, algae resembling sea lettuce (<i>Ulva intestinalis</i>) was not observed during this inspection in the low marsh planting zone. • Depth to sediment surface measurements taken at 7 of the 12 reference posts installed on May 25, 2022 within the low marsh zone indicate an average increase of 1.5 inches (with gains ranging from 0.8 to 2.4 inches) since the May 2022 baseline measurements. 	13 to 19	<ul style="list-style-type: none"> • Continue monitoring erosional/depositional rates using reference posts during inspections. • Consider planting additional plugs in the low marsh areas where establishment remains low. In low elevation areas, consider clumping, or using larger plugs for increased stability and to improve resistance to tidal energy.

SITE INSPECTION LOG (CONTINUED)

<p style="text-align: center;">PLANTING ZONE B – HIGH MARSH</p>	<ul style="list-style-type: none"> • Between Outfalls A and B, primarily in the area of GroSoxxs, total vegetative coverage ranged from 50 to 60% (an increase from the 20 to 30% vegetative cover observed during the July 2022 inspection). Elsewhere, total vegetative cover ranged from 75 to 85% (consistent with the July 2022 inspection). Vegetation appeared vibrant and healthy. <ul style="list-style-type: none"> o Consistent with observations since October 2019, an odor typically associated with an anoxic environment (e.g., bog, wetland, swamp, etc.) was noted when stepping on the GroSoxx on the central portion of the BEP area, east of Outfall A. Limited vegetative growth was observed at this location. o Consistent with the prior inspections, vegetative growth observed throughout the areas of GroSoxx located at the interface of the uplands transition area and high marsh zone, particularly near the outfalls ranged from 75 to 85% total cover. Limited signs of new colonization were observed. o As stated in the previous inspection reports, some of the planted plugs on the eastern most side of the BEP area remain partially uprooted and/or have exposed roots. o Very few high marsh plantings were observed between Outfalls A and B. However, vegetative cover remains high due to colonization from low marsh plantings. • Observations regarding the condition of the GroSoxx, geogrid, and anchors were consistent with those made since October 2019: <ul style="list-style-type: none"> o Empty GroSoxx sleeves were observed outside of the geogrid. o There were several areas where ripping/holes or loose geogrid were observed. o Several anchors (both the Gripple Rock and Terra-Lock™ Earth anchors) were exposed at the time of inspection (possibly due to the deflation of the underlying GroSoxx). o Significant shifting of GroSoxx underneath the geogrid occurred, and the third row of GroSoxx (from the bottom) appeared to be mostly missing. o Significant siltation was observed over the GroSoxx located on the western side of Outfall A, with many of the GroSoxx completely buried up to the drift line. o Significant displacement and lifting of geogrid within the vicinity of Outfalls B and C. Geogrid observed to be hanging over the ledge of the Outfall B structure, as shown in Photo 21. • Observations regarding the condition of the RockSoxx installed along the interface of the upland transition area and high marsh zone in the central portion of the BEP area (between Outfalls A and B, and just north of Outfall C) were consistent with those made during prior inspections: <ul style="list-style-type: none"> o Some of the RockSoxx showed signs of wear and tear, with holes on the surface that could potentially result in loss of the material within. o Large cuts/openings were observed in several RockSoxx in the central portion of the BEP area, primarily between Outfalls A and B. • No invasive species were observed at the time of inspection. • Large amounts of debris (e.g., vegetative waste, plastic, trash, consumables) was observed along the drift deposit line (i.e., the transition zone between high marsh and uplands) below the bottom row of GroSoxx, especially on the eastern side of the BEP. • Depth to sediment surface measurements taken at 5 of the 12 reference posts installed on May 25, 2022 within the high marsh zone indicate that an average increase of 1.0 inch of sediment (with no losses and gains ranging from 0.5 to 1.4 inches) since the May 2022 baseline. 	<p style="text-align: center;">20 to 23</p>	<ul style="list-style-type: none"> • Continue monitoring erosional/depositional rates using reference posts during inspections. • Monitor area where plugs were uprooted or lost, primarily in the eroded area on the eastern side of the BEP, for signs of recovery. • Repair or replace the damaged RockSoxx. • Consider planting plugs in the areas with exposed geogrid, where soil has filled in over previously installed GroSoxx to increase rate of colonization. • Consider implementing options to repair the high marsh zone (generally within the drift line) where vegetation is not successfully establishing and the GroSoxx appear to be saturated and in some cases “emptying out”.
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SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
PLANTING ZONE C – UPLANDS TRANSITION AREA	<ul style="list-style-type: none"> • Total vegetative cover within the upland portion of the BEP was greater than 95% (consistent with vegetative cover observed during the July 2022 inspection). <ul style="list-style-type: none"> ○ Observations from the August 2023 inspection indicate that the 5 to 7-ft wide strip, which was previously mowed to a height of approximately 1 to 3 inches (observed during the July 2022 inspection), has shown significant growth and continues to reestablish. ○ GroSoxx, geogrid, and anchors, and the ¾-inch stone strip along the fence line appeared to be in good condition. • Invasive species cover throughout the upland zone ranged from 35 to 45%, which is consistent with last summer’s inspection. The highest density of invasive species was observed in the central and western areas of the BEP. The dominant species included common mugwort (<i>Artemisia vulgaris</i>), curly dock (<i>Rumex crispus</i>), and Japanese siltgrass (<i>Microstegium vimineum</i>). Hairy vetch (<i>Vicia villosa</i>), observed in May 2023, has experienced significant die back. Consistent with previous inspections, a small amount of common reed (<i>Phragmites australis</i>) was observed on the eastern side of the BEP. The shoots of common reed previously observed on the western side of the BEP and east of Outfall C in the GroSoxx, which were impacted by the previously reported mowing activities, do not appear to have reestablished. Invasive species White mulberry (<i>Morus alba</i>) previously report in May 2023 was not observed during the August 2023 inspection. • With the increase in invasive species cover, native species no longer make up the predominant vegetative cover within the uplands area. The following notable native species were observed: <ul style="list-style-type: none"> ○ Switchgrass (<i>Panicum virgatum</i>) ○ Black locust (<i>Robinia pseudoacacia</i>) ○ Black-eyed susan (<i>Rudbeckia hirta</i>) ○ Swamp rose mallow (<i>Hibiscus moscheutos</i>) 	24 to 27	<ul style="list-style-type: none"> • Continue to monitor non-native plant density.

SITE INSPECTION LOG (CONTINUED)



Photo 1: Northern end of Cap Area 16 (facing west). Note vibrant and healthy vegetation present in high marsh planting and upland zones.



Photo 2: Central portion of Cap Area 16 (facing west). Note reference posts used to assess sediment surface changes.

SITE INSPECTION LOG (CONTINUED)



Photo 3: Western end of Cap Area 16 (facing east). Note the vibrant and healthy vegetation in the low and high marsh planting zones.



Photo 4: Subaquatic vegetation not observed within Cap Area 22 (facing northwest).

SITE INSPECTION LOG (CONTINUED)



Photo 5: Cap Area 22 partially exposed during low tide (facing west).



Photo 6: Central portion of the BEP, between Outfalls A and B (facing east). Note vibrant and healthy vegetation in the low marsh planting zone.

SITE INSPECTION LOG (CONTINUED)



Photo 7: Exposed geotextile fabric between the shoreline stabilization berm and the BEP fill material west of Outfall A (facing west).



Photo 8: Outfall A and surrounding armor stone (facing southwest). Note vibrant and healthy vegetation in the low marsh and high marsh planting zones.

SITE INSPECTION LOG (CONTINUED)



Photo 9: Outfall B and surrounding armor stone (facing south).



Photo 10: Armor stone along the western edge of the apron for Outfalls B and C (facing west). Note the siltation present on the apron stone.

SITE INSPECTION LOG (CONTINUED)



Photo 11: Outfall D discharge area where previously observed minor flow channel is overlain by displaced stone (facing east).



Photo 12: Area beyond the shoreline stabilization berm near Outfall D with Cap Area 22 partially exposed in the background (facing north).

SITE INSPECTION LOG (CONTINUED)



Photo 13: Low marsh zone in the eastern corner of the BEP near Outfall D (facing southeast). Note vibrant and healthy vegetation throughout the low marsh planting zone.



Photo 14: Transition from upland to low marsh zone in the easternmost corner of the BEP area (facing west).

SITE INSPECTION LOG (CONTINUED)



Photo 15: Low marsh planting zone on the eastern side of the BEP (facing west).



Photo 16: Transition area between low marsh planting zone and high marsh planting zone within the eastern side of the BEP (facing southeast). Note the vibrant and healthy low marsh and high marsh vegetation.

SITE INSPECTION LOG (CONTINUED)



Photo 17: Low marsh planting zone within eastern portion of the BEP (facing northeast).



Photo 18: Low marsh planting zone between Outfalls A and B (facing west). Note the vibrant and healthy vegetation in the higher elevations of the low marsh area.

SITE INSPECTION LOG (CONTINUED)



Photo 19: Vibrant and healthy vegetation in the higher elevations of the low marsh zone and high marsh zones in the eastern BEP area (facing southeast).



Photo 20: Vibrant and healthy low and high marsh zones west of Outfall A (facing southwest). Note the exposed geogrid and absence of GroSoxx at the bottom of the low marsh zone.

SITE INSPECTION LOG (CONTINUED)



Photo 21: Exposed geogrid over and around the Outfall C structure and within the high marsh planting zone (facing south).



Photo 22: Healthy low and high marsh vegetation west of Outfall A (facing east). Note the presence of tidal drift deposits and debris within the high marsh areas.

SITE INSPECTION LOG (CONTINUED)



Photo 23: Healthy vegetation in the upland transition area and interface between the low and high marsh between Outfalls A and B (facing southeast).



Photo 24: Healthy vegetation in the upland transitional area and interface between the low and high marsh west of Outfall A (facing east).

SITE INSPECTION LOG (CONTINUED)



Photo 25: Previously mowed section of the upland planting area in the western portion of the BEP (facing west).



Photo 26: Native species black-eyed susan located within the upland transitional planting zone of the BEP.

SITE INSPECTION LOG (CONTINUED)



Photo 27: Native species swamp rose mallow located within the upland transitional planting zone of the BEP.

**ATTACHMENT A.3
NOVEMBER 13, 2023 INSPECTION LOG**

SITE INSPECTION LOG

PROJECT NAME:	<u>SA-7 Long-Term Monitoring Year 10</u>	INSPECTION DATE:	<u>November 13, 2023</u>
		WEATHER	<u>SNOWY <input type="checkbox"/> RAINY <input type="checkbox"/> OVERCAST <input type="checkbox"/></u>
PROJECT NUMBER:	<u>1690025609_Conv</u>	CONDITIONS:	<u>PARTLY CLOUDY <input type="checkbox"/> SUNNY <input checked="" type="checkbox"/></u>
PROJECT LOCATION:	<u>SA-7 Droyers Cove BEP</u>	TEMPERATURE (°F):	<u>42°F (High 51°F)</u>
	<u>City of Jersey City, Hudson County, NJ</u>	PREVAILING WIND:	<u>8 - 14 mph (SSW)</u>
INSPECTOR NAME:	<u>Owen Zalme/Bart Bancewicz</u>	INSPECTOR	<u></u>
INSPECTOR TITLE:	<u>Managing Consultant/Consultant 3</u>	SIGNATURE(s):	<u></u>

The inspection was conducted on November 13, 2023 around the predicted low tide at 14:41, when Cap Area 16 and the entire BEP area (including the shoreline stabilization berm) were exposed. Cap Area 22 was partially exposed at the time of the inspection. **Figure 1** presents the location of the as-built BEP and cap areas described in the tables that follow. The observations described in the following tables are compared to those made in the summer inspection of August 2023, unless otherwise noted.

TABLE 1. SEDIMENT CAP AREA INSPECTION LOG			
CAP AREA	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
16	<ul style="list-style-type: none"> Long-term monitoring plate was not observed (i.e., plate remains buried). Depth to sediment surface measurements taken at 4 of the 12 reference posts installed on May 25, 2022 indicate 0.3 inches of sediment gain throughout the cap area (with losses of 0.2 inches in some areas and gains of up to 0.7 inches in others) since the May 2022 baseline measurements¹. 	1 to 3	<ul style="list-style-type: none"> None
22	<ul style="list-style-type: none"> Cap Area was partially exposed at low tide. The long-term monitoring plate was not accessible. Water in the Hackensack River was appeared siltier as compared to the May 2022 inspection. Sub-aquatic vegetation was not observed during this inspection. 	4 to 5	<ul style="list-style-type: none"> None

¹ Monitoring stake #4 was reset during the May 2023 inspection.

SITE INSPECTION LOG (CONTINUED)

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"> • Shoreline stabilization appeared to be in good condition. • Several areas of exposed geofabric were observed between the BEP fill material and the shoreline stabilization berm west of Outfall A. 	6 to 7	<ul style="list-style-type: none"> • Cut exposed geofabric or cover it with stone.
OUTFALL RIPRAP APRONS	<ul style="list-style-type: none"> • Outfall A: Appeared in good condition. Siltation within the rip rap apron ranged from approximately 1 to 3 inches, especially in the vicinity of the outfall. • Outfalls B and C: Appeared in good condition. Consistent with prior observations, approximately 1 to 3 inches of siltation was observed throughout the rip rap apron, especially in the vicinity of both outfalls. • Outfall D: Appeared in good condition. The previously observed minor flow channel at the discharge of Outfall D continues to be partially filled with displaced stone. 	8 to 12	<ul style="list-style-type: none"> • None.
PLANTING ZONE A – LOW MARSH	<ul style="list-style-type: none"> • The overall total vegetative coverage in the upper portion of the low marsh area was greater than 95% (consistent with the August 2023 inspection) and is entering the dormant season. However, total vegetative coverage remained consistent with less than 5% coverage observed elsewhere. <ul style="list-style-type: none"> ○ Vegetation appeared healthy and vibrant in the highest elevation of the low marsh zone. Lower elevation areas appeared as mudflats with limited to no vegetation. ○ Vegetation remains tall, healthy, and vibrant along the southern boundary of vegetation located in the upper portion of the low marsh. ○ While no uprooted plants were observed in the low marsh plantings of the BEP, some roots of the low marsh plantings were partially exposed in the eastern side of the BEP near Outfall D. ○ Consistent with prior 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. The GroSoxx in this area are mostly covered by silt with only a small section of the geogrid exposed. ○ No invasive species were observed at the time of inspection. ○ Small amounts of algae resembling sea lettuce (<i>Ulva intestinalis</i>) was observed coating rocks in the low marsh planting zone. • Depth to sediment surface measurements taken at 7 of the 12 reference posts installed on May 25, 2022 within the low marsh zone indicate an average increase of 0.6 inch (with losses of 0.1 inches in some areas and gains of up to 1.6 inches in others) since the May 2022 baseline measurements. 	13 to 19	<ul style="list-style-type: none"> • Continue monitoring erosional/depositional rates using reference posts during inspections. • Monitor area of exposed roots of the low marsh planting area, primarily in the eastern side of the BEP, for signs of recovery. • Consider planting additional plugs in the low marsh areas where establishment remains low. In low elevation areas, consider clumping, or using larger plugs for increased stability and to improve resistance to tidal energy.

SITE INSPECTION LOG (CONTINUED)

<p>PLANTING ZONE B – HIGH MARSH</p>	<ul style="list-style-type: none"> • Between Outfalls A and B, primarily in the area of GroSoxxs, total vegetative coverage ranged from 50 to 60% (consistent with the August 2023 inspection). Elsewhere total vegetative cover ranged from 75 to 85% (consistent with the August 2023 inspection). Vegetation appeared vibrant and healthy and is entering the dormant season. <ul style="list-style-type: none"> ○ Consistent with observations since October 2019, an odor typically associated with an anoxic environment (e.g., bog, wetland, swamp, etc.) was noted when stepping on the GroSoxx on the central portion of the BEP area, east of Outfall A. Limited vegetative growth was observed at this location. ○ Consistent with the prior inspections, vegetative growth observed throughout the areas of GroSoxx located at the interface of the uplands transition area and high marsh zone, particularly near the outfalls ranged from 75 to 85% total cover. Limited signs of new colonization were observed. ○ As stated in the previous inspection reports, some of the planted plugs on the eastern most side of the BEP area remain partially uprooted and/or have exposed roots. ○ Very few high marsh plantings were observed between Outfalls A and B. However, vegetative cover remains high due to colonization from low marsh plantings. • Observations regarding the condition of the GroSoxx, geogrid, and anchors were consistent with those made since October 2019: <ul style="list-style-type: none"> ○ Empty GroSoxx sleeves were observed outside of the geogrid. ○ There were several areas where ripping/holes or loose geogrid were observed. ○ Several anchors (both the Gripple Rock and Terra-Lock™ Earth anchors) were exposed at the time of inspection (possibly due to the deflation of the underlying GroSoxx). ○ Significant shifting of GroSoxx underneath the geogrid occurred, and the third row of GroSoxx (from the bottom) appeared to be mostly missing. ○ Significant siltation was observed over the GroSoxx located on the western side of Outfall A, with many of the GroSoxx completely buried up to the drift line. ○ Significant displacement and lifting of geogrid within the vicinity of Outfalls B and C. Geogrid observed to be hanging over the ledge of the Outfall B structure, as shown in Photo 21. • Observations regarding the condition of the RockSoxx installed along the interface of the upland transition area and high marsh zone in the central portion of the BEP area (between Outfalls A and B, and just north of Outfall C) were consistent with those made during prior inspections: <ul style="list-style-type: none"> ○ Some of the RockSoxx showed signs of wear and tear, with holes on the surface that could potentially result in loss of the material within. ○ Large cuts/openings were observed in several RockSoxx in the central portion of the BEP area, primarily between Outfalls A and B. • No invasive species were observed at the time of inspection. • Large amounts of debris (e.g., vegetative waste, plastic, trash, consumables) was observed along the drift deposit line (i.e., the transition zone between high marsh and uplands) below the bottom row of GroSoxx, especially on the eastern side of the BEP. • Depth to sediment surface measurements taken at 5 of the 12 reference posts installed on May 25, 2022 within the high marsh zone indicate an average increase of 0.2 inches of sediment (with losses of 0.8 inches in some areas and gains of up to 1.0 inches in others) since the May 2022 baseline. 	<p>20 to 23</p>	<ul style="list-style-type: none"> • Continue monitoring erosional/depositional rates using reference posts during inspections. • Monitor area where plugs were uprooted or lost, primarily in the eroded area on the eastern side of the BEP, for signs of recovery. • Repair or replace the damaged RockSoxx. • Consider planting plugs in the areas with exposed geogrid, where soil has filled in over previously installed GroSoxx to increase rate of colonization. • Consider implementing options to repair the high marsh zone (generally within the drift line) where vegetation is not successfully establishing and the GroSoxx appear to be saturated and in some cases "emptying out".
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SITE INSPECTION LOG (CONTINUED)

TABLE 2. BENEFICIAL ENVIRONMENTAL PROJECT AREA INSPECTION LOG			
BEP AREA ELEMENT	OBSERVATIONS	PHOTO(S) TAKEN	CORRECTIVE ACTION(S) REQUIRED
PLANTING ZONE C – UPLANDS TRANSITION AREA	<ul style="list-style-type: none"> • Total vegetative cover within the upland portion of the BEP was greater than 95% (consistent with vegetative cover observed during the August 2022 inspection). <ul style="list-style-type: none"> ○ Observations from the November 2023 inspection indicate that the 5 to 7-ft wide strip, which was previously mowed to a height of approximately 1 to 3 inches (observed during the July 2022 inspection), has fully reestablished. ○ GroSoxx, geogrid, and anchors, and the ¾-inch stone strip along the fence line appeared to be in good condition. • Invasive species cover throughout the upland zone ranged from 40 to 50%, which is a slight increase since the August 2023 inspection (35 to 45%) but slightly lower than observed during the November 2023 inspection (45 to 5%). The highest density of invasive species was observed in the central and western areas of the BEP. The dominant species included common mugwort (<i>Artemisia vulgaris</i>), curly dock (<i>Rumex crispus</i>), and Japanese siltgrass (<i>Microstegium vimineum</i>). Hairy vetch (<i>Vicia villosa</i>), which experienced a significant die back in August 2023, was present in small amounts. • With the increase in invasive species cover, native species no longer make up the predominant vegetative cover within the uplands area. The following notable native species were observed: <ul style="list-style-type: none"> ○ Switchgrass (<i>Panicum virgatum</i>) ○ Black locust (<i>Robinia pseudoacacia</i>) ○ Claspig coneflower (<i>Dracopis amplexicaulis</i>) ○ Sage brush (<i>Artemisia tridentata</i>) ○ Swamp rose mallow (<i>Hibiscus moscheutos</i>) 	24 to 27	<ul style="list-style-type: none"> • Continue to monitor non-native plant density.

SITE INSPECTION LOG (CONTINUED)



Photo 1: Northern end of Cap Area 16 (facing west). Note vibrant and healthy vegetation present in high marsh planting and upland zones.



Photo 2: Central portion of Cap Area 16 (facing west). Note reference posts used to assess sediment surface changes.

SITE INSPECTION LOG (CONTINUED)



Photo 3: Western end of Cap Area 16 (facing east). Note the vibrant and healthy vegetation in the low marsh planting zone.



Photo 4: Subaquatic vegetation not observed within Cap Area 22 (facing west).

SITE INSPECTION LOG (CONTINUED)



Photo 5: Partially exposed Cap Area 22 during low tide (facing west).



Photo 6: Central portion of the BEP, between Outfalls A and B (facing southeast). Note vibrant and healthy vegetation in the low marsh planting zone.

SITE INSPECTION LOG (CONTINUED)

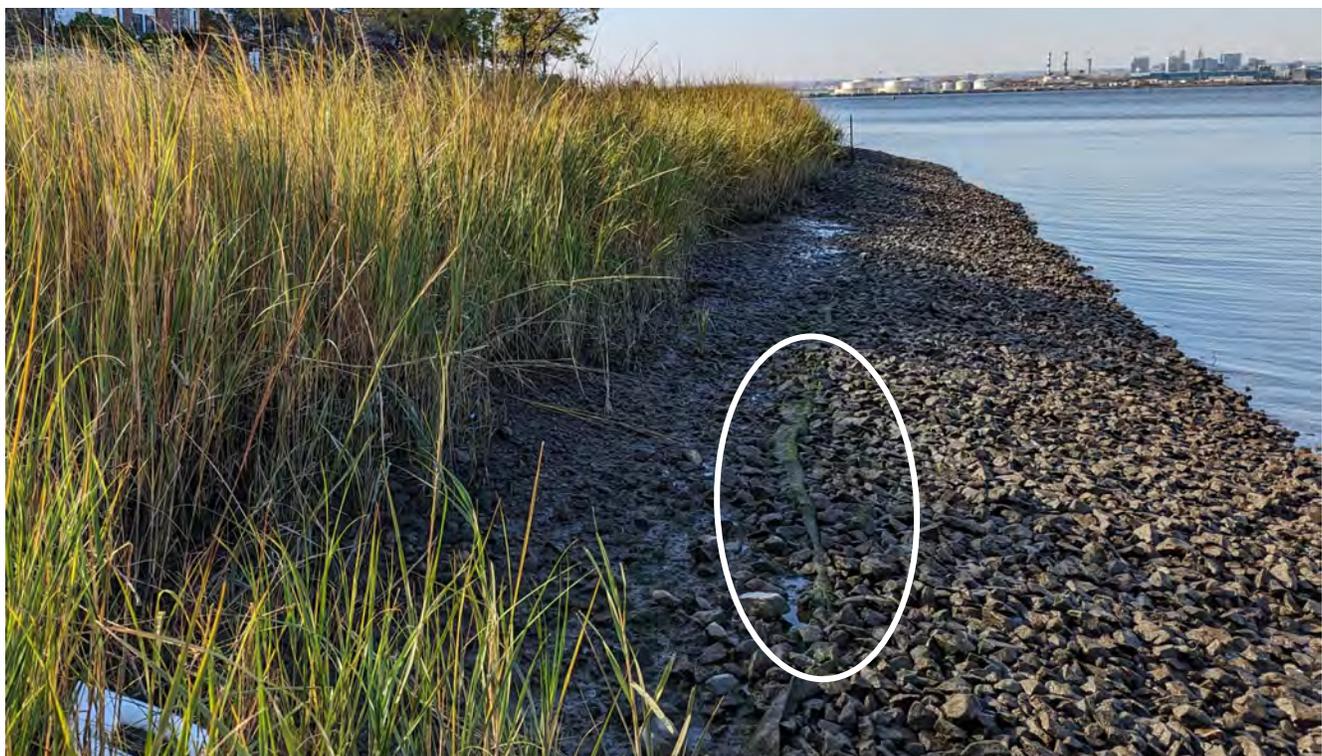


Photo 7: Exposed geotextile fabric between the shoreline stabilization berm and the BEP fill material west of Outfall A (facing west).



Photo 8: Outfall A and surrounding armor stone (facing southwest). Note vibrant and healthy vegetation in the low marsh and high marsh planting zones.

SITE INSPECTION LOG (CONTINUED)



Photo 9: Outfall B and surrounding armor stone (facing southwest). Note the tidal drift deposits and debris in front of the outlet.

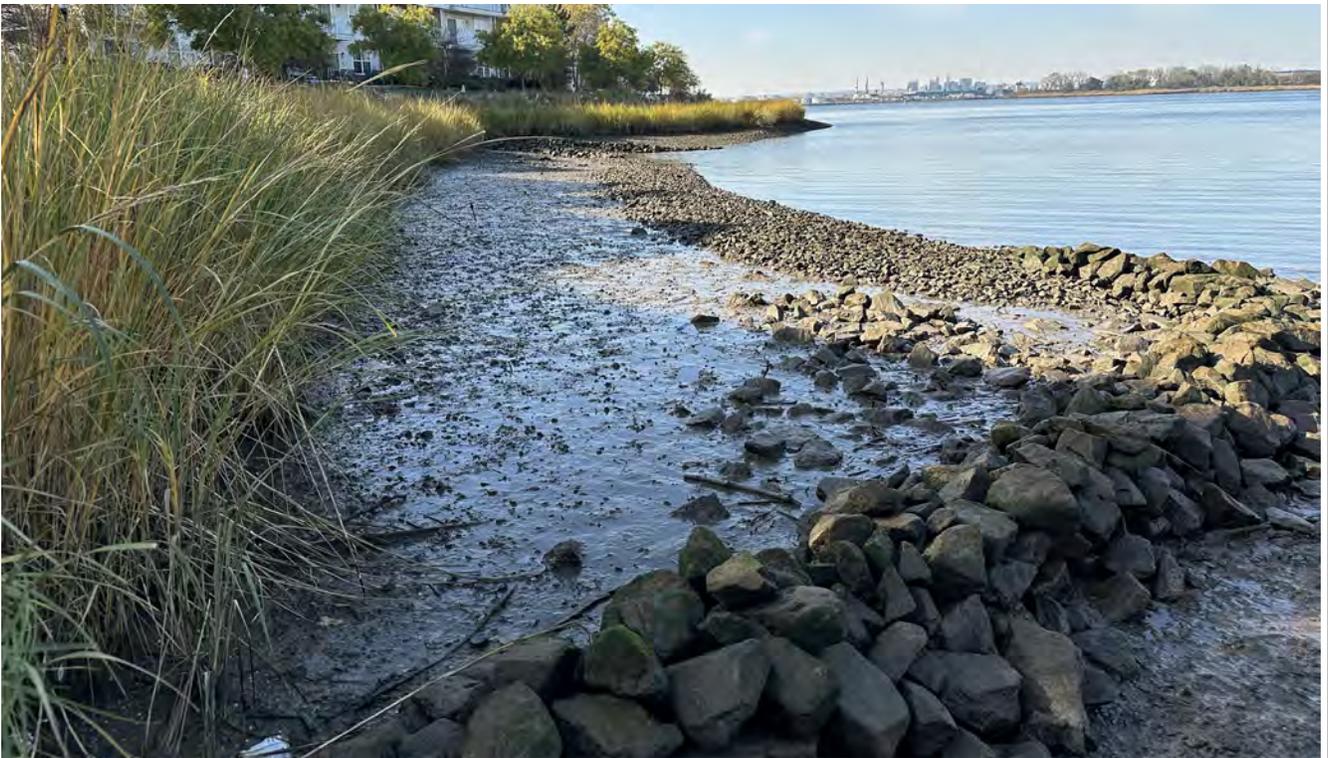


Photo 10: Armor stone along the western edge of the apron for Outfalls B and C (facing west). Note the siltation present on and behind the apron stone.

SITE INSPECTION LOG (CONTINUED)



Photo 11: Outfall D discharge area where previously observed minor flow channel is overlain by displaced stone (facing east).



Photo 12: Area beyond the shoreline stabilization berm near Outfall D with Cap Area 22 partially exposed in the background (facing north).

SITE INSPECTION LOG (CONTINUED)



Photo 13: Low marsh zone in the eastern corner of the BEP near Outfall D (facing southeast). Note vibrant and healthy vegetation throughout the low marsh planting zone.



Photo 14: Transition from upland to low marsh zone in the easternmost corner of the BEP area (facing west).

SITE INSPECTION LOG (CONTINUED)



Photo 15: Low marsh planting zone on the eastern side of the BEP (facing west).



Photo 16: Transition area between low marsh planting zone and high marsh planting zone within the eastern side of the BEP (facing southeast). Note the vibrant and healthy low marsh and high marsh vegetation appears and tidal drift deposits and debris.

SITE INSPECTION LOG (CONTINUED)



Photo 17: Low marsh planting zone within eastern portion of the BEP (facing northeast). Note the small amount of algae coating stabilization stone in the low marsh area.



Photo 18: Low marsh planting zone between Outfalls A and B (facing west). Note the vibrant and healthy vegetation in the higher elevations of the low marsh area.

SITE INSPECTION LOG (CONTINUED)



Photo 19: Vibrant and healthy vegetation in the higher elevations of the low marsh zone and high marsh zones in the eastern BEP area (facing southeast).



Photo 20: Vibrant and healthy low and high marsh zones west of Outfall A (facing southwest). Note the exposed geogrid and absence of GroSoxx at the bottom of the low marsh zone.

SITE INSPECTION LOG (CONTINUED)



Photo 21: Exposed geogrid over and around the Outfall C structure and within the high marsh planting zone (facing south).



Photo 22: Healthy low and high marsh vegetation west of Outfall A (facing east). Note the presence of tidal drift deposits and debris, and invasive species Canada goldenrod within the upland transition zone.

SITE INSPECTION LOG (CONTINUED)



Photo 23: Healthy vegetation in the upland transition area and interface between the low and high marsh between Outfalls A and B (facing southeast). Note presence of invasive Canada goldenrod in upland transition zone.



Photo 24: Healthy vegetation in the upland transitional area and interface between the low and high marsh west of Outfall A (facing southeast). Note the presence of tidal drift deposits and debris within the high marsh areas.

SITE INSPECTION LOG (CONTINUED)

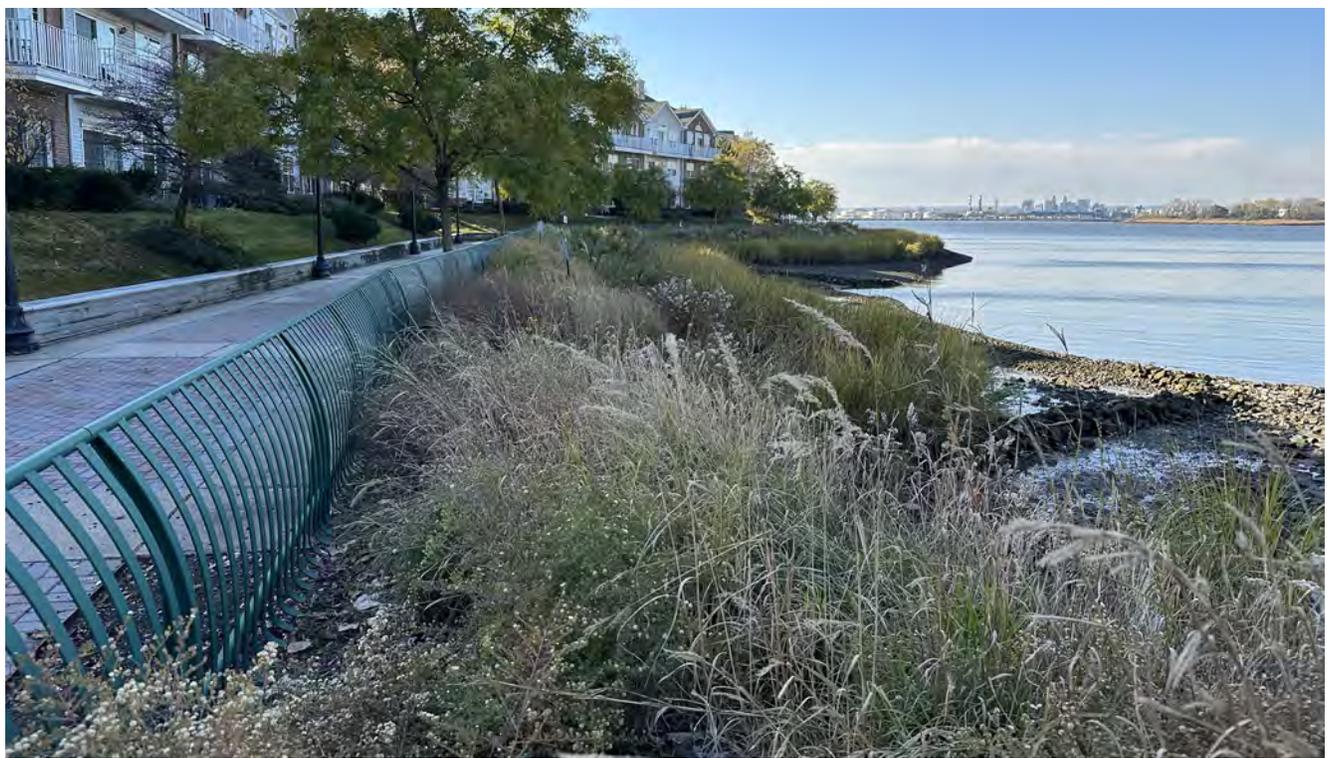


Photo 25: Reestablished vegetation in the previously mowed section of the upland planting area in the western portion of the BEP (facing west).



Photo 26: Invasive species Canada goldenrod located within the upland transitional planting zone of the BEP.

SITE INSPECTION LOG (CONTINUED)

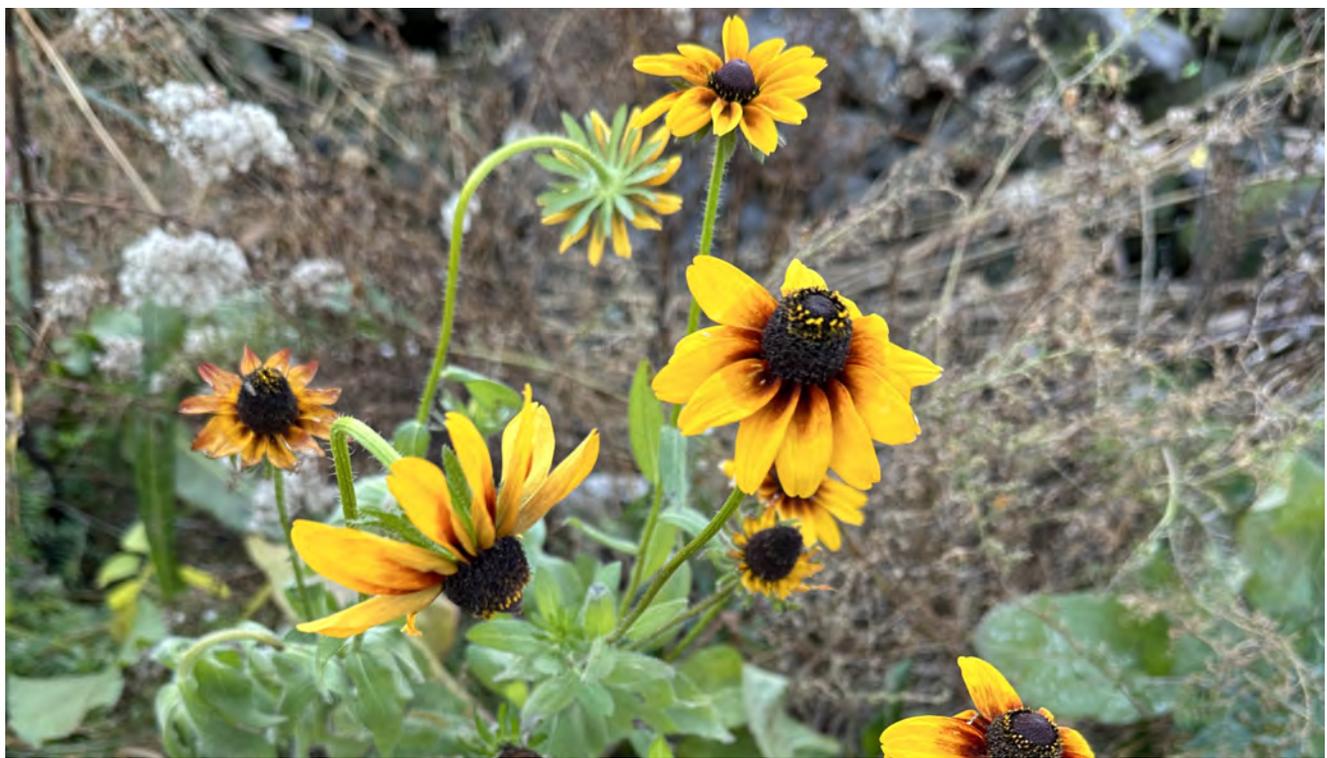


Photo 27: Native species claspine coneflower located within the upland transitional planting zone of the BEP.

**ATTACHMENT B
YEAR 10 HYDRAULIC AND HYDRODYNAMIC
EVALUATION SUMMARIES**

**ATTACHMENT B.1
Q1 2023 HYDRAULIC AND HYDRODYNAMIC
EVALUATION SUMMARIES**

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

<u>Monitoring Period:</u> January 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u></p> <p>Max Rainfall (in): 0.95 Dates: 1/19/2023 and 1/25/2023</p> <p>50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u></p> <p>Max Increase Above Predicted Normal Tidal Cycling (m): 0.755 Date: 1/26/2023 Time: 0:00</p> <p>Exceeds event trigger criteria? YES</p> <p>Max Tide Gauge Reading (m): 1.412 Date: 1/23/2023 Time: 14:00</p> <p>Exceeds event trigger criteria? YES</p> <p>10-year storm surge event defined as a hurricane? NO</p> <p>(1) While on January 26, 2023 the criteria for the storm surge increase above the predicted normal tide cycle was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p> <p>(2) While on January 23, 2023 the criteria for the storm surge tide gauge reading was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p>	NO
<p><u>Wind Event Data:</u></p> <p>Max Wind (mph): 28 Date: 1/26/2023</p> <p>Exceeds trigger criteria? NO</p> <p>Wind direction over 6-hr period: SW OK</p> <p>(3) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

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CXUS51 KOKX 011010

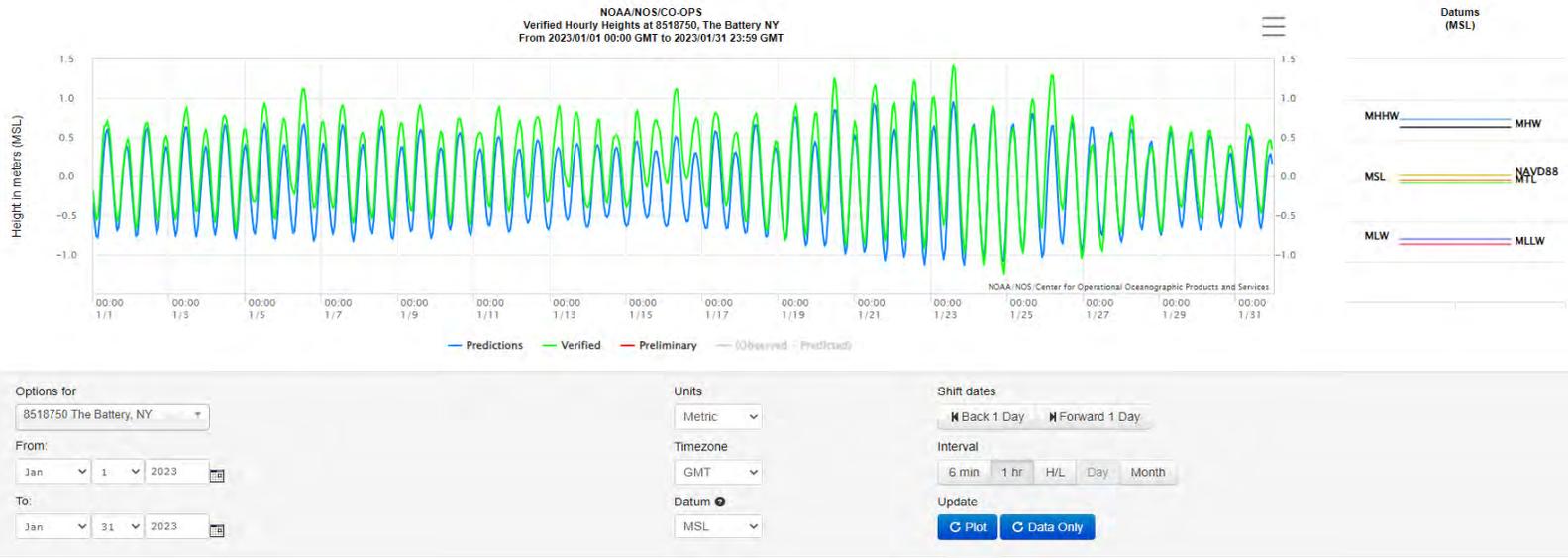
CF6EWR

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

STATION: NEWARK NJ
 MONTH: JANUARY
 YEAR: 2023
 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	58	45	52	18	13	0	T	0.0	0	8.0	18	280	M	M	7	1	23	280													
2	59	43	51	17	14	0	0.05	0.0	0	4.8	15	260	M	M	8	1	18	260													
3	56	49	53	19	12	0	0.45	0.0	0	3.4	15	230	M	M	10	12	19	220													
4	66	50	58	24	7	0	0.02	0.0	0	5.5	13	210	M	M	9	1	15	210													
5	55	47	51	17	14	0	T	0.0	0	4.3	10	20	M	M	10	12	12	20													
6	50	39	45	12	20	0	0.31	0.0	0	6.3	21	290	M	M	9	1	30	290													
7	48	37	43	10	22	0	0.00	0.0	0	10.0	18	310	M	M	6		27	290													
8	42	33	38	5	27	0	0.00	0.0	0	5.7	13	10	M	M	5		21	300													
9	48	37	43	10	22	0	0.01	T	0	7.1	20	300	M	M	5		26	300													
10	43	33	38	5	27	0	0.00	0.0	0	7.7	14	340	M	M	9		19	270													
11	41	36	39	6	26	0	0.00	0.0	0	6.1	15	10	M	M	10		17	20													
12	57	39	48	15	17	0	0.21	0.0	0	6.4	14	180	M	M	10	13	19	110													
13	59	38	49	16	16	0	0.11	0.0	0	13.9	23	340	M	M	9		33	290													
14	38	33	36	4	29	0	T	T	0	17.8	29	360	M	M	10		34	340													
15	46	32	39	7	26	0	0.00	0.0	0	19.3	29	350	M	M	5		38	350													
16	51	29	40	8	25	0	0.00	0.0	0	10.7	20	350	M	M	3		26	310													
17	48	31	40	8	25	0	0.00	0.0	0	6.3	15	240	M	M	8		19	240													
18	57	40	49	17	16	0	0.02	0.0	0	12.1	28	300	M	M	6		35	300													
19	44	38	41	9	24	0	0.95	0.0	0	5.6	18	350	M	M	9	13	21	340													
20	51	38	45	13	20	0	T	0.0	0	11.9	28	270	M	M	8		33	280													
21	42	38	40	8	25	0	T	0.0	0	10.0	21	340	M	M	9		31	300													
22	43	37	40	8	25	0	0.50	0.0	0	7.2	18	20	M	M	10	1	22	10													
23	41	37	39	7	26	0	0.29	T	0	14.8	26	310	M	M	10	1	34	300													
24	50	36	43	11	22	0	0.00	0.0	0	12.9	26	290	M	M	6		34	290													
25	58	34	46	14	19	0	0.95	T	0	8.5	25	130	M	M	8	1	36	120													
26	58	40	49	17	16	0	0.38	0.0	0	18.3	33	260	M	M	8	1	44	260													
27	45	31	38	6	27	0	0.00	0.0	0	8.4	16	260	M	M	4		22	270													
28	55	31	43	11	22	0	T	T	0	9.0	25	270	M	M	6		33	280													
29	54	38	46	14	19	0	0.00	0.0	0	7.5	22	210	M	M	8		30	200													
30	57	39	48	16	17	0	0.00	0.0	0	5.7	14	230	M	M	7		21	230													
31	49	32	41	8	24	0	0.06	T	0	10.4	20	350	M	M	9	4	23	340													
SM	1569	1160			644	0	4.31	T		285.6			M		241																
AV	50.6	37.4								9.2	FASTST	M	M	8		MAX(MPH)															
								MISC	---->	33	260						44	260													

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

<u>Monitoring Period:</u> February 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u></p> <p>Max Rainfall (in): 0.38 Date: 2/27/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u></p> <p>Max Increase Above Predicted Normal Tidal Cycling (m): 1.047 Date: 2/28/2023 Time: 15:00 Exceeds event trigger criteria? YES</p> <p>Max Tide Gauge Reading (m): 1.448 Date: 2/28/2023 Time: 8:00 Exceeds event trigger criteria? YES</p> <p>10-year storm surge event defined as a hurricane? NO</p> <p>(1) While on February 28, 2023 the criteria for the storm surge increase above the predicted normal tide cycle was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted. (2) While on February 28, 2023 the criteria for the storm surge tide gauge reading was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p>	NO
<p><u>Wind Event Data:</u></p> <p>Max Wind (mph): 33 Date: 2/3/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: WNW OK</p> <p>(3) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

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CXUS51 KOKX 012354

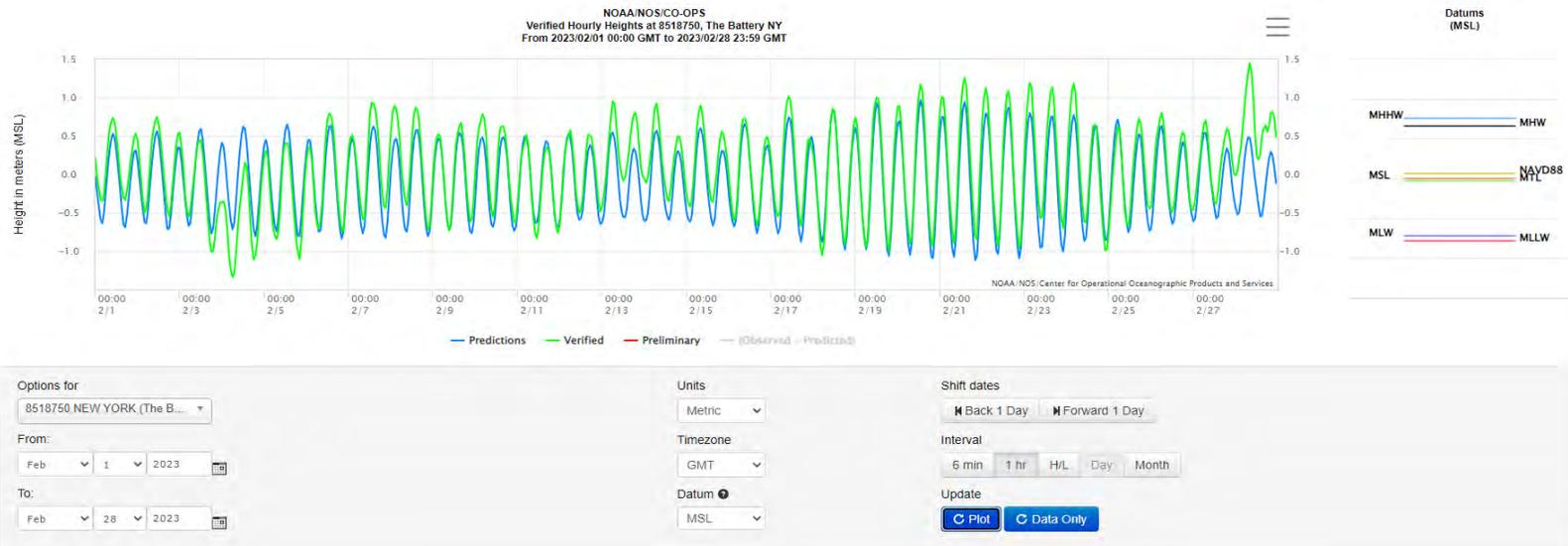
CF6EWR

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

STATION: NEWARK NJ
 MONTH: FEBRUARY
 YEAR: 2023
 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																	
MAX		MIN		AVG		DEP		HDD		CDD		WTR		SNW		DPTH		SPD		SPD		DIR		MIN		PSBL		S-S		WX		SPD		DR	
1	40	27	34	1	31	0	0.02	0.3	T	9.3	17	10	M	M	6				22	290															
2	42	25	34	1	31	0	0.00	0.0	0	8.6	20	250	M	M	7				25	260															
3	35	13	24	-9	41	0	0.00	0.0	0	21.0	37	290	M	M	5				46	310															
4	26	5	16	-17	49	0	0.00	0.0	0	11.5	30	310	M	M	4				36	330															
5	51	25	38	5	27	0	0.00	0.0	0	6.6	17	210	M	M	8				24	260															
6	56	32	44	11	21	0	0.00	0.0	0	11.2	26	340	M	M	6				33	340															
7	43	27	35	1	30	0	0.01	0.0	0	7.4	14	180	M	M	6				17	180															
8	57	35	46	12	19	0	T	0.0	0	7.4	21	320	M	M	5				28	300															
9	52	33	43	9	22	0	0.00	0.0	0	3.7	14	140	M	M	9				19	140															
10	61	43	52	18	13	0	0.00	0.0	0	14.4	28	250	M	M	5				36	260															
11	48	36	42	8	23	0	0.00	0.0	0	11.6	31	280	M	M	4				38	280															
12	48	31	40	6	25	0	0.12	0.0	0	4.6	17	360	M	M	10				20	350															
13	61	39	50	15	15	0	T	0.0	0	13.4	22	250	M	M	7				28	290															
14	57	42	50	15	15	0	0.00	0.0	0	10.7	24	300	M	M	2				32	290															
15	70	43	57	22	8	0	0.00	0.0	0	11.3	25	230	M	M	7				36	220															
16	68	50	59	24	6	0	0.06	0.0	0	4.7	13	180	M	M	9				16	180															
17	62	33	48	12	17	0	0.15	0.0	0	14.7	36	320	M	M	9	1			48	320															
18	44	28	36	0	29	0	0.00	0.0	0	13.4	29	320	M	M	3				36	340															
19	52	32	42	6	23	0	0.00	0.0	0	6.5	17	160	M	M	8				24	140															
20	64	40	52	16	13	0	0.00	0.0	0	9.1	24	270	M	M	8	1			33	290															
21	49	38	44	8	21	0	0.21	0.0	0	8.0	20	20	M	M	8	18			23	10															
22	45	34	40	3	25	0	0.19	T	0	6.4	13	260	M	M	7	14			16	360															
23	45	40	43	6	22	0	0.01	0.0	0	7.9	14	30	M	M	10	1			17	160															
24	48	26	37	0	28	0	T	0.0	0	16.4	35	320	M	M	6	1			47	320															
25	34	23	29	-8	36	0	T	T	0	6.1	18	330	M	M	8				25	320															
26	53	23	38	0	27	0	0.00	0.0	0	10.1	26	250	M	M	3	18			33	260															
27	45	34	40	2	25	0	0.38	1.2	0	8.6	20	100	M	M	6	14			28	130															
28	39	33	36	-2	29	0	0.26	0.5	2	9.1	18	50	M	M	9	14			26	50															
SM	1395	890			671	0	1.41	2.0		273.7			M		185																				
AV	49.8	31.8								9.8	FASTST		M	M	7				MAX(MPH)																
										MISC	---->	37	290							48	320														

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



SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

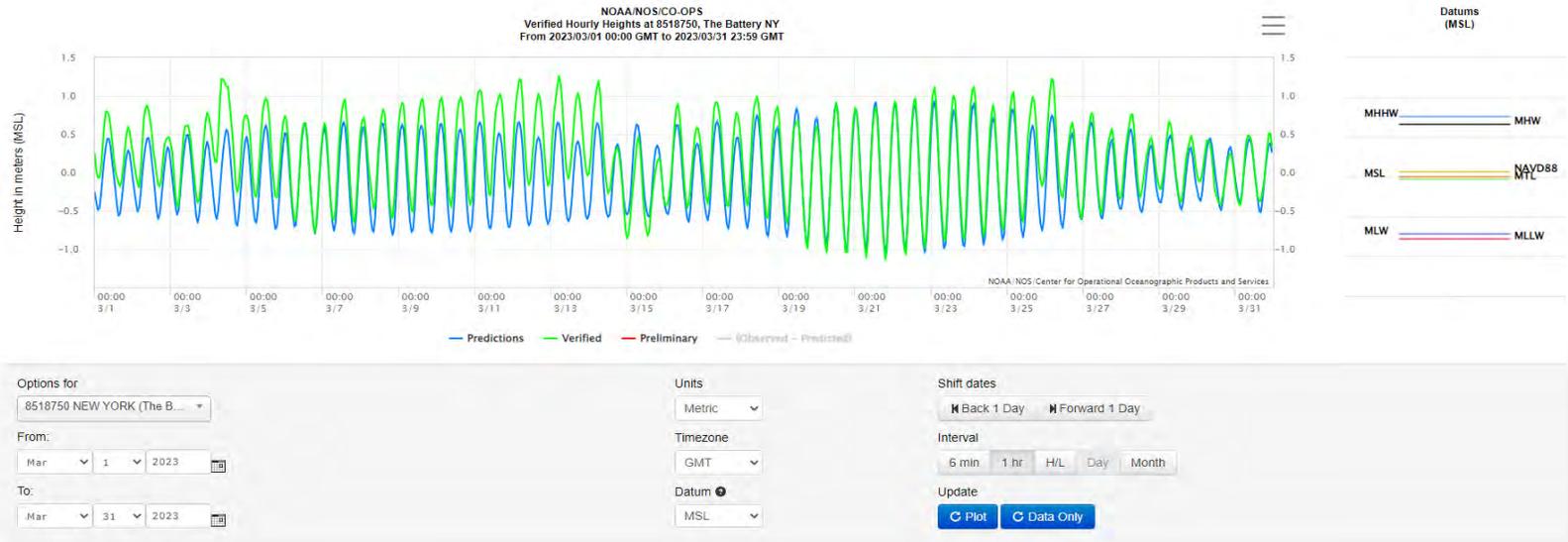
Monitoring Period: March 2023	Assessment Required?
<p><u>Rainfall Event Data:</u> Max Rainfall (in): 1.24 Date: 3/4/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 1.186 Date: 3/4/2023 Time: 8:00 Exceeds event trigger criteria? YES Max Tide Gauge Reading (m): 1.263 Date: 3/13/2023 Time: 5:00 Exceeds event trigger criteria? NO 10-year storm surge event defined as a hurricane? NO (1) While on March 4, 2023 the criteria for the storm surge tide gauge reading was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p>	NO
<p><u>Wind Event Data:</u> Max Wind (mph): 33 Date: 3/15/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: NW OK (2) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: MARCH
 YEAR: 2023
 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	46	30	38	0	27	0	0.01	0.0	1	7.0	18	130	M	M	7	1	26	140		
2	57	40	49	11	16	0	T	0.0	0	11.2	29	330	M	M	9	12	34	340		
3	47	36	42	3	23	0	0.25	T	0	8.7	22	80	M	M	8	14	35	100		
4	50	40	45	6	20	0	1.24	0.0	0	14.3	28	50	M	M	9	13	37	40		
5	57	39	48	9	17	0	0.00	0.0	0	13.7	28	320	M	M	7		37	320		
6	54	40	47	7	18	0	T	0.0	0	11.1	21	310	M	M	5		32	300		
7	50	34	42	2	23	0	0.13	0.2	T	18.7	36	330	M	M	7	1	49	320		
8	50	32	41	1	24	0	0.00	0.0	0	17.2	28	340	M	M	4		35	330		
9	53	34	44	4	21	0	0.00	0.0	0	12.9	21	360	M	M	3		29	330		
10	46	34	40	-1	25	0	0.32	0.0	0	7.0	15	20	M	M	8	1	17	20		
11	47	35	41	0	24	0	0.33	T	0	14.5	23	360	M	M	9	1	27	360		
12	48	33	41	0	24	0	0.00	0.0	0	7.3	15	10	M	M	6		20	300		
13	45	39	42	0	23	0	0.53	0.0	0	9.1	17	320	M	M	10	1	23	330		
14	39	33	36	-6	29	0	0.09	0.4	0	20.4	33	290	M	M	10	1	44	270		
15	48	35	42	0	23	0	0.00	0.0	0	21.7	37	310	M	M	5		47	320		
16	62	31	47	5	18	0	0.00	0.0	0	8.4	17	290	M	M	4		27	280		
17	61	45	53	10	12	0	T	0.0	0	6.6	20	230	M	M	9		26	200		
18	56	41	49	6	16	0	0.01	0.0	0	14.4	25	260	M	M	7		31	310		
19	42	30	36	-7	29	0	0.00	0.0	M	16.6	29	270	M	M	4		36	280		
20	54	27	41	-3	24	0	0.00	0.0	0	8.7	18	240	M	M	1		25	240		
21	65	32	49	5	16	0	0.00	0.0	0	10.4	22	240	M	M	3		28	250		
22	65	40	53	9	12	0	0.00	0.0	0	5.8	20	200	M	M	7		25	200		
23	62	46	54	9	11	0	0.04	0.0	0	8.5	20	240	M	M	9	1	26	240		
24	57	43	50	5	15	0	T	0.0	0	7.1	20	350	M	M	9		29	310		
25	47	42	45	0	20	0	0.16	0.0	0	10.5	21	100	M	M	10	1	29	70		
26	65	41	53	7	12	0	T	0.0	0	12.2	24	250	M	M	3	1	32	260		
27	60	43	52	6	13	0	0.20	0.0	0	8.1	16	50	M	M	6		22	100		
28	54	41	48	2	17	0	0.01	0.0	0	10.0	17	340	M	M	8		24	290		
29	57	38	48	1	17	0	T	0.0	0	9.2	32	330	M	M	4		38	320		
30	48	31	40	-7	25	0	T	0.0	0	13.5	29	310	M	M	3		40	320		
31	56	33	45	-2	20	0	0.00	0.0	0	5.4	16	140	M	M	8		22	130		
SM	1648	1138			614	0	3.32	0.6		350.2			M		202					
AV	53.2	36.7								11.3	FASTST		M	M	7		MAX(MPH)			
								MISC	---->	37	310						49	320		

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.2
Q2 2023 HYDRAULIC AND HYDRODYNAMIC
EVALUATION SUMMARIES**

SA-7 Sediment Remedy
 Long-Term Monitoring Program
 Hydrologic Data Review

Monitoring Period: April 2023	Assessment Required?
<u>Rainfall Event Data:</u> Max Rainfall (in): 3.05 Date: 4/29/2023 50-Year, 24-Hr event? NO	NO
<u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.445 Date: 4/22/2023 Time: 23:00 Exceeds event trigger criteria? NO Max Tide Gauge Reading (m): 1.17 Date: 4/22/2023 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): 31 Date: 4/2/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: WNW OK (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 <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>

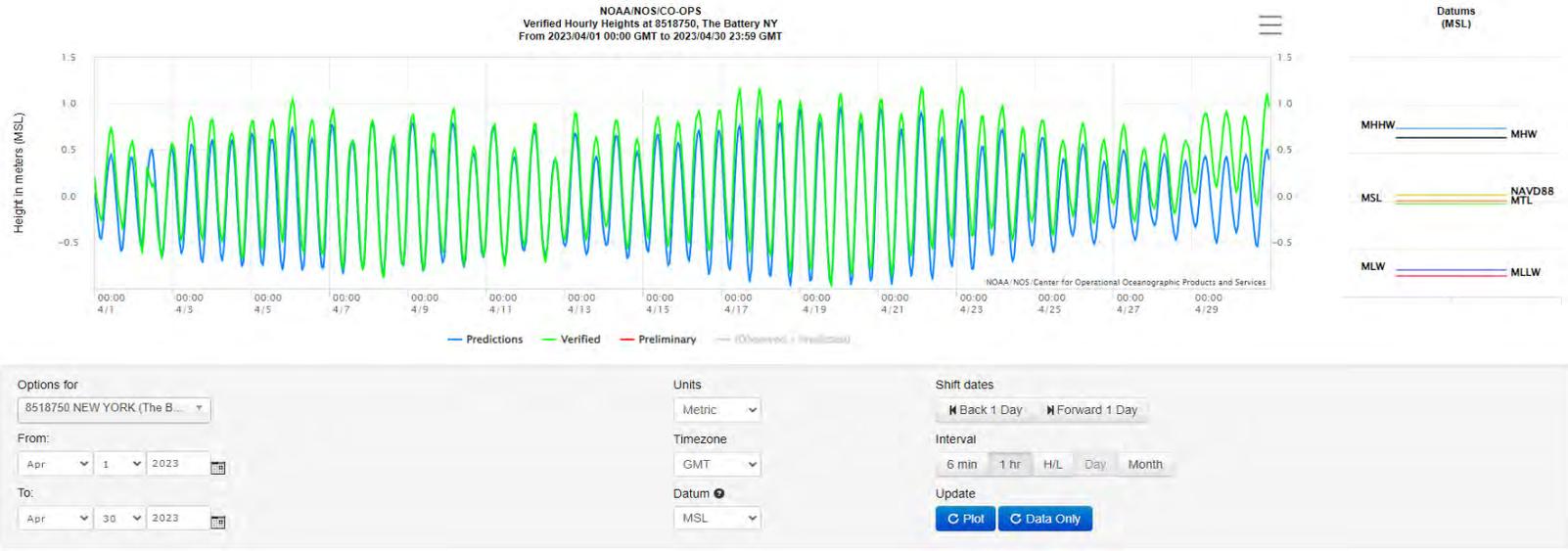
CHECKED BY: _____

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

STATION: NEWARK NJ
 MONTH: APRIL
 YEAR: 2023
 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	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
=====																			
1	74	52	63	15	2	0	0.26	0.0	0	14.1	40	310	M	M	9	13	54	310	
2	53	37	45	-3	20	0	0.00	0.0	0	17.2	35	330	M	M	3		48	280	
3	66	36	51	2	14	0	0.00	0.0	0	7.8	21	220	M	M	3		27	200	
4	73	47	60	11	5	0	0.00	0.0	0	4.1	13	120	M	M	5		18	100	
5	59	48	54	5	11	0	T	0.0	0	7.8	15	20	M	M	9	18	19	30	
6	83	48	66	16	0	1	T	0.0	0	9.8	29	320	M	M	9	128	35	310	
7	62	43	53	3	12	0	0.00	0.0	0	14.8	25	350	M	M	9		31	350	
8	54	38	46	-4	19	0	0.00	0.0	0	8.2	20	350	M	M	8		23	360	
9	55	35	45	-6	20	0	0.00	0.0	0	8.1	16	150	M	M	3		22	160	
10	69	35	52	1	13	0	0.00	0.0	0	7.0	16	230	M	M	1		20	230	
11	77	45	61	9	4	0	0.00	0.0	0	13.6	25	240	M	M	6		34	240	
12	87	64	76	24	0	11	0.00	0.0	0	12.4	25	310	M	M	5		37	340	
13	92	61	77	25	0	12	0.00	0.0	0	11.4	23	240	M	M	1		29	230	
14	93	61	77	24	0	12	0.00	0.0	0	9.2	18	220	M	M	6		24	190	
15	75	60	68	15	0	3	0.15	0.0	0	6.4	15	220	M	M	9	13	23	250	
16	72	56	64	10	1	0	T	0.0	0	5.2	12	110	M	M	9	18	15	100	
17	71	55	63	9	2	0	0.03	0.0	0	11.4	28	260	M	M	9	18	38	250	
18	59	45	52	-2	13	0	0.00	0.0	0	17.1	33	280	M	M	5		42	280	
19	68	40	54	-1	11	0	0.00	0.0	0	10.0	21	240	M	M	5		27	260	
20	64	45	55	0	10	0	T	0.0	0	6.6	15	20	M	M	5		18	30	
21	69	51	60	4	5	0	0.00	0.0	0	7.6	17	100	M	M	6		22	130	
22	70	53	62	6	3	0	0.90	0.0	0	10.3	23	120	M	M	10	13	34	120	
23	72	50	61	5	4	0	1.01	0.0	0	10.3	23	260	M	M	8	1	30	300	
24	64	45	55	-2	10	0	0.00	0.0	0	8.5	16	260	M	M	4		24	300	
25	63	47	55	-2	10	0	0.00	0.0	0	8.0	17	300	M	M	5		26	290	
26	61	42	52	-5	13	0	T	0.0	0	7.8	15	130	M	M	6		21	130	
27	59	50	55	-3	10	0	T	0.0	0	5.0	12	130	M	M	9		16	130	
28	57	50	54	-4	11	0	0.41	0.0	0	9.3	18	60	M	M	9	1	26	50	
29	54	50	52	-6	13	0	3.05	0.0	0	10.4	21	60	M	M	10	1	30	80	
30	61	52	57	-2	8	0	2.26	0.0	0	8.9	16	110	M	M	10	13	22	90	
=====																			
SM	2036	1441			244	39	8.07	0.0		288.3			M		196				
=====																			
AV	67.9	48.0								9.6	FASTST	M	M	7		MAX(MPH)			
										MISC	---->	40	310					54	310
=====																			

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



SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

<u>Monitoring Period:</u> May 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u> Max Rainfall (in): 0.66 Date: 5/20/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.73 Date: 5/1/2023 Time: 4:00 Exceeds event trigger criteria? YES Max Tide Gauge Reading (m): 1.168 Date: 5/5/2023 Time: 0:00 Exceeds event trigger criteria? NO 10-year storm surge event defined as a hurricane? NO (1) While on May 1, 2023 the criteria for the storm surge tide gauge reading was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p>	NO
<p><u>Wind Event Data:</u> Max Wind (mph): 25 Date: 5/17/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: N OK (2) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: MAY
 YEAR: 2023
 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	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	64	50	57	-2	8	0	0.07	0.0	0	16.8	30	230	M	M	7	1	39	240
2	59	47	53	-6	12	0	0.05	0.0	0	12.0	31	260	M	M	8		39	230
3	60	47	54	-6	11	0	T	0.0	0	9.5	17	290	M	M	8		25	270
4	58	48	53	-7	12	0	0.02	0.0	0	7.7	15	360	M	M	9		18	10
5	66	47	57	-3	8	0	T	0.0	0	5.0	10	150	M	M	6		15	270
6	76	45	61	1	4	0	0.00	0.0	0	7.1	17	320	M	M	3		25	320
7	80	53	67	6	0	2	T	0.0	0	8.3	22	250	M	M	6		31	260
8	80	60	70	9	0	5	0.01	0.0	0	11.2	21	320	M	M	7		29	310
9	68	55	62	1	3	0	0.00	0.0	0	7.7	15	10	M	M	8		18	30
10	76	48	62	0	3	0	0.00	0.0	0	5.3	14	150	M	M	4		20	290
11	84	52	68	6	0	3	0.00	0.0	0	9.6	18	240	M	M	4		27	260
12	90	60	75	13	0	10	0.00	0.0	0	8.4	22	250	M	M	6		26	260
13	84	67	76	14	0	11	0.00	0.0	0	8.9	17	350	M	M	9		24	290
14	77	59	68	5	0	3	0.00	0.0	0	11.8	22	330	M	M	7		33	290
15	78	51	65	2	0	0	0.00	0.0	0	11.0	21	230	M	M	5		26	250
16	83	53	68	5	0	3	0.00	0.0	0	12.6	26	230	M	M	5		34	260
17	70	50	60	-4	5	0	0.00	0.0	0	17.4	26	330	M	M	5		36	320
18	61	44	53	-11	12	0	0.00	0.0	0	8.4	18	140	M	M	1		23	140
19	72	52	62	-2	3	0	0.00	0.0	0	7.9	20	150	M	M	6		28	140
20	70	58	64	0	1	0	0.66	0.0	0	5.1	9	270	M	M	10	1	20	270
21	75	57	66	1	0	1	0.01	0.0	0	11.5	22	360	M	M	7		29	310
22	78	56	67	2	0	2	0.00	0.0	0	7.1	15	150	M	M	4		20	140
23	69	55	62	-3	3	0	0.00	0.0	0	5.9	15	150	M	M	7		20	150
24	81	52	67	1	0	2	0.07	0.0	0	6.9	25	20	M	M	6		29	30
25	72	51	62	-4	3	0	0.00	0.0	0	13.6	24	360	M	M	4		33	350
26	76	51	64	-2	1	0	0.00	0.0	0	7.8	16	340	M	M	3		23	310
27	80	54	67	1	0	2	0.00	0.0	0	6.4	13	120	M	M	5		17	120
28	80	56	68	1	0	3	0.00	0.0	0	5.6	13	160	M	M	6		17	160
29	79	59	69	2	0	4	0.00	0.0	0	9.7	21	120	M	M	3		28	120
30	70	57	64	-3	1	0	0.00	0.0	0	8.0	16	160	M	M	2	8	21	160
31	78	51	65	-3	0	0	0.00	0.0	0	4.9	13	140	M	M	2		18	150
SM	2294	1645			90	51	0.89	0.0		279.1			M		173			
AV	74.0	53.1								9.0	FASTST		M	M	6		MAX(MPH)	
								MISC	---->	31	260						#	39 240

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

<u>Monitoring Period:</u> June 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u> Max Rainfall (in): 0.90 Date: 6/26/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.487 Date: 6/4/2023 Time: 2:00 Exceeds event trigger criteria? NO Max Tide Gauge Reading (m): 1.443 Date: 6/4/2023 Time: 1:00 Exceeds event trigger criteria? YES 10-year storm surge event defined as a hurricane? NO (1) While on June 4, 2023 the criteria for the storm surge tide gauge reading was exceeded, the 10-year storm surge did not meet the definition of a hurricane. Therefore, further assessment was not warranted.</p>	NO
<p><u>Wind Event Data:</u> Max Wind (mph): 23 Date: 6/17/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: NW OK (2) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: JUNE
 YEAR: 2023
 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
				DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
				AVG	MAX	MIN	AVG	DEP	12Z	AVG	MX	2MIN						
1	88	59	74	6	0	9	0.00	0.0	0	3.6	12	140	M	M	1		14	50
2	91	64	78	10	0	13	0.00	0.0	0	5.2	15	50	M	M	3	3	19	20
3	74	56	65	-4	0	0	0.00	0.0	0	9.4	17	30	M	M	8		23	80
4	71	49	60	-9	5	0	0.00	0.0	0	8.7	20	20	M	M	7		26	30
5	80	56	68	-1	0	3	0.00	0.0	0	10.7	20	320	M	M	5		29	330
6	84	62	73	3	0	8	T	0.0	0	11.2	26	350	M	M	9	38	32	340
7	74	59	67	-3	0	2	0.00	0.0	0	10.6	22	290	M	M	9	8	29	290
8	77	50	64	-6	1	0	0.00	0.0	0	6.5	16	310	M	M	9	8	24	290
9	77	59	68	-3	0	3	T	0.0	0	7.2	20	360	M	M	8		24	360
10	83	58	71	0	0	6	T	0.0	0	9.0	18	230	M	M	6		27	310
11	85	65	75	4	0	10	T	0.0	0	5.8	16	110	M	M	8		22	100
12	78	68	73	1	0	8	0.53	0.0	0	8.8	21	250	M	M	10	18	27	260
13	83	65	74	2	0	9	0.00	0.0	0	11.4	21	270	M	M	6		26	290
14	79	62	71	-1	0	6	0.28	0.0	0	10.4	25	240	M	M	6	38	32	240
15	82	60	71	-2	0	6	0.00	0.0	0	10.2	20	310	M	M	5		25	300
16	82	62	72	-1	0	7	0.22	0.0	0	6.2	15	220	M	M	8	13	21	240
17	82	63	73	0	0	8	T	0.0	0	13.2	35	350	M	M	8	38	42	350
18	85	64	75	1	0	10	0.00	0.0	0	10.3	18	340	M	M	6		25	280
19	80	65	73	-1	0	8	0.00	0.0	0	8.2	14	170	M	M	5		19	120
20	78	65	72	-2	0	7	0.00	0.0	0	7.6	14	130	M	M	8		20	130
21	75	63	69	-6	0	4	0.00	0.0	0	11.1	17	120	M	M	8		23	130
22	74	59	67	-8	0	2	0.04	0.0	0	10.3	18	30	M	M	10	18	26	20
23	71	66	69	-6	0	4	0.07	0.0	0	6.3	12	100	M	M	10	1	16	110
24	82	69	76	1	0	11	0.08	0.0	0	4.5	12	250	M	M	9	1	15	120
25	87	71	79	3	0	14	0.01	0.0	0	3.5	15	160	M	M	6	3	21	140
26	80	69	75	-1	0	10	0.90	0.0	0	7.3	25	360	M	M	9	138	33	10
27	82	67	75	-1	0	10	0.53	0.0	0	4.9	14	140	M	M	9	13	18	130
28	85	67	76	0	0	11	T	0.0	0	8.2	21	290	M	M	8		26	290
29	85	67	76	-1	0	11	0.00	0.0	0	7.4	16	310	M	M	6	8	26	310
30	86	67	77	0	0	12	0.00	0.0	0	6.1	14	160	M	M	5	8	19	150
SM	2420	1876			6	212	2.66	0.0		243.8			M		215			
AV	80.7	62.5								8.1	FASTST		M	M	7		MAX(MPH)	
								MISC	---->	35	350						42	350

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.3
Q3 2023 HYDRAULIC AND HYDRODYNAMIC
EVALUATION SUMMARIES**

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

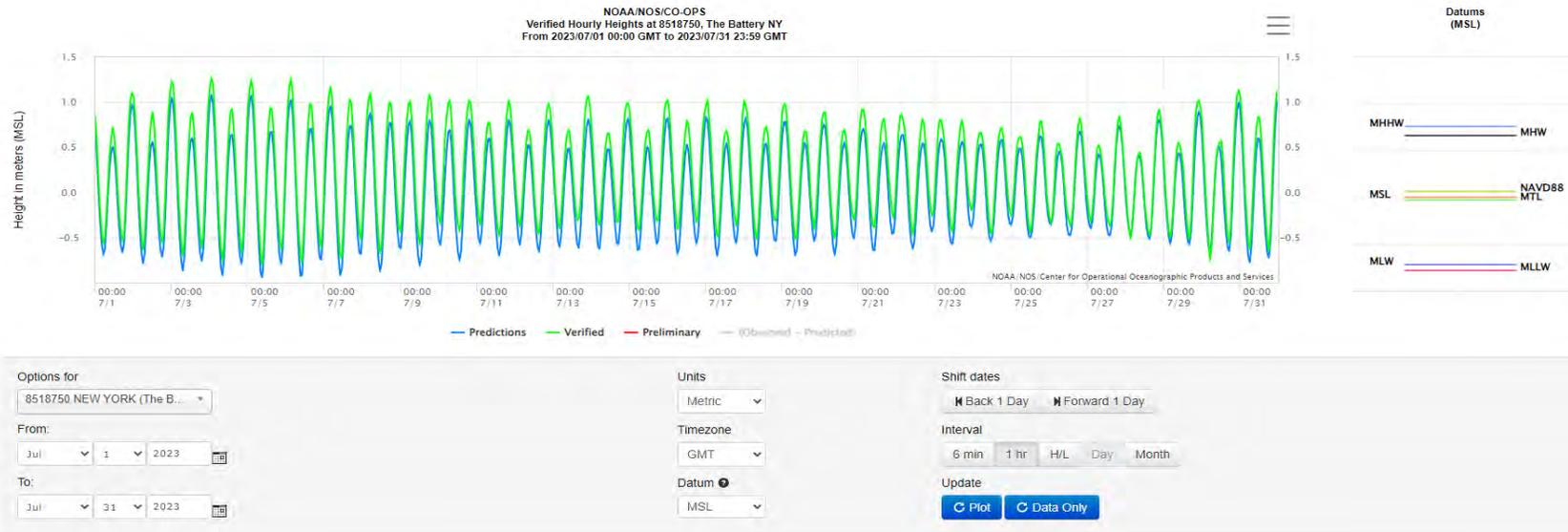
<u>Monitoring Period:</u> July 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u></p> <p>Max Rainfall (in): 1.49 Date: 7/16/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u></p> <p>Max Increase Above Predicted Normal Tidal Cycling (m): 0.433 Date: 7/10/2023 Time: 4:00 Exceeds event trigger criteria? NO</p> <p>Max Tide Gauge Reading (m): 1.27 Date: 7/4/2023 Time: 1:00 Exceeds event trigger criteria? NO</p> <p>10-year storm surge event defined as a hurricane? NO</p>	NO
<p><u>Wind Event Data:</u></p> <p>Max Wind (mph): 12 Date: 7/25/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: SE OK</p> <p>(1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: <u> OZ </u></p>	

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

STATION: NEWARK NJ
 MONTH: JULY
 YEAR: 2023
 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	83	69	76	-1	0	11	0.00	0.0	0	7.5	17	150	M	M	6		23	140	
2	91	72	82	5	0	17	0.30	0.0	0	7.6	29	280	M	M	9	138	36	280	
3	93	74	84	7	0	19	0.05	0.0	0	7.2	17	230	M	M	8	3	25	240	
4	83	74	79	1	0	14	1.19	0.0	0	3.8	26	250	M	M	8	138	32	250	
5	94	73	84	6	0	19	0.00	0.0	0	6.1	14	230	M	M	3	18	16	220	
6	92	77	85	7	0	20	0.00	0.0	0	6.4	15	150	M	M	3	8	20	150	
7	88	76	82	4	0	17	0.00	0.0	0	4.8	14	160	M	M	7	8	19	130	
8	88	76	82	4	0	17	0.00	0.0	0	5.3	14	130	M	M	8	3	18	150	
9	83	75	79	1	0	14	0.25	0.0	M	7.4	18	130	M	M	9	13	25	140	
10	88	72	80	2	0	15	0.00	0.0	M	10.1	21	330	M	M	7		27	310	
11	92	68	80	2	0	15	0.00	0.0	0	7.6	16	260	M	M	2		21	230	
12	95	71	83	5	0	18	0.00	0.0	0	7.2	18	260	M	M	4		26	290	
13	93	75	84	6	0	19	0.00	0.0	0	9.8	23	200	M	M	6	3	30	210	
14	87	72	80	2	0	15	0.31	0.0	0	7.8	23	250	M	M	8	13	29	280	
15	91	71	81	3	0	16	0.14	0.0	0	5.7	16	150	M	M	7	13	22	140	
16	80	76	78	0	0	13	1.49	0.0	0	6.1	15	200	M	M	10	1	18	200	
17	93	75	84	6	0	19	0.00	0.0	0	6.6	20	250	M	M	5	18	27	250	
18	86	73	80	2	0	15	1.16	0.0	0	6.1	24	270	M	M	6	3	29	280	
19	84	71	78	0	0	13	T	0.0	0	3.8	14	190	M	M	6	18	16	190	
20	88	72	80	2	0	15	0.00	0.0	0	6.0	14	140	M	M	6	18	18	160	
21	88	72	80	2	0	15	0.28	0.0	0	8.5	18	270	M	M	5	13	22	270	
22	87	71	79	1	0	14	0.00	0.0	0	9.6	18	350	M	M	5		24	340	
23	93	68	81	3	0	16	0.00	0.0	0	6.6	15	220	M	M	4		20	220	
24	88	71	80	2	0	15	0.00	0.0	0	7.3	15	200	M	M	6		21	180	
25	88	69	79	1	0	14	0.89	0.0	0	6.5	36	230	M	M	6	13	46	240	
26	92	66	79	1	0	14	0.00	0.0	0	6.9	16	240	M	M	4		23	250	
27	96	75	86	8	0	21	0.01	0.0	0	14.3	28	250	M	M	7	3	34	260	
28	95	77	86	8	0	21	0.09	0.0	0	6.7	23	230	M	M	4	3	32	230	
29	93	73	83	5	0	18	0.10	0.0	0	12.4	26	250	M	M	8	8	33	300	
30	83	67	75	-3	0	10	0.00	0.0	0	11.0	21	330	M	M	5		27	310	
31	87	64	76	-2	0	11	0.00	0.0	0	6.3	20	330	M	M	5		24	330	
SM	2762	2235			0	490	6.26	0.0		229.0			M		187				
AV	89.1	72.1								7.4	FASTST		M	M	6		MAX(MPH)		
										MISC	---->	36	230				46	240	

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

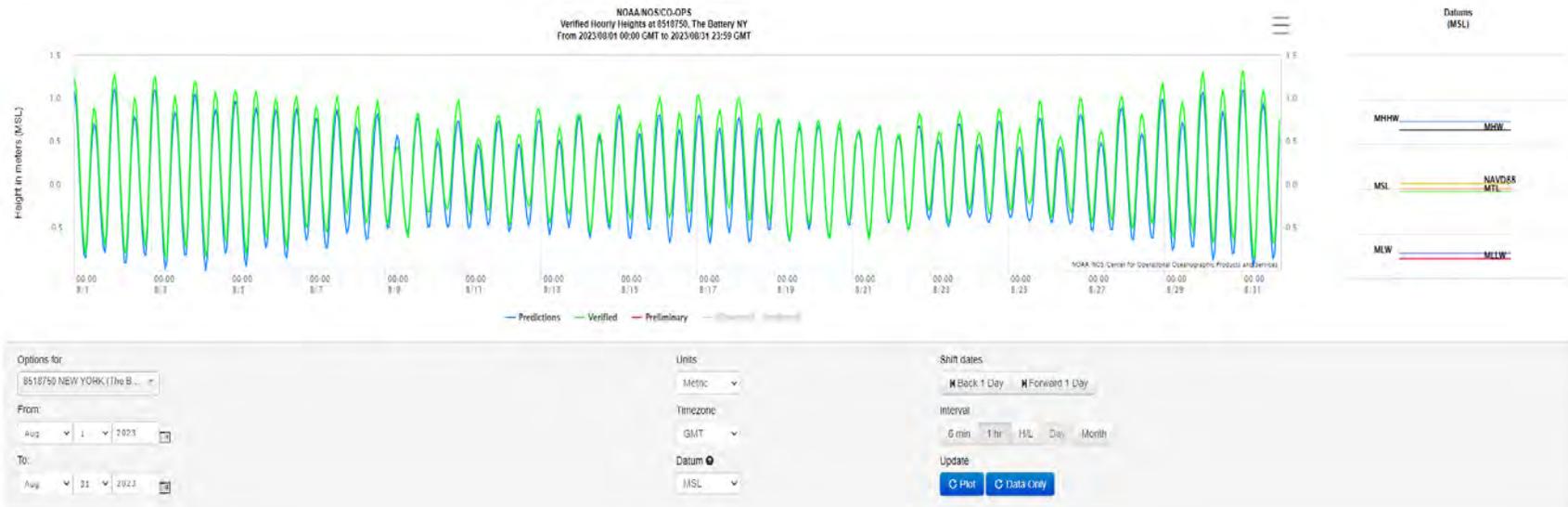
Monitoring Period: August 2023	Assessment Required?
Rainfall Event Data: Max Rainfall (in): 0.91 Date: 8/25/2023 50-Year, 24-Hr event? NO	NO
Storm Surge Event Data: Max Increase Above Predicted Normal Tidal Cycling (m): 0.313 Date: 8/8/2023 Time: 15:00 Exceeds event trigger criteria? NO Max Tide Gauge Reading (m): 1.314 Date: 8/31/2023 Time: 0:00 Exceeds event trigger criteria? NO 10-year storm surge event defined as a hurricane? NO	NO
Wind Event Data: Max Wind (mph): 25 Date: 8/18/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: SE OK (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; <ul style="list-style-type: none">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 <ul style="list-style-type: none">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." <ul style="list-style-type: none">https://w2.weather.gov/climate/index.php?wfo=okx	
	CHECKED BY: <u> OZ </u>

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

STATION: NEWARK NJ
 MONTH: AUGUST
 YEAR: 2023
 LATITUDE: 40 42 N
 LONGITUDE: 74 10 W

TEMPERATURE IN F:					:PCPN:			SNOW:	WIND		:SUNSHINE:			SKY	:PK WIND			
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	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
										12Z	AVG	MX	2MIN					
1	84	67	76	-2	0	11	T	0.0	0	10.0	17	330	M	M	6		26	310
2	83	63	73	-5	0	8	0.00	0.0	0	6.5	13	170	M	M	4		23	320
3	81	64	73	-5	0	8	0.00	0.0	0	8.6	16	200	M	M	8		23	150
4	79	72	76	-2	0	11	0.00	0.0	0	9.9	16	240	M	M	9		22	220
5	88	70	79	1	0	14	0.00	0.0	0	6.8	15	20	M	M	7		20	30
6	87	68	78	0	0	13	0.00	0.0	0	7.8	16	160	M	M	5		19	160
7	84	69	77	0	0	12	0.67	0.0	0	9.1	26	200	M	M	10	13	37	220
8	84	71	78	1	0	13	T	0.0	0	14.0	31	260	M	M	8	8	37	310
9	90	70	80	3	0	15	0.00	0.0	0	13.7	22	260	M	M	3		35	270
10	83	71	77	0	0	12	0.45	0.0	0	3.8	14	200	M	M	8	13	18	190
11	88	67	78	1	0	13	0.00	0.0	0	8.7	22	260	M	M	3		28	250
12	90	68	79	2	0	14	0.01	0.0	0	6.6	18	180	M	M	6	3	25	170
13	90	71	81	4	0	16	0.50	0.0	0	9.3	23	250	M	M	6	13	29	250
14	90	73	82	5	0	17	T	0.0	0	4.6	14	200	M	M	8		17	170
15	84	72	78	1	0	13	0.43	0.0	0	8.1	15	280	M	M	9	1	18	280
16	85	70	78	2	0	13	0.56	0.0	0	5.4	14	150	M	M	8	13	18	160
17	82	74	78	2	0	13	T	0.0	0	7.6	17	120	M	M	9		25	130
18	85	70	78	2	0	13	0.36	0.0	0	12.6	31	320	M	M	6	13	37	320
19	82	63	73	-3	0	8	0.00	0.0	0	11.2	21	260	M	M	4		27	260
20	89	62	76	0	0	11	0.00	0.0	0	7.6	17	240	M	M	5		21	220
21	91	70	81	5	0	16	0.00	0.0	0	8.9	18	330	M	M	7		24	330
22	80	68	74	-2	0	9	0.00	0.0	0	13.4	24	20	M	M	8		30	20
23	82	65	74	-2	0	9	0.00	0.0	0	7.9	13	130	M	M	6		18	130
24	75	68	72	-3	0	7	0.04	0.0	0	6.5	18	180	M	M	10	1	24	180
25	81	71	76	1	0	11	0.91	0.0	0	5.8	15	230	M	M	8	13	19	180
26	87	73	80	5	0	15	0.24	0.0	0	6.2	14	340	M	M	7	1	20	300
27	87	69	78	3	0	13	0.00	0.0	0	7.1	15	330	M	M	5		23	320
28	78	72	75	0	0	10	0.00	0.0	0	6.7	13	130	M	M	9		17	130
29	83	68	76	2	0	11	T	0.0	0	5.1	9	110	M	M	8		12	130
30	88	70	79	5	0	14	0.10	0.0	0	10.4	23	330	M	M	8	1	30	320
31	80	64	72	-2	0	7	0.00	0.0	0	13.4	23	350	M	M	5		31	360
SM	2620	2133			0	370	4.27	0.0		263.3			M		213			
AV	84.5	68.8								8.5	FASTST		M	M	7		MAX(MPH)	
										MISC	---->	# 31	260				# 37	220

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



SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

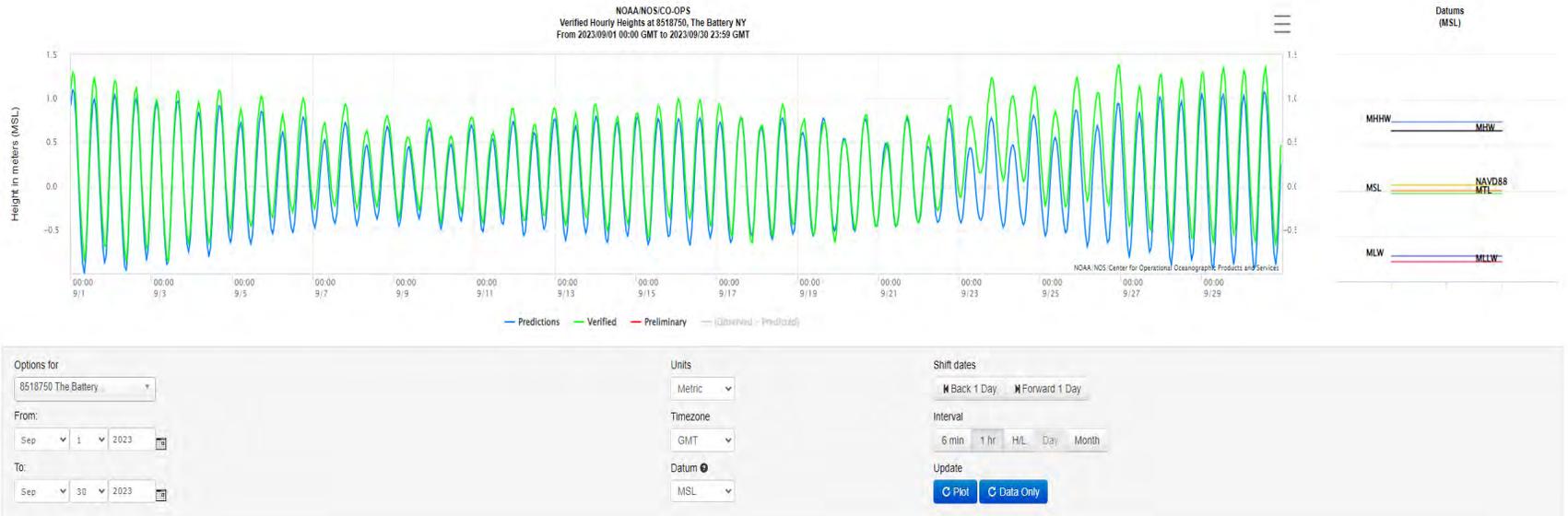
<u>Monitoring Period:</u> September 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u></p> <p>Max Rainfall (in): 1.72 Date: 9/29/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u></p> <p>Max Increase Above Predicted Normal Tidal Cycling (m): 0.581 Date: 9/24/2023 Time: 4:00 Exceeds event trigger criteria? NO</p> <p>Max Tide Gauge Reading (m): 1.382 Date: 9/26/2023 Time: 23:00 Exceeds event trigger criteria? NO</p> <p>10-year storm surge event defined as a hurricane? NO</p>	NO
<p><u>Wind Event Data:</u></p> <p>Max Wind (mph): 22 Date: 9/23/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: NE OK</p> <p>(1) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: <u> OZ </u></p>	

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

STATION: NEWARK NJ
 MONTH: SEPTEMBER
 YEAR: 2023
 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	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
=====																		
1	79	60	70	-4	0	5	0.00	0.0	0	8.5	14	20	M	M	1		18	10
2	83	59	71	-3	0	6	0.00	0.0	0	7.8	15	160	M	M	4		18	250
3	92	66	79	6	0	14	0.00	0.0	0	8.2	18	270	M	M	4		24	250
4	93	72	83	10	0	18	T	0.0	0	6.1	17	350	M	M	6		21	360
5	95	78	87	14	0	22	0.00	0.0	0	5.8	15	340	M	M	7		20	310
6	97	77	87	15	0	22	0.00	0.0	0	6.4	16	260	M	M	3		20	290
7	96	76	86	14	0	21	0.00	0.0	0	8.0	23	300	M	M	4	3	29	290
8	92	73	83	11	0	18	0.29	0.0	0	5.8	31	190	M	M	8	3	39	190
9	88	73	81	9	0	16	0.02	0.0	0	6.5	15	330	M	M	9	138	19	140
10	81	70	76	5	0	11	1.18	0.0	0	3.6	17	250	M	M	9	13	20	270
11	85	72	79	8	0	14	0.58	0.0	0	5.3	15	330	M	M	8	13	17	310
12	87	69	78	7	0	13	0.00	0.0	0	6.3	13	240	M	M	6		17	260
13	83	71	77	7	0	12	0.25	0.0	0	7.3	15	280	M	M	7	13	18	270
14	81	63	72	2	0	7	0.00	0.0	0	13.2	20	350	M	M	3		27	310
15	74	58	66	-4	0	1	0.00	0.0	0	14.7	24	360	M	M	5		31	360
16	79	60	70	1	0	5	0.00	0.0	0	10.7	21	280	M	M	6		31	290
17	79	56	68	-1	0	3	0.16	0.0	0	4.7	13	150	M	M	5	1	16	160
18	70	62	66	-2	0	1	1.23	0.0	0	7.1	16	300	M	M	9	18	24	310
19	77	59	68	0	0	3	0.00	0.0	0	10.2	21	270	M	M	2		29	280
20	78	58	68	0	0	3	0.00	0.0	0	6.9	16	260	M	M	3		27	290
21	75	56	66	-1	0	1	0.00	0.0	0	7.5	14	20	M	M	5		20	50
22	74	58	66	-1	0	1	0.00	0.0	0	11.1	20	60	M	M	8		27	120
23	65	58	62	-5	3	0	1.00	0.0	0	16.1	24	30	M	M	10	1	32	30
24	67	61	64	-2	1	0	1.11	0.0	0	12.2	21	40	M	M	10	1	30	30
25	65	59	62	-4	3	0	0.57	0.0	0	14.6	25	30	M	M	10	1	34	30
26	63	56	60	-5	5	0	0.09	0.0	0	11.1	18	20	M	M	10	1	24	20
27	68	51	60	-5	5	0	0.00	0.0	0	9.8	16	40	M	M	8		22	30
28	66	55	61	-3	4	0	0.07	0.0	0	10.9	17	20	M	M	9	1	21	30
29	65	60	63	-1	2	0	1.72	0.0	0	14.1	23	40	M	M	10	13	30	40
30	70	59	65	1	0	0	0.04	0.0	0	10.9	17	20	M	M	9	1	22	330
=====																		
SM	2367	1905			23	217	8.31	0.0		271.4			M		198			
=====																		
AV	78.9	63.5								9.0	FASTST	M	M	7		MAX(MPH)		
										MISC	---->	31	190			39	190	
=====																		

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT B.4
Q4 2023 HYDRAULIC AND HYDRODYNAMIC
EVALUATION SUMMARIES**

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

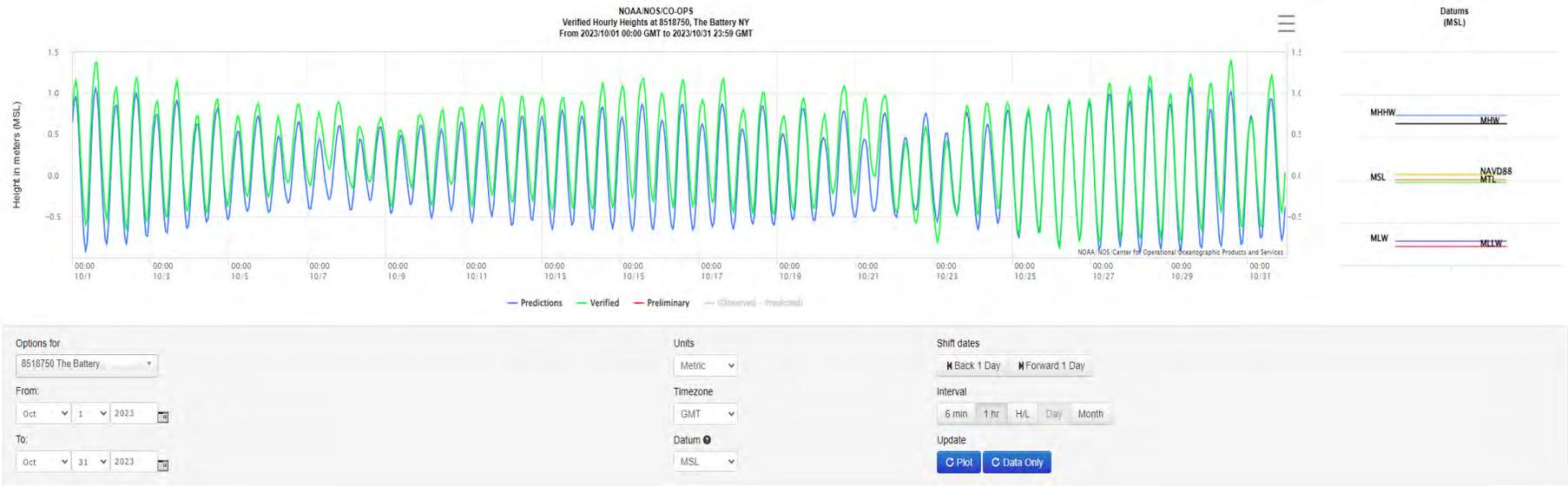
<u>Monitoring Period:</u> October 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u> Max Rainfall (in): 1.83 Date: 10/20/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 0.524 Date: 10/21/2023 Time: 6:00 Exceeds event trigger criteria? NO Max Tide Gauge Reading (m): 1.402 Date: 10/30/2023 Time: 14:00 Exceeds event trigger criteria? YES 10-year storm surge event defined as a hurricane? NO</p> <p>(1) The recorded max tide reading does not exceed threshold criteria for a hurricane and assessment was not required.</p>	NO
<p><u>Wind Event Data:</u> Max Wind (mph): 25 Date: 10/21/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: NW OK</p> <p>(2) The averaged wind speed for the 6-hour period during which the maximum wind speed was recorded does not exceed the threshold criteria.</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: OCTOBER
 YEAR: 2023
 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	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
									12Z	AVG	MX	2MIN						
1	82	58	70	7	0	5	0.00	0.0	0	8.9	21	10	M	M	2		26	10
2	81	63	72	9	0	7	0.00	0.0	0	6.9	15	20	M	M	3		19	10
3	85	59	72	10	0	7	0.00	0.0	0	4.0	9	150	M	M	1		14	260
4	85	63	74	12	0	9	0.00	0.0	0	3.3	10	150	M	M	1		M	100
5	79	60	70	8	0	5	T	0.0	0	5.6	14	140	M	M	5	1	19	140
6	75	68	72	11	0	7	0.10	0.0	0	4.5	10	120	M	M	10	128	14	90
7	72	54	63	2	2	0	0.22	0.0	0	8.9	25	320	M	M	9	1	36	320
8	63	49	56	-4	9	0	0.00	0.0	0	15.3	24	240	M	M	4		29	250
9	64	47	56	-4	9	0	0.02	0.0	0	9.5	20	250	M	M	6		24	260
10	67	51	59	-1	6	0	0.01	0.0	0	6.1	16	220	M	M	7	8	23	230
11	73	52	63	4	2	0	0.00	0.0	0	5.2	16	250	M	M	4		21	230
12	74	50	62	3	3	0	0.00	0.0	0	5.3	14	300	M	M	4		17	290
13	67	53	60	2	5	0	0.00	0.0	0	9.2	16	350	M	M	4		24	300
14	57	50	54	-4	11	0	0.65	0.0	0	9.3	17	360	M	M	10	1	20	30
15	64	50	57	-1	8	0	T	0.0	0	12.6	23	320	M	M	7		31	330
16	68	45	57	0	8	0	0.00	0.0	0	8.2	17	330	M	M	5		25	310
17	66	52	59	2	6	0	0.00	0.0	0	5.3	12	350	M	M	7		17	320
18	67	52	60	3	5	0	0.00	0.0	0	4.0	8	170	M	M	7		11	170
19	68	47	58	2	7	0	0.00	0.0	0	7.2	14	130	M	M	5		19	130
20	66	59	63	7	2	0	1.83	0.0	0	5.9	15	230	M	M	10	13	20	230
21	68	58	63	7	2	0	0.25	0.0	0	13.5	29	290	M	M	8	1	41	290
22	62	49	56	1	9	0	0.00	0.0	0	16.7	29	320	M	M	7		40	290
23	64	48	56	1	9	0	0.00	0.0	0	9.6	22	310	M	M	3		29	310
24	70	44	57	3	8	0	0.00	0.0	0	5.3	15	200	M	M	3		17	210
25	77	48	63	9	2	0	0.00	0.0	0	9.2	17	240	M	M	5		22	240
26	82	54	68	14	0	3	0.00	0.0	0	6.7	14	230	M	M	6		19	230
27	78	59	69	16	0	4	0.00	0.0	0	7.7	16	230	M	M	7		21	250
28	84	61	73	20	0	8	0.00	0.0	0	9.6	17	350	M	M	4		23	320
29	65	51	58	5	7	0	0.38	0.0	0	10.3	18	20	M	M	10	1	22	30
30	63	51	57	5	8	0	0.56	0.0	0	9.3	21	330	M	M	10	18	27	320
31	54	46	50	-2	15	0	T	0.0	0	6.9	15	340	M	M	9		21	320
SM	2190	1651			143	55	4.02	0.0		250.0			M		183			
AV	70.6	53.3								8.1	FASTST		M	M	6		MAX(MPH)	
										MISC	---->	#	29	290			41	290

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

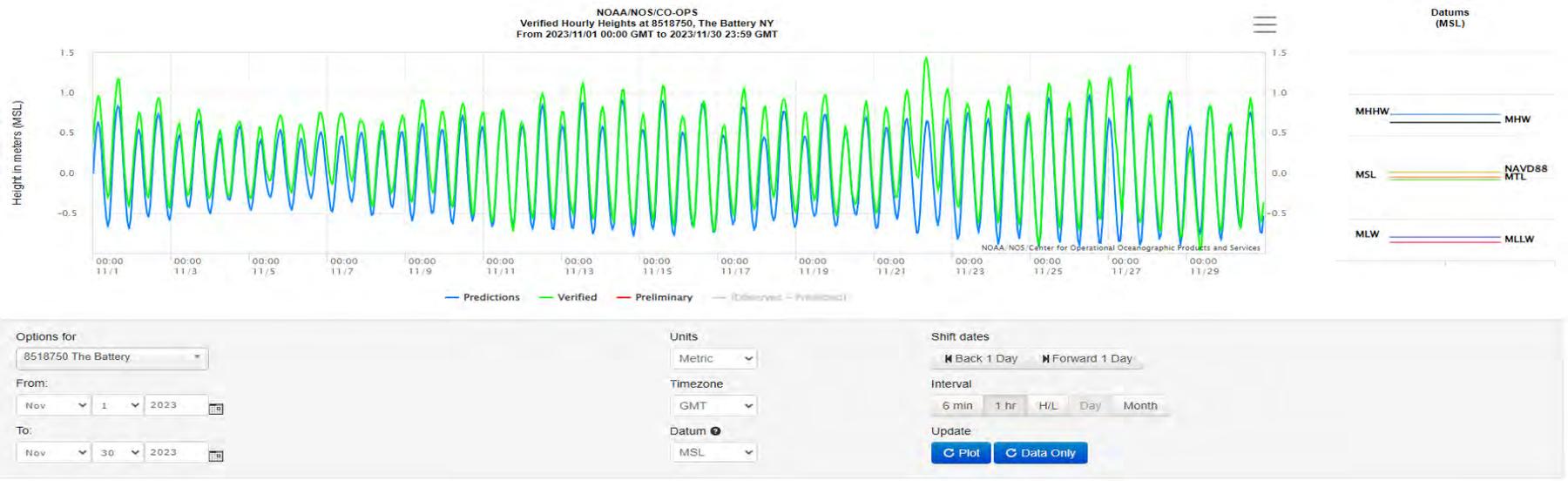
<u>Monitoring Period:</u> November 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u></p> <p>Max Rainfall (in): 1.46 Date: 11/22/2023</p> <p>50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u></p> <p>Max Increase Above Predicted Normal Tidal Cycling (m): 0.92 Date: 11/27/2023 Time: 5:00</p> <p>Exceeds event trigger criteria? YES</p> <p>Max Tide Gauge Reading (m): 1.435 Date: 11/22/2023 Time: 8:00</p> <p>Exceeds event trigger criteria? YES</p> <p>10-year storm surge event defined as a hurricane? NO</p> <p>(1) The recorded max increase above predicted normal tide reading does not exceed threshold criteria for a hurricane and assessment was not required.</p> <p>(2) The recorded max tide reading does not exceed threshold criteria for a hurricane and assessment was not required.</p>	NO
<p><u>Wind Event Data:</u></p> <p>Max Wind (mph): 25 Date: 11/28/2023</p> <p>Exceeds trigger criteria? NO</p> <p>Wind direction over 6-hr period: W OK</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: NOVEMBER
 YEAR: 2023
 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	52	39	46	-6	19	0	T	0.0	0	12.1	24	320	M	M	6		32	290	
2	52	35	44	-7	21	0	0.00	0.0	0	6.9	14	240	M	M	1		17	290	
3	59	34	47	-4	18	0	0.00	0.0	0	6.9	16	200	M	M	3		21	200	
4	63	40	52	1	13	0	0.00	0.0	0	4.3	10	230	M	M	8		13	230	
5	68	45	57	7	8	0	0.00	0.0	0	5.6	18	340	M	M	6		23	310	
6	57	43	50	0	15	0	0.00	0.0	0	6.0	14	360	M	M	7		16	20	
7	66	53	60	10	5	0	T	0.0	0	10.2	26	320	M	M	7		35	320	
8	55	40	48	-1	17	0	0.00	0.0	0	10.7	22	350	M	M	6		27	310	
9	62	41	52	3	13	0	T	0.0	0	4.6	14	350	M	M	7		20	280	
10	54	43	49	0	16	0	0.00	0.0	0	9.6	17	230	M	M	7		24	230	
11	58	35	47	-1	18	0	0.00	0.0	0	9.1	20	350	M	M	3		25	320	
12	48	34	41	-7	24	0	0.00	0.0	0	8.5	15	30	M	M	4		18	30	
13	51	32	42	-6	23	0	T	0.0	0	5.8	13	200	M	M	4		16	200	
14	57	38	48	1	17	0	0.00	0.0	0	12.1	26	340	M	M	2		33	320	
15	55	33	44	-3	21	0	0.00	0.0	0	5.8	15	240	M	M	5		19	230	
16	69	38	54	7	11	0	0.00	0.0	0	6.3	13	230	M	M	4		17	250	
17	70	45	58	12	7	0	0.00	0.0	0	7.7	18	230	M	M	7		24	200	
18	61	40	51	5	14	0	T	0.0	0	11.3	23	330	M	M	6		32	310	
19	57	35	46	0	19	0	0.00	0.0	0	9.8	25	330	M	M	2		32	320	
20	49	36	43	-3	22	0	0.00	0.0	0	8.9	18	350	M	M	4		23	360	
21	51	32	42	-3	23	0	0.78	0.0	0	11.9	22	110	M	M	8	1	32	100	
22	58	50	54	9	11	0	1.46	0.0	0	11.7	25	110	M	M	9	1	40	110	
23	55	46	51	7	14	0	0.00	0.0	0	13.0	25	310	M	M	4		30	300	
24	54	34	44	0	21	0	0.00	0.0	0	11.7	26	320	M	M	7		35	320	
25	43	31	37	-7	28	0	0.00	0.0	0	3.9	14	320	M	M	5		17	330	
26	57	30	44	0	21	0	0.66	0.0	0	8.1	25	100	M	M	9	1	35	110	
27	54	37	46	3	19	0	0.01	0.0	0	13.9	22	260	M	M	5	1	31	260	
28	43	31	37	-6	28	0	T	T	0	15.1	28	280	M	M	3		36	280	
29	39	27	33	-10	32	0	0.00	0.0	0	12.4	20	230	M	M	6		25	240	
30	54	30	42	0	23	0	0.00	0.0	0	9.3	17	230	M	M	6		23	230	
SM	1671	1127			541	0	2.91	T		273.2			M		161				
AV	55.7	37.6								9.1	FASTST		M	M	5		MAX(MPH)		
								MISC	---->	28	280						40	110	

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



SA-7 Sediment Remedy

Long-Term Monitoring Program
Hydrologic Data Review

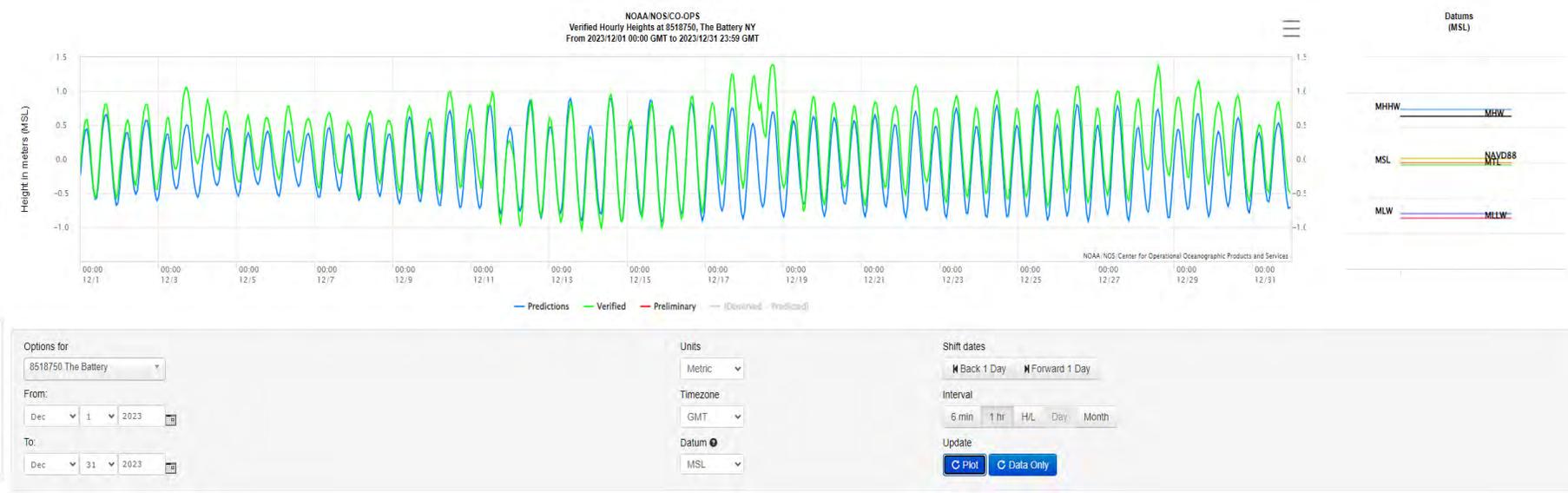
<u>Monitoring Period:</u> December 2023	<i>Assessment Required?</i>
<p><u>Rainfall Event Data:</u> Max Rainfall (in): 2.75 Date: 12/18/2023 50-Year, 24-Hr event? NO</p>	NO
<p><u>Storm Surge Event Data:</u> Max Increase Above Predicted Normal Tidal Cycling (m): 1.427 Date: 12/18/2023 Time: 10:00 Exceeds event trigger criteria? YES Max Tide Gauge Reading (m): 1.388 Date: 12/18/2023 Time: 17:00 Exceeds event trigger criteria? NO 10-year storm surge event defined as a hurricane? NO (1) The recorded maximum increase above predicted normal tide reading does not exceed threshold criteria for a hurricane and assessment was not required.</p>	NO
<p><u>Wind Event Data:</u> Max Wind (mph): 29 Date: 12/18/2023 Exceeds trigger criteria? NO Wind direction over 6-hr period: W OK</p>	NO
<p><u>CRITERIA FROM LTMP:</u></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">• See https://w2.weather.gov/climate/index.php?wfo=okx <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">• Note: Hurricane events are defined by NOAA.• See http://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750 <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">• https://w2.weather.gov/climate/index.php?wfo=okx <p style="text-align: right;">CHECKED BY: _____</p>	

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

STATION: NEWARK NJ
 MONTH: DECEMBER
 YEAR: 2023
 LATITUDE: 40 42 N
 LONGITUDE: 74 10 W

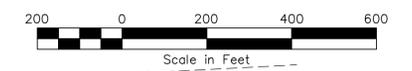
TEMPERATURE IN F:					:PCPN:			SNOW:		WIND			:SUNSHINE:			SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18	
12Z													AVG		MX		2MIN		
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR	
1	48	35	42	0	23	0	0.38	0.0	0	4.3	14	220	M	M	8	1	19	230	
2	61	46	54	12	11	0	0.00	0.0	0	5.5	13	230	M	M	9	18	19	260	
3	52	45	49	8	16	0	0.75	0.0	0	7.4	14	310	M	M	10	1	19	300	
4	55	42	49	8	16	0	0.00	0.0	0	10.6	21	270	M	M	6	1	29	270	
5	44	37	41	0	24	0	0.00	0.0	0	7.6	17	320	M	M	6		22	320	
6	44	33	39	-2	26	0	0.00	0.0	0	11.6	24	320	M	M	7		30	320	
7	39	31	35	-5	30	0	T	T	0	9.2	18	250	M	M	8		23	250	
8	52	34	43	3	22	0	0.00	0.0	0	4.7	12	180	M	M	6		22	290	
9	59	36	48	8	17	0	T	0.0	0	2.9	9	30	M	M	6	8	10	30	
10	64	46	55	15	10	0	0.93	0.0	0	5.8	25	340	M	M	10	1	33	330	
11	50	39	45	6	20	0	0.43	0.0	0	16.2	32	310	M	M	8	1	41	290	
12	46	32	39	0	26	0	0.00	0.0	0	11.4	18	230	M	M	3		25	240	
13	49	32	41	2	24	0	0.00	0.0	0	10.0	22	280	M	M	2		28	280	
14	44	33	39	1	26	0	0.00	0.0	0	8.8	14	240	M	M	4		19	320	
15	59	32	46	8	19	0	0.00	0.0	0	9.6	16	280	M	M	2		23	250	
16	57	38	48	10	17	0	0.00	0.0	0	6.4	17	20	M	M	6		20	20	
17	60	49	55	17	10	0	0.40	0.0	0	7.7	23	120	M	M	10	1	34	120	
18	64	41	53	16	12	0	2.75	0.0	0	16.5	32	170	M	M	7	18	48	140	
19	45	32	39	2	26	0	0.00	0.0	0	14.1	25	320	M	M	5		33	330	
20	49	31	40	3	25	0	0.00	0.0	0	10.5	18	310	M	M	3		26	300	
21	45	29	37	0	28	0	0.00	0.0	0	11.3	18	20	M	M	3		24	340	
22	38	25	32	-4	33	0	0.00	0.0	0	5.0	15	20	M	M	6		19	10	
23	45	30	38	2	27	0	0.00	0.0	0	5.4	9	20	M	M	8		11	10	
24	49	40	45	9	20	0	0.01	0.0	0	2.8	8	10	M	M	9		12	250	
25	51	43	47	11	18	0	0.00	0.0	0	3.3	8	30	M	M	8	18	10	40	
26	50	44	47	11	18	0	0.00	0.0	0	3.1	7	30	M	M	10	18	9	40	
27	51	45	48	13	17	0	0.34	0.0	0	5.8	17	30	M	M	10	18	22	30	
28	55	50	53	18	12	0	1.51	0.0	0	10.4	23	30	M	M	10	1	29	20	
29	57	46	52	17	13	0	0.05	0.0	M	7.6	18	260	M	M	8	1	23	260	
30	47	37	42	7	23	0	T	M	0	12.2	22	270	M	M	7		27	270	
31	44	40	42	8	23	0	0.00	0.0	0	8.5	16	280	M	M	9		21	300	
SM	1573	1173			632	0	7.55	T		256.2			M		214				
AV	50.7	37.8								8.3	FASTST		M	M	7		MAX(MPH)		
								MISC	---->	#	32	310						48	140

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



<https://tidesandcurrents.noaa.gov/waterlevels.html?id=8518750&units=metric&bdate=20210701&edate=20210801&timezone=GMT&datum=MSL&interval=h&action=>

**ATTACHMENT C
BATHYMETRIC SURVEY**



NOTE:
CAP AREAS 16 & 22 SHOWING
2019 BASELINE SURVEY

- NOTES:
1. TOPOGRAPHY: TOPOGRAPHIC ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD 29) BASED ON BENCHMARK "PK-NA1" WHICH HAS AN ELEVATION OF 6.94 FEET NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88) AS PROVIDED BY HONEYWELL. THE PLANE OF NGVD 29 IS 1.14 FEET BELOW THE PLANE OF NAVD 88 AT KEARNY POINT, NEW JERSEY BASED ON NATIONAL GEODETIC SURVEY FIRST ORDER TIDAL BENCHMARK "W 16" WHICH HAS A PUBLISHED ELEVATION OF 17.00 FEET NAVD 88 AND 18.14 FEET NGVD 29.
 2. 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 ROVER USING THE VRS CORRECTIONS WAS VERIFIED BY OCCUPYING CONTROL POINT ASI-PA AVE, LOCATED NEAR THE WESTERN END OF PENNSYLVANIA AVENUE IN KEARNY, NEW JERSEY.
 3. SURVEYED BATHYMETRIC CONTOURS WERE PROVIDED IN MLLW DATUM AND CONVERTED TO NGVD 29 DATUM BY PERFORMING AN ELEVATION ADJUSTMENT OF -1.94 FEET. THE ELEVATION ADJUSTMENT IS BASED ON THE DIFFERENCE IN ELEVATION DATUM BETWEEN MLLW AND NGVD 29 AS DOCUMENTED AT TIDAL BENCHMARK "W16".
 4. NEAR SHORE CONDITIONS (BETWEEN ELEVATION -1 FT AND +1 FT) ARE DEFINED BASED ON SURVEY DATA POINTS PROVIDED BY AQUA SURVEY INC. FOR THE 2010 BATHYMETRY.

SOURCES:
 SITE LAYOUT BASED ON RIVERBED ELEVATIONS NORTHERN SITE, HONEYWELL SA7; SITE INVESTIGATION BY OCEAN SURVEYS, INC. HACKENSACK RIVER, JERSEY CITY, NJ OCTOBER 2007
 LOTS BASED ON A MAP SHOWING REMAINING STATE TIDELANDS CLAIMS, BLOCK 1290.1, LOT A1 & A2, BLOCK 1751, LOTS 10K1, 10K2, 11 & 12, CMX, 8/6/09.
 2014 BATHYMETRIC CONTOURS BASED ON A BATHYMETRIC SURVEY FOR HONEYWELL BY AQUA SURVEY INC., CONDUCTED ON 9/29/2014 AND DIGITALLY PROVIDED ON 12/18/2014.
 CAP AREA 16: BENEFICIAL ENVIRONMENTAL PROJECT AS BUILT, KENNON SURVEYING SERVICES INC., 02/21/2019.
 CAP AREA 22: CAP AREA 22 AS BUILT, KENNON SURVEYING SERVICES INC., 02/13/2019.

- LEGEND
- BATHYMETRIC CONTOUR ELEVATION MAJOR
 - BATHYMETRIC CONTOUR ELEVATION MINOR
 - - - AS-BUILT CAPPING LIMIT
 - ⊕ 7-A AS-BUILT LONG TERM MONITORING PLATE - ODD YEARS
 - ⊕ 7-B AS-BUILT LONG TERM MONITORING PLATE - EVEN YEARS

2014 BATHYMETRIC BASE MAP			
HONEYWELL INTERNATIONAL, INC. SA7 SEDIMENT REMEDIATION PROJECT JERSEY CITY, HUDSON COUNTY, NJ		PREPARED BY: ECP/PRM DATE: 4/4/2024	DRAWING 1
		DRAFTED BY: PRM APPROVED BY: JSJ/MN	SCALE: AS SHOWN PROJECT: 169000484

DATE: 4/4/24
DRAWING: 001



- NOTES:
1. TOPOGRAPHY: TOPOGRAPHIC ELEVATIONS ARE IN FEET AND ARE REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM 1929 (NGVD 29) BASED ON BENCHMARK "PK-NAL" WHICH HAS AN ELEVATION OF 6.94 FEET NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88) AS PROVIDED BY HONEYWELL. THE PLANE OF NGVD 29 IS 1.14 FEET BELOW THE PLANE OF NAVD 88 AT KEARNEY POINT, NEW JERSEY BASED ON NATIONAL GEODETIC SURVEY FIRST ORDER TIDAL BENCHMARK "W 16" WHICH HAS A PUBLISHED ELEVATION OF 17.00 FEET NAVD 88 AND 18.14 FEET NGVD 29.
 2. 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). THE POSITIONING SYSTEM USED WAS AN RTK-DGPS SYSTEM WHICH WAS CHECKED AGAINST AN NGS BENCHMARK AND FOUND TO HAVE AN X,Y ACCURACY WITHIN 0.2 FEET. THE RTK ANTENNA WAS MOUNTED DIRECTLY ABOVE THE MULTIBEAM PROJECTOR TO ELIMINATE OFFSET ERRORS. DATA FROM THE MULTIBEAM SYSTEM WAS CORRECTED USING THE RESULTS OF A PATCH TEST TO ACCOUNT FOR ANY LATENCY, ROLL, PITCH, OR YAW ERRORS IN THE HARDWARE INSTALLATION. SPEED OF SOUND READINGS WERE TAKEN REAL-TIME AT THE MULTIBEAM PROJECTOR AND WATER COLUMN SOUND VELOCITY PROFILES WERE TAKEN BEFORE AND AFTER DATA COLLECTION AND CORRECTIONS ARE APPLIED IN POST-PROCESSING.
 3. SURVEYED BATHYMETRIC CONTOURS WERE PROVIDED IN MLW DATUM AND CONVERTED TO NGVD 29 DATUM BY PERFORMING AN ELEVATION ADJUSTMENT OF -1.94 FEET. THE ELEVATION ADJUSTMENT IS BASED ON THE DIFFERENCE IN ELEVATION DATUM BETWEEN MLW AND NGVD 29 AS DOCUMENTED AT TIDAL BENCHMARK "W16".
 4. NEAR SHORE CONDITIONS (BETWEEN ELEVATION -1 FT AND +1 FT) ARE DEFINED BASED ON SURVEY DATA POINTS PROVIDED BY AQUA SURVEY INC. FOR THE 2010 BATHYMETRY.

LEGEND

- 2023 BATHYMETRIC CONTOUR ELEVATION
- - - AS-BUILT CAPPING LIMIT
- ⊕ 7-A AS-BUILT LONG TERM MONITORING PLATE - YEAR 1
- ⊞ 7-B AS-BUILT LONG TERM MONITORING PLATE - YEAR 5

SOURCES:

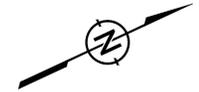
SITE LAYOUT BASED ON RIVERBED ELEVATIONS NORTHERN SITE, HONEYWELL SA7. SITE INVESTIGATION BY OCEAN SURVEYS, INC. HACKENSACK RIVER, JERSEY CITY, NJ OCTOBER 2007.

LOTS BASED ON A MAP SHOWING REMAINING STATE TIDELANDS CLAIMS, BLOCK 1290.1, LOT A1 & A2, BLOCK 1751, LOTS 10K1, 10K2, 11 & 12, CMX, 8/6/09.

2023 BATHYMETRIC CONTOURS BASED ON A BATHYMETRIC SURVEY FOR HONEYWELL BY AQUA SURVEY INC., CONDUCTED 11/01/2023, 11/02/2023 AND 11/16/2023 AND DIGITALLY PROVIDED 11/27/2023.

2023 BATHYMETRIC BASE MAP			
HONEYWELL INTERNATIONAL, INC. SA7 SEDIMENT REMEDIATION PROJECT JERSEY CITY, HUDSON COUNTY, NJ		PREPARED BY: JS DATE: 4/4/2024	DRAWING 2
		DRAFTED BY: MSB SCALE: AS SHOWN	
		APPROVED BY: JS/JMN PROJECT: 169000484	

DATE: 6/12/24 | DRAWING: 2023



CAP Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
1-1	6976.69	9.57
1-2	7875.07	7.52
2-1	5190.81	9.73
2-2	9227.40	9.16
2-3	8074.12	10.14
3-1	9888.19	8.09
3-2	9577.30	7.41
3-3	7791.11	9.73
4-1	4884.97	3.17
5-1	10624.57	11.07
5-2	10775.32	11.33
5-3	3612.18	7.32
5-4	10226.65	10.20
5-5	5760.84	11.55
6A-1	9898.13	9.85
6A-2	6360.60	11.83
6B-1	10675.93	9.09
6B-2	10485.00	10.81
6B-3	9304.28	12.80
7A-1	9296.32	7.25
7A-2	10643.50	8.70
7A-3	10650.17	5.97
7A-4	10764.85	6.90
7A-5	10209.86	9.38
7A-6	10132.28	7.98
7A-7	10491.91	7.69
7A-8	10752.96	9.80
7B-1	6072.73	7.34
7B-2	8466.24	5.83
7B-3	9143.45	7.74
7C-1	4830.64	3.40
7C-2	3984.43	5.19
7C-3	2915.59	10.66
8A-1	5321.93	8.93
8A-2	10168.12	8.96
8A-3	9889.20	8.67
8A-4	11039.19	12.63
8A-5	10569.88	19.08
8B-1	7513.52	14.84
8B-2	10605.66	16.99
9-1	6727.34	14.12
9-2	11389.60	16.12
9-3	7319.95	18.77
10-1	9785.14	7.39
10-2	7908.97	11.30
10-3	7171.59	9.73
10-4	6714.88	8.59

CAP Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
11A-1	9384.73	7.43
11B-5	7093.74	4.17
11B-6	10888.92	4.29
11B-7	10888.92	3.75
11B-8	10888.92	3.18
11B-9	10120.85	2.83
11B-10	9594.19	1.82
11B-11	8621.65	9.33
11B-12	10888.92	9.81
11B-13	10888.92	10.44
11B-14	10888.92	9.46
11B-15	10651.11	8.52
11B-16	10806.33	12.11
11B-17	8332.10	8.73
11C-1	9079.90	12.14
11C-2	10856.57	10.75
11C-3	10755.43	9.60
11C-4	7657.32	12.80
11C-5	7390.58	9.04
11C-6	841.71	7.30
11C-7	246.64	9.60
12-1	2671.45	9.69
13A-1	10884.68	12.24
13A-2	10710.96	11.10
13A-3	10764.41	12.02
13A-4	9293.67	10.24
13A-5	10888.92	10.68
13A-6	10888.92	10.71
13A-7	10861.99	14.29
13A-8	9641.56	10.22
13A-9	10812.64	12.78
13A-10	10323.22	11.84
13A-11	9740.43	14.55
13A-12	8438.85	10.76
13B-1	7960.98	7.91
13B-2	6755.09	6.70
13B-3	6497.89	5.50
13B-4	5179.66	9.83
13B-5	10721.25	13.64
14-1	10869.50	5.66
14-2	9740.21	4.75
14-3	10133.25	7.57
14-4	10013.68	7.78

CAP Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
15-1	7685.85	8.45
15-2	9968.47	9.07
15-3	10802.38	7.92
16-1	3116.71	-0.19
16-2	2464.76	1.40
17A-1	9130.55	5.14
17A-2	10755.48	6.04
17A-3	10532.40	7.16
17A-4	10842.36	5.89
17A-5	10757.17	7.49
17A-6	10601.60	8.08
17A-7	10792.51	8.99
17A-8	6603.19	7.81
17A-9	10888.92	6.93
17A-10	10888.92	7.72
17A-11	10888.92	6.79
17A-12	4662.45	8.93
17A-13	9474.69	7.16
17A-14	6461.97	8.67
18A-1	9865.12	7.73
18A-2	8551.72	7.98
18A-3	9161.56	7.42
18A-4	9060.05	6.60
18A-5	9378.66	7.46
18A-6	10617.44	8.05
18A-7	10666.84	9.04
18A-8	10714.65	7.75
18A-9	10386.36	8.03
18A-10	9265.60	7.86
18A-11	10502.08	8.19
18B-1	6249.41	9.34
18B-2	2603.56	9.83
19A-1	9375.24	7.49
19A-2	10638.74	7.61
19A-3	8148.37	4.26
19A-4	5801.48	5.13
19B-1	10040.58	11.70
19B-2	8108.89	14.10
19B-3	5817.84	15.34
20-1	7071.05	7.15
20-2	9504.85	7.48
20-3	10011.35	11.08
20-4	10441.14	19.99
21-1	5754.80	7.89
21-2	5276.55	7.91
22-1	8071.85	-6.95
22-2	6492.43	-7.42

CAP Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
23-1	6349.83	18.77
23-2	7731.54	7.39
24-1	8939.90	11.30
24-2	3451.14	9.73
25-1	10886.41	8.59
25-2	10887.38	7.43
25-3	10834.03	8.55
25-4	10889.45	5.64
26-1	4091.28	3.74
26-2	4051.20	3.56
27-1	10145.65	4.15
27-2	9720.15	4.17
27-3	9556.33	4.29
27-4	10336.69	3.75
27-5	6606.32	3.18
29A-1	10140.97	2.83
29A-2	10751.43	1.82
29A-3	9766.71	9.33
29A-4	8156.62	9.81
29A-5	5649.17	10.44
29B-1	9404.02	9.46
29B-2	9200.77	8.52
29B-3	8906.93	12.11
29B-4	9288.71	8.73
29B-5	10888.92	12.14
29B-6	8260.06	10.75
29B-7	10127.05	9.60
29B-8	10886.06	12.80
29B-9	10678.16	9.04
29B-10	8540.15	7.30
29B-11	10650.20	9.60
29B-12	9738.45	9.69
30A-1	10837.09	12.24
30A-2	10175.73	11.10
30B-1	7786.37	11.02
30B-2	5944.75	10.24
30B-3	3431.11	10.68

MNR Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
1 MNR	6243.04	16.31
2 MNR	7253.84	13.20
3 MNR	4785.81	11.61
4 MNR	10694.97	6.69
5 MNR	9676.39	14.00
6 MNR	8461.53	9.12
7 MNR	7462.13	9.39
8 MNR	6986.11	10.67
9 MNR	7297.02	11.87
10 MNR	10515.53	9.10
11 MNR	7313.32	10.86
12 MNR	3293.33	17.82
13 MNR	10888.92	11.58
14 MNR	10888.92	8.50
15 MNR	10888.92	11.86
16 MNR	7439.94	11.13
17 MNR	10888.92	14.02
18 MNR	10888.92	11.77
19 MNR	10888.92	13.14
20 MNR	3371.11	12.96
21 MNR	9550.74	11.66
22 MNR	10888.92	13.52
23 MNR	10888.92	20.64
24 MNR	7583.07	17.20
25 MNR	10428.71	25.31
26 MNR	10888.92	28.86
27 MNR	10888.92	19.84
28 MNR	8127.54	14.58
29 MNR	8536.80	17.90
30 MNR	10888.92	26.83
31 MNR	10770.70	38.10
32 MNR	10888.92	36.57
33 MNR	8956.79	20.41
34 MNR	9163.43	30.08
35 MNR	8750.49	15.30
36 MNR	10532.95	6.66
37 MNR	7542.29	6.02
38 MNR	10348.98	7.20
39 MNR	8256.15	6.40
40 MNR	11966.63	9.99
41 MNR	3408.85	4.36
42 MNR	8506.57	7.72
43 MNR	10376.52	6.52
44 MNR	10887.46	4.81
45 MNR	10888.92	7.59
46 MNR	6762.11	14.93
47 MNR	7194.82	4.89

MNR Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
48 MNR	7375.15	7.02
49 MNR	7950.86	8.58
50 MNR	5884.05	5.46
51 MNR	8302.79	16.95
52 MNR	9676.39	23.67
53 MNR	9784.57	24.61
54 MNR	10636.06	11.89
55 MNR	10189.85	7.02
56 MNR	5489.81	9.72
57 MNR	8673.42	9.67
58 MNR	6322.03	10.65
59 MNR	3871.80	14.13
60 MNR	6984.14	15.14
61 MNR	8839.43	12.55
62 MNR	7126.33	14.92
63 MNR	4158.65	14.99
64 MNR	6300.83	14.61
65 MNR	6404.03	12.63
66 MNR	10458.39	12.66
67 MNR	10595.07	8.82
68 MNR	10752.68	14.22
69 MNR	10888.92	23.95
70 MNR	6051.29	17.33
71 MNR	10588.92	18.84
72 MNR	10476.67	-0.36
73 MNR	5760.04	12.11
74 MNR	7984.39	2.17
75 MNR	7984.39	2.17
76 MNR	10812.61	25.69
77 MNR	10888.92	29.92
78 MNR	10888.92	31.14
79 MNR	10888.92	11.51
80 MNR	10877.93	21.53
81 MNR	10391.12	21.16
82 MNR	10888.92	23.56
83 MNR	10888.92	23.35
84 MNR	9159.44	16.06
85 MNR	11298.49	15.94
86 MNR	10888.92	19.27
87 MNR	10888.92	22.34
88 MNR	12560.30	15.26
89 MNR	10763.67	18.51
90 MNR	7000.52	13.81
91 MNR	10886.66	15.11
92 MNR	5601.45	13.88
93 MNR	7211.49	11.10
94 MNR	2984.17	10.96

MNR Areas		
Grid Name	Grid Area (square feet)	Net Loss/Gain (inches)
95 MNR	8930.48	21.64
96 MNR	10888.92	15.67
97 MNR	6487.33	13.63
98 MNR	7613.48	6.11
99 MNR	9911.58	22.29
100 MNR	10888.92	19.08
101 MNR	10888.92	13.05
102 MNR	10888.92	12.50
103 MNR	10885.85	11.07
104 MNR	5907.43	12.06
105 MNR	10330.10	19.25
106 MNR	10888.92	16.97
107 MNR	10888.92	13.04
108 MNR	10888.92	9.74
109 MNR	4045.35	13.21
110 MNR	2646.81	12.32
111 MNR	2054.66	15.34
112 MNR	9710.16	16.53
113 MNR	10888.92	12.69
114 MNR	10528.01	11.43
115 MNR	10273.15	12.08
116 MNR	4474.07	11.97
117 MNR	5921.71	10.35
118 MNR	8104.49	4.17
119 MNR	10476.64	6.10
120 MNR	7942.80	2.85
121 MNR	6617.54	6.72
122 MNR	9677.65	6.83
123 MNR	7563.36	10.15
124 MNR	9749.27	9.97
125 MNR	10828.50	11.31
126 MNR	10423.30	12.48
127 MNR	10888.92	11.47
128 MNR	10345.18	12.10
129 MNR	7899.39	10.66
130 MNR	10270.15	11.28
131 MNR	7194.11	13.91
132 MNR	8898.16	12.84
133 MNR	9340.87	14.14
134 MNR	10888.92	12.50
135 MNR	6324.57	14.32
136 MNR	10362.04	13.02
137 MNR	10594.41	15.61
138 MNR	10886.66	15.11
139 MNR	8275.23	13.88
140 MNR	8971.10	14.60
141 MNR	10511.70	18.09

