



Proactive by Design



Coastal Resources Management Council
Rhode Island Department of Environmental Management
United States Army Corps of Engineers

**Bulkhead Maintenance Repairs
Assessor's Plat 56 Lots 273, 317, 316, 5
THE NARRAGANSETT ELECTRIC COMPANY
Providence, RI**

RIDEM Waste Management Case No. SR-28-1152

December 2019
File No. 03.0033554.98



PREPARED FOR:

National Grid
Providence, Rhode Island

GZA GeoEnvironmental, Inc.

188 Valley Street, Suite 300 | Providence, RI 02909
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December 16, 2019
File No. 03.00033554.98

Mr. Dan Goulet
Coastal Resources Management Council
Stedman Government Center – Suite 3
4808 Tower Hill Road
Wakefield, Rhode Island 02879

Mr. Neal Personeus
Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, RI 02908

Mr. Michael Wierbonics
United States Army Corps of Engineers
New England District, Regulatory District
696 Virginia Road
Concord, MA 01742

Re: Application for CRMC Maintenance Certificate, RIDEM Water Quality Certification, & USACE
General Permit
Bulkhead Maintenance Repairs
The Narragansett Electric Company
Providence, Rhode Island

Dear Messrs. Goulet, Personeus, and Wierbonics:

On behalf of our client, The Narragansett Electric Company d/b/a National Grid (National Grid), this application is being submitted by GZA GeoEnvironmental, Inc. (GZA) pursuant to applicable requirements of the following:

- Coastal Resources Management Council (CRMC) Maintenance Assent;
- Rhode Island Department of Environmental Management (RIDEM) Water Quality Certificate; and
- United States Army Corps of Engineers (USACE) General Permit.

The proposed Project is to reconstruct an existing and functioning seawall/bulkhead along the Providence River at National Grid's properties located at City of Providence Tax Assessors Plat (A.P.) 56, Lots 273, 316, 317, and 5 in Providence, RI. The Project Area, including laydown and access road, is a small portion (1.97 acres) of a larger 41.5-acre Site known as 642 Allens Avenue. The total disturbed area (limits of disturbance, LOD) associated with the maintenance repairs is 0.36 acres. The approximately 700-foot long seawall/bulkhead currently serves as a docking facility for marine vessels for the Holcim Cement Corporation (tenant of National Grid). The seawall/bulkhead is in need of maintenance repairs that will consist of construction of a new steel bulkhead, timber fendering, and mooring system. The new wall system will be installed as close as practicable to the existing wall. The existing mooring bollards will be replaced with new 60-ton and 150-ton bollards.



Based on correspondence with CRMC, it was recommended that authorization for this proposed activity be secured through a CRMC Maintenance Assent Certificate. There have also been communications with RIDEM and USACE regarding proper permit requirements; both affirm that the proposed Project likely constitutes maintenance of an existing structure.

We trust that the following materials will provide the necessary data and information to secure the required permits for CRMC, RIDEM, and USACE. Should you have any questions or require additional information, please do not hesitate to contact Igor Runge at (401) 427-2710. Thank you for your attention to this matter.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

A handwritten signature in blue ink, appearing to read "S. Haupt".

Sara Haupt, P.E.
Assistant Project Manager

A handwritten signature in blue ink, appearing to read "Igor Runge".

Igor Runge, Ph.D., P.H.
Consultant/Reviewer

A handwritten signature in blue ink, appearing to read "Margaret S. Kilpatrick".

Margaret S. Kilpatrick, P.E.
Associate Principal

Attachments: Application Forms
Supporting Documentation

CC: Joe Martella, RIDEM OWM
William Howard, National Grid
Amy Willoughby, National Grid



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1.0 INTRODUCTION

The Narragansett Electric Company d/b/a National Grid (National Grid) is seeking the necessary applicable permits from the Coastal Resources Management Council (CRMC), Rhode Island Department of Environmental Management, and United States Army Corps of Engineers (USACE) for repair of the existing bulkhead (herein referred to as the Project) at National Grid's 642 Allens Avenue Former Manufactured Gas Plant (MGP) facility in Providence, Rhode Island (herein referred to as the Site). Completed application forms for the Project are included as Appendix A.

The following Sections 2, 3, and 4 provide the Site description, Project overview, and anticipated schedule. Sections 5, 6, and 7 address specific program (application) requirements.

2.0 SITE DESCRIPTION AND HISTORY

The Site is located at 642 Allens Avenue in Providence, Rhode Island northeast of the intersection of Allens Avenue and Terminal Road. The area of the Project is a relatively small portion (approximately 1.97 acres) of the larger property (41.5 acres - the "Site") owned by National Grid. The Project is located on portions of the parcels identified in the City of Providence Tax Assessor's Office as Assessors Plat (A.P.) 56, Lots 273, 316, 317, and 5. A Property Boundaries and Site Location Plan is provided as Figure G-3 of the attached plan set. The Site is bounded to the west by Allens Avenue, to the east by the Providence River, to the south by Terminal Road, and a cove area of the Providence River to the north. The Project Area is located on the eastern portion of Site, adjacent to the Providence River. This section of the Providence River is listed as Type 6 Industrial Waterfront and Commercial Navigation Channel. The Providence River is currently listed by the Rhode Island Department of Environmental Management ("RIDEM") Office of Water Resources on the State of Rhode Island 2016 303(d) List of Impaired Waters. The Providence River is impaired for fecal coliform, total nitrogen, and dissolved oxygen. The water quality classification of the Providence River adjacent to the Site is SB1{a}. SB1 waters are saline water bodies that are designated for primary and secondary contact recreational activities and fish and wildlife habitat. The Providence River has a partial use designation {a} due to combined sewer overflows that are directed to the river. According to the FEMA Flood Insurance Rate Map for the area (44007C0317J), portions of the Site are mapped as Zone AE flood zones with a base flood elevation ("BFE") of 12 feet.

The Site (and hence the Project Area) is listed with the RIDEM Office of Waste Management due to contaminant concentrations present in soil and groundwater that represent Method 1 exceedances (as defined in the Remediation Regulations) as a result of historical operations/activities. The Site is listed as RIDEM Site Remediation File No. SR-28-1152 (formerly Case No. 98-004). Construction activities associated with the maintenance repairs will be performed in accordance with the Site-specific Soil Management Plan (SMP) that was submitted to the RIDEM Office of Waste Management on September 12, 2012.

From 1910 until 1954, a Manufactured Gas Plant ("MGP") occupied the Site. Other occupants included B.P. Clapp in 1910 (ammonia works, including the recycling and sale of ammonia by-products), and in 1918, the United States Government operated a toluene facility at the Site. Portions of the Site included the Sassafraz Point Rifle Range, which was a small arms range that operated during the late 1800s. An LNG facility has occupied the eastern/southeastern portion of the Site since 1972, and Holcim (formerly St. Lawrence Cement Company) has occupied the southeastern portion (plat 56 Lot 273) of the Site since 1961. National Grid's Compressed Natural Gas ("CNG") Fueling Area has occupied the southwestern portion of the Site since at least 1995. National Grid's Natural Gas Regulation Facility occupies the remainder of the Site. Construction associated with the proposed bulkhead maintenance is limited to the waterfront portion of the Site.



3.0 PROJECT DETAILS

GZA has evaluated the condition of the existing seawall/bulkhead. Based on the evaluation, the deteriorated seawall/bulkhead should be repaired. The maintenance repairs described in Section 5.0 (below) are necessary to continue to support the current activities at the Holcim facility and maintain the integrity of the shoreline at the Site. The anticipated sequence and schedule for the bulkhead maintenance repair activities are described further below.

4.0 ANTICIPATED CONSTRUCTION SEQUENCE AND SCHEDULE

The following summarizes the anticipated construction schedule and sequence for maintenance repairs of the bulkhead.

The anticipated construction schedule will proceed as follows:

- Contractor notice to proceed is planned for Summer/Fall 2020.
- Site mobilization and preparation is planned to begin in late Fall 2020.
- Bulkhead maintenance construction is planned to begin in late Fall 2020 and conclude in late Fall 2021.

The construction sequence is planned as follows:

- Mobilization of equipment, vessels, and materials;
- Establish horizontal and vertical survey control for the new bulkhead alignment;
- Establish limits of work within the upland area (temporary fencing/barriers) as necessary to perform the work;
- Install erosion and sediment controls around work area;
- Install new 150-ton mooring bollards (drilled monopiles);
- Install turbidity curtain around vessels and/or work area;
- Remove and dispose of existing timber fender system;
- Drive steel sheet piles with vibratory and/or impact hammer systems;
- Install outfall extension connections;
- Excavate soil and remove and dispose of existing seawall elements (Granite Blocks/ Concrete Fill) that may interfere with or interrupt steel wale installation;
- Remove abandoned concrete foundations (upland area) to approximately two (2) feet below existing grade;
- Install steel wale along upland side of sheet piling;
- Install new 60-ton mooring bollards;
- Remove and dispose of existing mooring bollards;
- Install tieback anchors along new bulkhead wall;
- Backfill and compact between existing and new bulkheads to existing grade;
- Test and post-tension tieback anchors;
- Install steel pile cap;
- Replace timber fender system in-kind;
- Perform all required site restoration, including placement of engineered caps within excavated areas and fence installation;
- Remove temporary security fencing and erosion and sediment controls; and
- Demobilization.



Since Holcim will continue with normal operations at the waterfront during construction, the planned construction sequence may have to be adjusted as necessary to accommodate.

5.0 CRMC PROGRAM REQUIREMENTS

5.1 DESCRIPTION OF FACILITY TO BE MAINTAINED

Beginning from the north side, the existing bulkhead consists of approximately 466 linear feet of steel sheet pile bulkhead/quay wall followed by 240 linear feet of quay wall (706 feet total) owned by National Grid and leased by the Holcim cement facility.

The 466-foot length of seawall consists of a granite block retaining wall (termed a quay) fronted with an anchored steel sheet pile bulkhead, comprised of MZ-38 steel sections. Available information suggests the quay was likely constructed during the original port development and the anchored steel bulkhead was installed to buttress the quay to allow for berth deepening. Based on information available in previous permit applications, the steel sheeting was installed in 1947 and 1948 in front of the granite block seawall. The northern portion of the steel sheet pile wall terminates into the upland area with an angled return of 50 lineal feet. The southern end of the sheet pile wall terminates at the Holcim Facility fence line. Concrete (approximately 4 to 5 feet thick and 6 feet deep) and soil backfill (below the concrete) was placed between the original granite block wall and the steel sheet pile wall. The sheet pile wall is anchored with a wale (backside of sheeting), tie rods, and concrete deadman system.

The remaining wall length, approximately 240 feet, consists of the original quay. Permit documents indicate the bottom of the quay wall is located at elevation -29.3 feet NAVD88 (-27 feet in reference to MLW) with an exposed face of approximately 36 feet high. The quay is battered along the front face resulting in the toe of the wall extending approximately 2.5 feet outboard into the Providence River (measured from top of wall). Three 12-inch diameter outfalls penetrate the original quay and will be replaced in kind.

The date of the granite seawall construction is uncertain, but pre-dates the steel sheet pile wall. Per Section 1.3.1(N)e of the Coastal Resources Management Program (the "Redbook"), repairs and maintenance of structures with a previous Council Assent are permissible under a Certification of Maintenance through the CRMC program. Additionally, structures that pre-date the formation of the CRMC and therefore may not have a Previous Council Assent are permissible under a Certification of Maintenance through the CRMC program. Both the steel sheet pile and granite block bulkhead sections are in need of repair. The steel sheet pile section has experienced significant corrosion. The granite block wall shows signs of instability. The existing bulkhead is depicted on Figure C-2 of the attached plan set.

A timber fender system, consisting of timber fender piles, wales, and chocks, is attached to the entire outboard face of the 240-foot-long quay and approximately 420 feet of the quay with outboard anchored steel sheet pile bulkhead. The timber fender system along both the steel sheet pile and original quay shows signs of deterioration.

Mooring hardware, consisting of a total of 18 bollards, is located in the upland area along the steel sheet pile bulkhead and original quay. The mooring hardware consists of 13 single bitt bollards or mooring posts and 5 double bitt bollards, typically attached to the top of the quay or supported by concrete blocks. Due to a storm event in 2016, two concrete block-supported bollards on the northwestern corner of the Site failed. The bollards along the quay and sheet pile bulkhead display minor rusting and other defects.



The Holcim cement facility utilizes the mooring hardware, the area along the quay and sheet pile bulkhead, 2 standoff barges, and one unloading barge for berthing/mooring and for offloading of cementitious materials. Two types of vessels, the M.S. Star Life (556-foot long bulk carrier) and the Alexandra (420-foot long cement transporter barge), frequent the facility. One 200-foot long unloading barge remains positioned at one location and onboard equipment is used to off-load cement from the vessels to the Holcim facility. Two small standoff barges are rafted (positioned side by side against one another) to provide standoff between the bulkhead and the moored vessels. The standoff barge locations are adjusted based on the position of the moored vessel.

5.2 MAINTENANCE WORK PROPOSED

The proposed bulkhead will consist of a steel sheet pile wall supported by a grouted tie-back anchoring system. The proposed sheet pile bulkhead will be installed as close as practicable to the existing seawalls and will vary due to the two types of existing wall systems. Along the 466-foot existing steel sheet pile bulkhead, the back of new steel sheet piles will be installed approximately 6 to 12 inches beyond the face of the existing sheet pile wall, refer to Section B on Figure S-2 of the attached plan set. This offset is necessary to prevent interference with the existing steel sheet pile wall during wall installation. The existing steel sheet pile bulkhead is not battered.

The sheet pile wall proposed along the remaining 240 linear feet of the bulkhead will be installed approximately 5.5 feet outboard of the existing battered granite block wall (measured at top of wall, varies along depth of wall) and approximately 12 inches outboard of the existing wall (measured at mudline). Refer to Section A on Figure S-2. This offset is the closest practicable (and possible) so that the new, non-battered steel sheet pile does not conflict with the battered granite block face.

A probing program utilizing a steel H-pile and survey will be performed at the start of project activities to identify the amount of batter of the existing wall systems and allow the new wall systems to be installed as close as practicable. Field adjustments will be made to the wall location based on the findings of the probing program.

Repairs and maintenance of seawalls will be consistent with Section 1.3.1(G) of the Redbook. The steel sheet piles in front of the granite block wall will be continuous with the steel sheet pile wall in front of the existing steel sheet pile wall. The new steel sheet pile wall will tie into the existing riprap slope to the north and the existing seawall to the south. The steel sheet piles will be driven to a depth of approximately 35 to 45 feet below the mudline. Any concrete used for the Project (including the sheet pile cap) will be Type 2 or Type 5 sulfate resistant concrete.

Based on the types of vessels moored for the Holcim facility offloading, mooring improvements are warranted. The timber fender system and bollards will be replaced as part of the proposed bulkhead construction phase. New bollards will consist of ten (10) 60-ton gravity bollards (i.e., concrete block-supported) and five (5) 150-ton monopile-supported bollards. The locations and details of the new bollards are shown on Figure C-5 and Figure S-3, respectively, of the attached plan set.

5.3 DESCRIPTION OF CONSTRUCTION METHODS

The following construction methods will be utilized to perform repair work including installation of the new anchored bulkhead wall and improvements to the berthing and mooring system. Prior to any earth disturbing activities, sediment and erosion controls will be installed. Filtrexx Soxx will be installed along the Limit of Work (LOW) on the landward portion of the Project Area. Turbidity curtains will be installed to enclose in-water work including, but not limited to, demolition of the existing timber fender system, the probing program, sheet pile installation, tieback installation, and timber fender system installation. All Site materials (soil and groundwater) will be managed in accordance with the September 2012 SMP. Refer to Figures C-3 and C-4 of the attached plan set for temporary controls to be installed during construction.



Construction of the 48-inch diameter monopiles for the 150-ton mooring bollards will be performed utilizing a land-based drill rig and conventional drilling methods (i.e., cased drive and wash). Water used for installation of the proposed piles (i.e., drilling water) will be recirculated in the boreholes as needed during installation. Temporary casing will be installed to the bottom of the drill hole (bottom of fill layer) and soil cuttings will be cleaned out within the casing. A 48-inch diameter pipe pile will then be vibrated to the specified tip elevation utilizing a vibratory hammer. Concrete will be placed within the pipe pile to the ground surface, lean concrete or sand will be backfilled between the temporary casing and pipe pile to grade, and the temporary casing will be removed. All soil cuttings removed from the casing will be removed from the site and disposed/recycled at a licensed receiving facility approved by National Grid. Any excess soil or groundwater generated during construction activities will be managed in accordance with the September 2012 SMP for the Site.

Steel sheet piles will be installed as close to the existing walls as practicable utilizing a barge-mounted crane and a vibratory hammer appropriately sized to achieve the design tip elevations within the existing soil conditions. An impact hammer may be used if the penetration rate due to vibratory loading does not meet specifications. Sheet piles will be installed such that the vertical alignment is maintained throughout installation.

Tieback anchors will be installed utilizing a barge-mounted drill rig and conventional or roto-sonic drilling methods. Water used for installation of the tiebacks (i.e., drilling water) will be recirculated in the drilled holes as needed during installation. Upon completion of the drilled hole to the specified extents, the tieback assembly will be placed into the drilled hole with a grout pipe attached, and the hole will be grouted. The anchor tendon will be held in position until the specified grout strength has been achieved. Tieback anchors will be tested and post-tensioned utilizing a center-hole hydraulic jack capable of applying the specified test load to the anchor tendon.

Utilizing either a land or barge-based crane, the new timber fender system will be constructed from a barge and the mooring bollard caps, excavation and wale installation, and steel cap installation will be performed from land.

5.4 COASTAL HAZARD APPLICATION WORKSHEET

A Coastal Hazard Application Worksheet has been completed and is attached as Appendix B. The FEMA 100-year Flood Insurance Map (panel 44007C0317J) shows that the BFE for the Project Area is 12 feet (Zone AE). CRMC's Shoreline Change Map for the area shows three transects at the Site (938 through 941). The digital shoreline analysis transects do not show an "end point rate" for erosion but do show an "end point distance". Transects 938 through 940 show an end point distance ranging from 0.3 feet to 6.7 feet and transect 941 shows an end point distance of -2.7 feet. Note, a positive end point distance represents fill and a negative end point distance represents erosion. Given that the erosion rate was not provided and the majority of transects for the site show net fill, the assumed erosion rate for the Project Area is zero.

The minimum setback is calculated based on the erosion rate and design life. However, a minimum setback of 50 feet is required. Given that the erosion rate is zero, the minimum setback for the Project is 50 feet. For the purposes of this evaluation, we have assumed the design life for the Bulkhead Repair Project is 50-years, which corresponds to an anticipated sea level rise of 5.35 feet. The Rhode Island Coastal Hazard Viewer¹ shows the areas that will be impacted by sea level rise. The 5-foot sea level rise option for the viewer shows that the access road (Terminal Road) to the Project Area will be impacted by sea level rise. The STORMTOOLS Design Elevation (SDE) shown on the viewer also shows that the SDE for a 100-year event for the Project is 22.1 feet (NAVD88) assuming sea level rise of 5 feet. A Coastal Environmental Risk Index (CERI) has not been completed for the Project Area. We do not expect that the bulkhead repairs will be impacted by a rise in groundwater level, saltwater intrusion, and/or other issues related to sea level rise. The Sea Level Affecting Marshes Model (SLAMM) Map for the site shows potential marsh zone along the eastern edge of the

¹ The Rhode Island Coastal Hazard Viewer is available online at <https://crc-uri.maps.arcgis.com/apps/MapSeries/index.html?appid=cea052a1b893488abe4ea67183b0cc89>.



Project Area assuming a 5-foot sea level rise. However, this portion of the Site is also identified on the SLAMM Map as a hardened shoreline (manmade).

6.0 USACE GENERAL PERMIT REQUIREMENTS

The repairs to the bulkhead will require work within Navigable Water of the United States and therefore falls under the jurisdiction of USACE. From a review of USACE Rhode Island guidelines and oral discussions with USACE, the proposed repair activities will likely fall under USACE Rhode Island General Permit 2 - Repair or Maintenance of Existing Currently Serviceable, Authorized, or Grandfathered Structures and Fills, Removal of Structures. Since the proposed activities are expected to impact considerably less than 5,000 square feet in tidal waters and the new, unbattered steel sheet pile wall will be installed within 12 inches of the existing bulkhead (or as close as practicable/possible to the battered wall section), we believe this Project represents a Self-Verification permitting process with no notification form required. Should this Project qualify as a Pre-Construction Notification, we will provide whatever additional information may be required.

In accordance with the General Conditions of the USACE Rhode Island General Permit, the Project will obtain all other required Federal, State, and Local authorizations. As described above, this Project is expected to fill a small area below MHW (approximately 2,066 square feet measured at MHW and approximately 1,660 square feet measured at the mudline). Temporary impacts will be mitigated utilizing soil erosion and sediment controls such as turbidity curtains and Filtrexx Soxx. The bulkhead repairs represent a single and complete project and are required regardless of any upland activities.

Soil erosion and sediment controls will be installed prior to the start of demolition and will be maintained until the area is restored. The controls will be inspected by the contractor at least on a weekly basis and more frequently depending on storm events. Any deficiencies observed in the controls will be addressed as soon as possible after discovery. During in-water work, turbidity curtains will be installed. The curtains will not extend beyond 25% of the width of the Providence River and are not expected to impact fish passage or aquatic life movements.

As indicated below, the proposed Project will obtain a Water Quality Certification from the RIDEM. The Project does not propose any new discharges to the Providence River. Prior to the start of any in-water work the contractor will notify the United States Coast Guard of the Project activities.

7.0 RIDEM WATER QUALITY CERTIFICATION REQUIREMENTS

Per Section 1.15 A.3.b(2) of the RIDEM Water Quality Regulations, any filling of Waters of the State requires a Water Quality Certificate. As described above, the proposed bulkhead will result in filling approximately 2,066 square feet of Providence River (measured at MHW). This filling will be incidental to the repair work with much of it attributed to replacement of a battered existing wall with a new vertical wall. The total limit of land-ward work area, including equipment/supply laydown area and Site access, is approximately 1.97 acres. The total area to be disturbed is approximately 0.36 acres.

The proposed bulkhead repairs and bollard replacement activities will not increase the impervious area of the Site and will not disturb more than one acre of land. There will be no new stormwater or wastewater discharges to the Providence River as a result of the Project. Currently, precipitation is infiltrated through pervious areas of the site and this will continue when the project is completed. Therefore, we believe this Project does not require authorization by the Rhode Island Pollutant Discharge Elimination System - Construction General Permit. Existing outfalls to the Providence River will be



extended beyond the proposed steel sheet pile wall per the details on Figure S-2 of the Plan Set. During construction, turbidity curtains, oil absorbent boom, and upland erosion controls will be implemented to prevent releases of turbid water/pollutants to the Providence River. This Project does not include any dredging.

Any excess soil or groundwater generated during construction activities will be managed in accordance with the September 2012 SMP for the Site. Project soils will be stockpiled on top of two layers of 6-mil polyethylene sheeting and will be covered with polyethylene sheeting at the end of each workday. Any excess soil and generated water will be shipped to a licensed receiving facility approved by National Grid. Groundwater generated during earthwork associated with the repair work will be containerized in fractionation tanks for off-Site transport and disposal/recycling at a licensed facility approved by National Grid. Water used for installation of the proposed piles (i.e., drilling water) can be recirculated in the boreholes only as needed during installation. Drilling water and groundwater will not be allowed to be infiltrated to the ground surface or discharged to surface water bodies. Any excess drilling water from pile installation activities will be containerized for off-site transport and disposal/recycling at a licensed facility approved by National Grid.



FIGURES

THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD

PROVIDENCE, RHODE ISLAND

BULKHEAD MAINTENANCE REPAIR

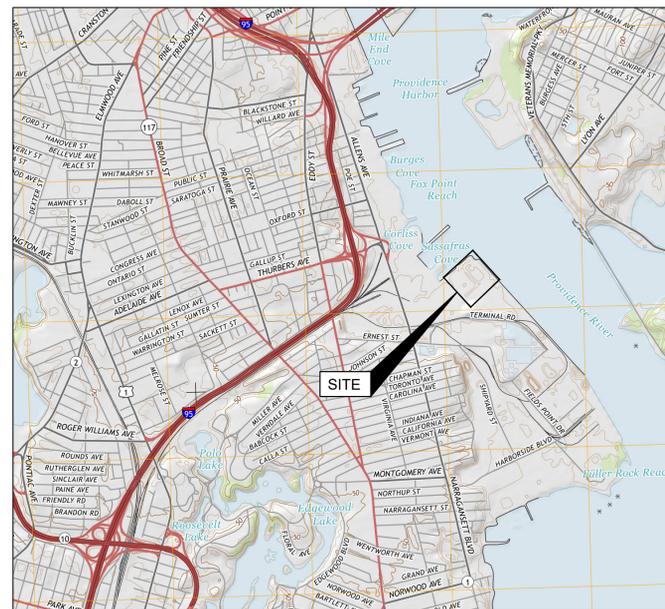
DECEMBER 2019

PREPARED FOR:

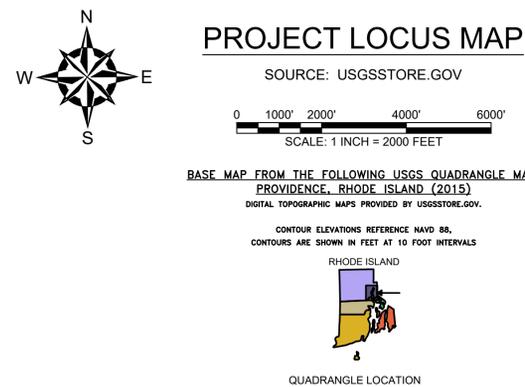
 nationalgrid

PREPARED BY:

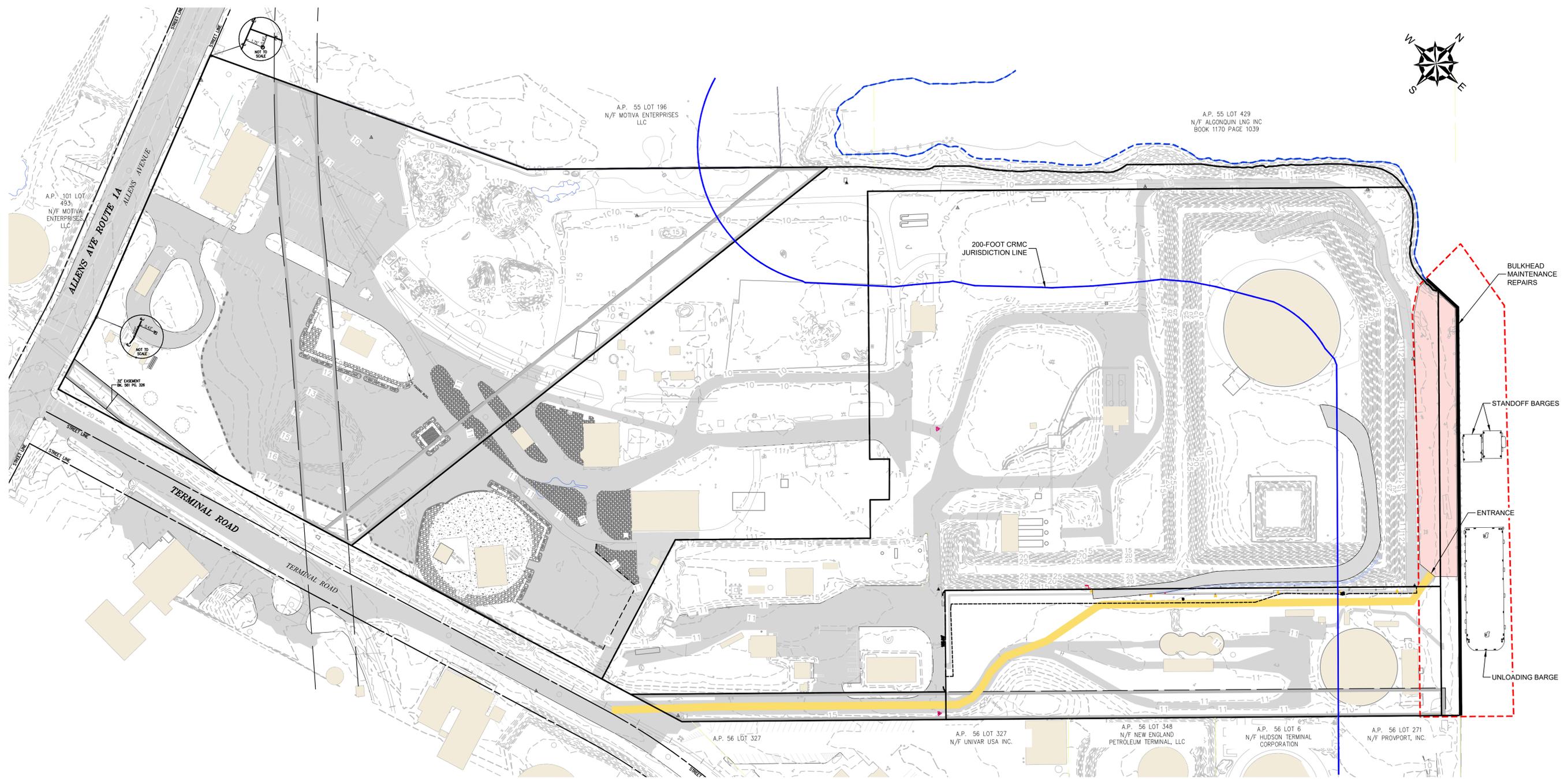
 **GZA** GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com



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S-3	MOORING BOLLARD SECTIONS
S-4	BULKHEAD DETAILS



PERMITTING ONLY
 NOT FOR CONSTRUCTION
 DECEMBER, 2019



GENERAL NOTES:

- 1) BASE MAP DEVELOPED FROM THE FOLLOWING:
 - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 AND AERIAL MAPPING BY WSP TRANSPORTATION AND INFRASTRUCTURE DATED JANUARY 15, 2014 PREPARED FOR NATIONAL GRID LAND SURVEYING DEPARTMENT, WALTHAM, MASSACHUSETTS AND CAD FILE NO. 09303023.052-1.DWG. PLANS PROVIDED BY NATIONAL GRID.
 - DESCRIPTIONS PROVIDED IN THE CITY OF PROVIDENCE DEED BOOK (BK) 470 PAGES 224 - 229, BK 561 PAGES 326 - 328, BK 1111 PAGES 752 - 756 AND BK 5249 PAGES 219 - 322.
 - ELECTRONIC CAD FILE 14-152_SU1_REV2.DWG, TITLED "TOPOGRAPHIC SURVEY PLAN, PORTION OF A.P. 56 LOT 5" DATED OCTOBER 27, 2014 AND PROVIDED BY NATIONAL GRID.
 - ELECTRONIC CAD FILE 5153_COO.DWG, TITLED "EXISTING CONDITIONS PLAN" PREPARED BY PROCESS PIPELINE SERVICES, DATED DECEMBER 18, 2014 AND PROVIDED BY NATIONAL GRID.
- 2) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
- 3) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
- 4) ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
- 5) PARCEL DATA PROVIDED BY THE CITY OF PROVIDENCE PLANNING AND DEVELOPMENT DEPARTMENT. PARCELS OF REAL ESTATE ASSESSED AS OF DECEMBER 31, 2012. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THESE DATA DO NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.
- 6) SITE BOUNDARIES ARE APPROXIMATE.

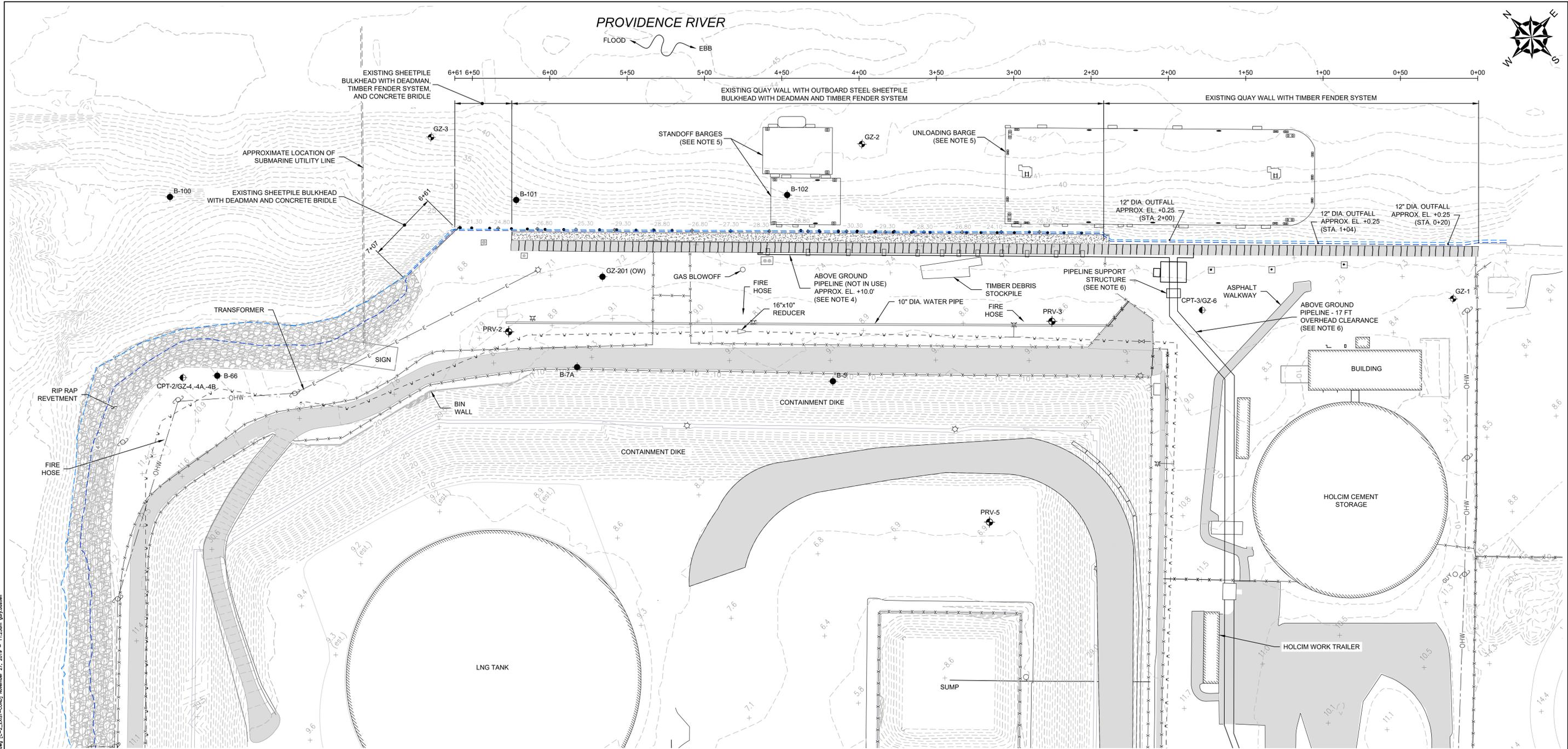
LEGEND:

- | | | | |
|--|---|--|--------------------------|
| | EXISTING STRUCTURE | | PROPERTY LINE |
| | EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL) | | INTERIOR PROPERTY LINE |
| | EXISTING CONTOUR (MINOR 1 FOOT INTERVAL) | | LIMIT OF WORK |
| | 200-FOOT CRMC JURISDICTION LINE | | EDGE OF WATER |
| | EASEMENT AREA | | EXISTING RAILROAD TRACKS |
| | PROJECT AREA ACCESS ROUTE (VIA HOLCIM FACILITY) | | |
| | BULKHEAD MAINTENANCE REPAIRS | | |
| | PROJECT STAGING AREA | | |

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THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD PROVIDENCE, RHODE ISLAND			
SITE ACCESS / KEY PLAN			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: 	
PROJ MGR: MJP DESIGNED BY: KBN DATE: DECEMBER 2019	REVIEWED BY: MJP DRAWN BY: MEA PROJECT NO.: 33554.98	CHECKED BY: MJP SCALE: AS NOTED REVISION NO.:	FIGURE C-1 SHEET NO. 4 OF 14

2019 - GZA GeoEnvironmental, Inc. GZA-A:\GEO_33554\844\PROJECTS\PROVIDENCE\PROVIDENCE\KEY PLAN\KEY PLAN.DWG C-1 SITE ACCESS DECEMBER 3, 2019 1:56 PM GARY BASTIN



NOTES:

- CONTRACTOR SHALL VERIFY LOCATION OF SUBMARINE UTILITY LINE PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOT ANCHOR BARGES WITHIN THE VICINITY OF SUBMARINE UTILITY LINE.
- CONTRACTOR SHALL PROTECT EXISTING UTILITIES AND STRUCTURES. CONTRACTOR SHALL REPAIR OR REPLACE IN KIND, ALL DAMAGED UTILITIES OR STRUCTURES AT NO ADDITIONAL COST TO OWNER.
- ALL WORK PERFORMED WITHIN CLOSE PROXIMITY TO OVERHEAD WIRES AND SUBMARINE UTILITY LINE, SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS.
- EXISTING PIPING TO BE REMOVED BY OTHERS.
- REFER TO CONTRACT DOCUMENTS FOR COORDINATION OF WORK NEAR EXISTING BARGES.
- PIPING AND SUPPORT STRUCTURE TO REMAIN IN PLACE DURING CONSTRUCTION.

LEGEND:

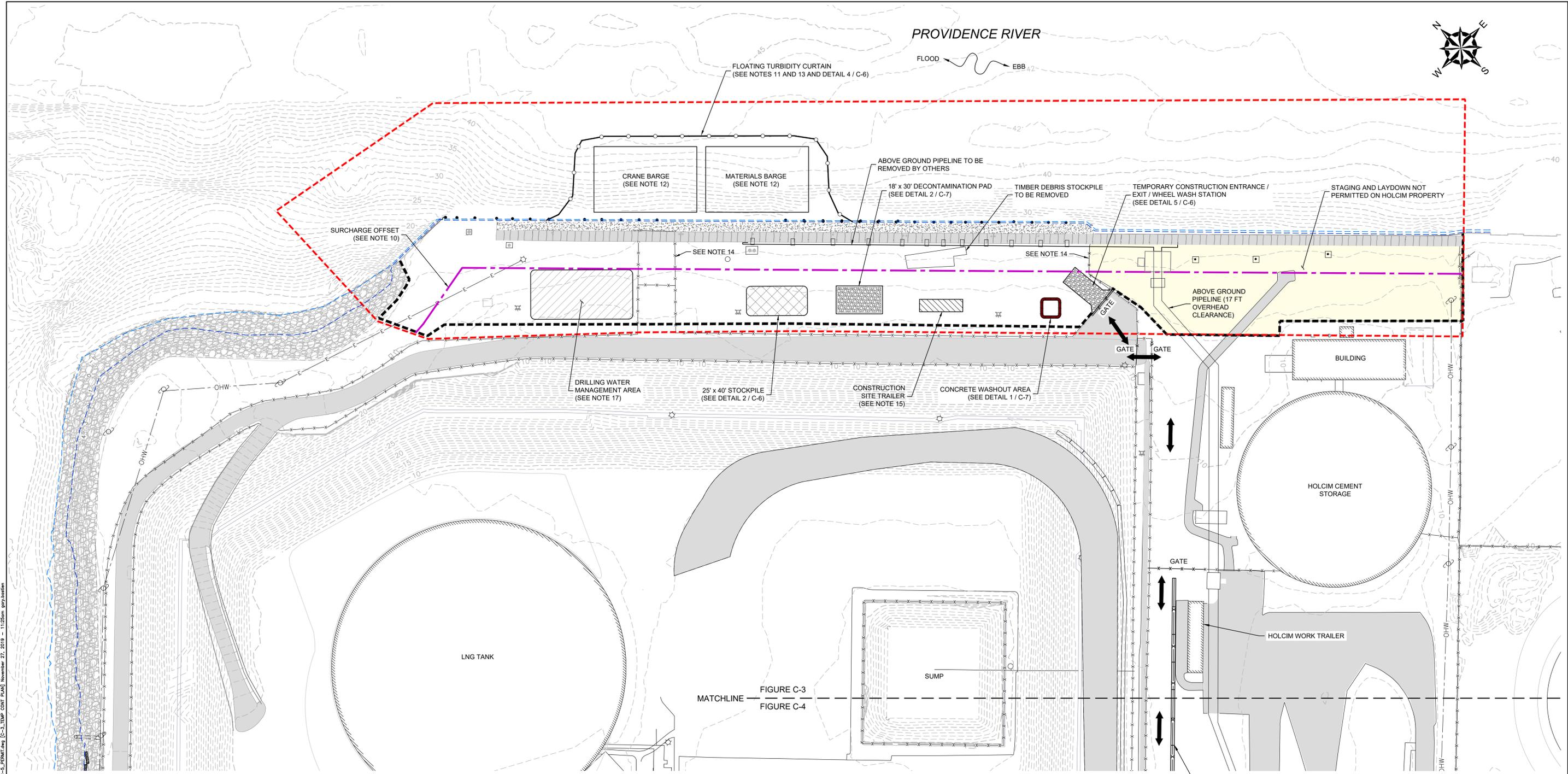
- MEAN HIGH WATER
- MEAN LOW WATER
- OHW EXISTING OVERHEAD WIRES
- EXISTING WATER LINE
- FENCE LINE
- EXISTING STRUCTURES
- AREA OF REVETMENT
- ASPHALT PAVEMENT
- GRANITE WALL
- CONCRETE
- TIMBER FENDER PILE
- SINGLE BITT BOLLARD OR MOORING POST (TYP.)
- DOUBLE BITT BOLLARD (TYP.)
- UTILITY / LIGHT POLE
- FIRE HYDRANT



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THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD PROVIDENCE, RHODE ISLAND			
EXISTING CONDITIONS AND UTILITIES PLAN			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MJP	DESIGNED BY: KBN	REVIEWED BY: MJP	CHECKED BY: MJP
DATE: DECEMBER 2019	DRAWN BY: MEA	SCALE: AS NOTED	REVISION NO.
PROJECT NO. 33554.98			FIGURE C-2
			SHEET NO. 5 OF 14

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- NOTES**
- CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY EROSION AND SEDIMENT CONTROLS IN ACCORDANCE WITH PERMITS AND CONTRACT DOCUMENTS.
 - INSTALL EROSION AND SEDIMENT CONTROLS BEFORE DISTURBING ANY SOILS, SEDIMENT OR VEGETATION AT THE SITE.
 - ADJUST, RELOCATE OR PROVIDE ADDITIONAL EROSION AND SEDIMENT CONTROLS AS WORK PROGRESSES INTO PREVIOUSLY UNDISTURBED AREAS OF THE SITE.
 - MAINTAIN EROSION AND SEDIMENT CONTROLS UNTIL THE SITE IS RESTORED AND SITE IMPROVEMENTS INCLUDING LANDSCAPING, IF ANY, ARE COMPLETE WITH UNDERLYING SOILS PERMANENTLY STABILIZED.
 - CONTRACTOR SHALL CLEAR AND GRUB WITHIN THE LIMITS OF WORK AS NEEDED TO ACCESS AND COMPLETE THE WORK. DEBRIS SHALL BE DISPOSED OF AT AN OFF-SITE FACILITY IN ACCORDANCE WITH SPECIFICATIONS. NO CLEARING OR GRUBBING SHALL BE PERFORMED WITHOUT APPROVAL FROM THE ENGINEER.
 - CONTRACTOR SHALL INSPECT EROSION AND SEDIMENT CONTROL MEASURES DAILY AND IMMEDIATELY AFTER A RAINFALL OF 0.25 INCHES OR MORE. CONTRACTOR SHALL IMMEDIATELY REPAIR ANY DAMAGED OR FAILED EROSION OR SEDIMENT CONTROL MEASURES.
 - CARE SHALL BE TAKEN NOT TO PLACE REMOVED SEDIMENTS WITHIN THE PATH OF EXISTING, NEWLY CREATED OR PROPOSED AREAS THAT ARE SUBJECT TO STORMWATER FLOW.
 - ALL DISTURBED AREAS THAT ARE SUBJECT TO POTENTIAL EROSION, EITHER NEWLY FILLED OR EXCAVATED, SHALL BE PROTECTED AT NO ADDITIONAL COST TO THE OWNER.
 - STAGING AREA TO BE CONSTRUCTED BY CONTRACTOR WITHIN THE LIMITS SHOWN, AS NEEDED FOR CRANE MOBILIZATION, CONSTRUCTION FACILITIES, MATERIAL STOCKPILE, MATERIAL LOADING AND ACCESS. LAYOUT SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY. FINAL LOCATIONS TO BE APPROVED BY THE ENGINEER AND OWNER.
 - MATERIAL STOCKPILES, CRANE LOADING AND OTHER ACTIVITIES CAUSING SURCHARGE LOADS GREATER THAN 250 PSF SHALL BE RESTRICTED 30 FEET BEHIND FACE OF EXISTING BULKHEADS.
 - CONTRACTOR SHALL PROVIDE AND MAINTAIN TURBIDITY CURTAINS AND IS RESPONSIBLE FOR DETERMINING LAYOUT AND INSTALLATION PROCEDURES IN ACCORDANCE WITH CONTRACT DOCUMENTS.
 - BARGES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. CONTRACTOR SHALL PROVIDE MARINE VESSELS AND EQUIPMENT IN ACCORDANCE WITH SPECIFICATIONS.
 - TURBIDITY CURTAINS SHALL BE INSTALLED TO SURROUND THE LIMIT OF WORK, AS NEEDED, INCLUDING BUT NOT LIMITED TO DEMOLITION AND WALL CONSTRUCTION.
 - CONTRACTOR SHALL REMOVE EXISTING FENCE AND INSTALL NEW FENCING. SEE DRAWING CD-1 FOR LIMITS.
 - CONSTRUCTION TRAILER SHALL BE CONSTRUCTED AND LOCATED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND API 753 TRAILER SITING FOR LNG FACILITIES PREPARED FOR NATIONAL GRID.
 - FINAL LOCATIONS OF TEMPORARY CONTROLS AND FACILITIES TO BE DETERMINED BY CONTRACTOR AND AS APPROVED BY ENGINEER AND OWNER.
 - DRILLING WATER MANAGEMENT AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH CONTRACT DOCUMENTS.

- CONTRACTOR SHALL REMOVE EXISTING FENCE AND INSTALL NEW FENCING. SEE DRAWING CD-1 FOR LIMITS.
- CONSTRUCTION TRAILER SHALL BE CONSTRUCTED AND LOCATED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND API 753 TRAILER SITING FOR LNG FACILITIES PREPARED FOR NATIONAL GRID.
- FINAL LOCATIONS OF TEMPORARY CONTROLS AND FACILITIES TO BE DETERMINED BY CONTRACTOR AND AS APPROVED BY ENGINEER AND OWNER.
- DRILLING WATER MANAGEMENT AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH CONTRACT DOCUMENTS.

LEGEND

- EXISTING CONTOURS (MAJOR)
- EXISTING CONTOURS (MINOR)
- MEAN HIGH WATER
- MEAN LOW WATER
- LIMIT OF WORK
- EXISTING STRUCTURES
- FILTREXX SOXX (OR EQUAL) (SEE DETAIL 1/C-6)
- FLOATING TURBIDITY CURTAIN
- FENCE LINE
- 30 FT SURCHARGE OFFSET (SEE NOTE 10)
- AREA OF REVETMENT
- ASPHALT PAVEMENT
- JERSEY BARRIER WITH FENCE
- STAGING AND LAYDOWN NOT PERMITTED ON HOLCIM PROPERTY
- VEHICLE DIRECTION OF TRAVEL

0 15' 30' 60' 90'
SCALE IN FEET 1" = 30'

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NO.	ISSUE/DESCRIPTION	BY	DATE

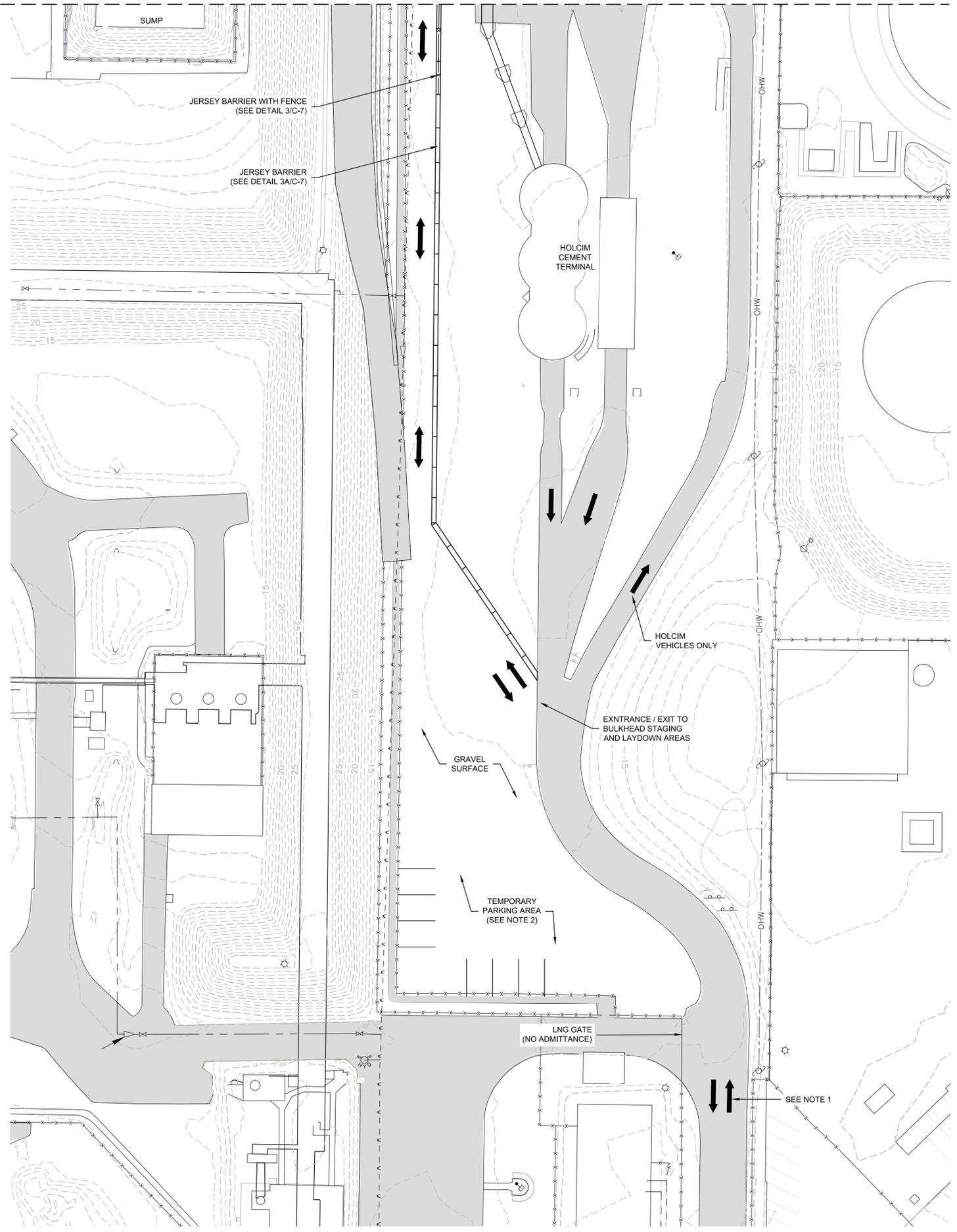
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**THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD
PROVIDENCE, RHODE ISLAND**

TEMPORARY CONTROLS PLAN (1 OF 2)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: nationalgrid
DESIGNED BY: MJP DATE: DECEMBER 2019	REVIEWED BY: MJP MEASURED BY: MEA PROJECT NO.: 33554.98
CHECKED BY: MJP SCALE: AS NOTED REVISION NO.:	FIGURE C-3 SHEET NO. 6 OF 14

MATCHLINE — FIGURE C-3
 FIGURE C-4



LEGEND

	EXISTING CONTOURS (MAJOR)
	EXISTING CONTOURS (MINOR)
	MEAN HIGH WATER
	MEAN LOW WATER
	EXISTING STRUCTURES
	FENCE LINE
	JERSEY BARRIER WITH FENCE
	JERSEY BARRIER
	ASPHALT PAVEMENT
	VEHICLE DIRECTION OF TRAVEL

- NOTES:**
- ROADWAY SHARED WITH VEHICLES ENTERING / EXITING LNG FACILITY AND HOLCIM CEMENT FACILITY.
 - TEMPORARY PARKING FOR CONSTRUCTION PERSONNEL. BACK IN PARKING ONLY.



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**THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD
 PROVIDENCE, RHODE ISLAND**

TEMPORARY CONTROLS PLAN (2 OF 2)

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MJP DESIGNED BY: KBN DATE: DECEMBER 2019	REVIEWED BY: MJP DRAWN BY: MEA PROJECT NO.: 33554.98	CHECKED BY: MJP SCALE: AS NOTED REVISION NO.:	FIGURE C-4 SHEET NO. 7 OF 14

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PROVIDENCE RIVER

FLOOD EBB

6+61 6+50 6+00 5+50 5+00 4+50 4+00 3+50 3+00 2+50 2+00 1+50 1+00 0+50 0+00

SECTION 1 - SHEETPILE WALL WITH TIEBACKS AND TIMBER FENDER SYSTEM (SEE NOTE 4)

SECTION 2
SHEETPILE WALL WITH
TIEBACKS (SEE NOTE 4)

12" DIA. OUTFALL
APPROX. EL. +0.25
(STA. 2+00)

12" DIA. OUTFALL
APPROX. EL. +0.25
(STA. 1+04)

12" DIA. OUTFALL
APPROX. EL. +0.25
(STA. 0+20)

PROPOSED BOLLARD (TYP.)

INSTALL FENCING AND
CONNECT TO EXISTING
(SEE NOTE 5)

CAP AND RESTORE TO EXISTING GRADE
(SEE C-8)

RESTORE EXISTING
FENCING

BUILDING

HOLCIM CEMENT
STORAGE

HOLCIM WORK TRAILER

LNG TANK

SUMP

LEGEND:

- INDICATES MEAN HIGH WATER
- INDICATES MEAN LOW WATER
- INDICATES EXISTING OVERHEAD WIRES
- FENCE LINE
- CAPPED AND RESTORED AREA
- NEW MOORING BOLLARD LOCATION
- AREA OF REVETMENT
- ASPHALT PAVEMENT
- WATERFRONT STRUCTURE INSTALLATION
- AREA OF DISTURBANCE (INCLUDING NEW MOORING BOLLARD LOCATIONS) = 15,837 SQ.FT.
- PROVIDENCE RIVER ENCROACHMENT AREA = 1,660 SQ.FT. (MEASURED AT MUDLINE) AND 2,066 SQ.FT. (MEASURED AT MHW)

NOTES:

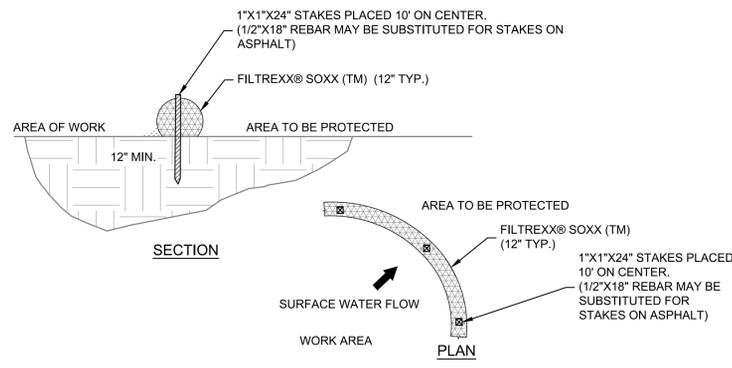
1. CONTRACTOR SHALL RESTORE, CAP, AND REGRADE SITE TO MATCH EXISTING CONDITIONS IN AREAS OF EXCAVATION, DEMOLITION, AND EXISTING SINKHOLES.
2. BACKFILL AND COMPACT SOILS AND AGGREGATE IN ACCORDANCE WITH CONTRACT DOCUMENTS.
3. SOILS AND AGGREGATE SHALL MEET THE REQUIREMENTS OF CONTRACT DOCUMENTS.
4. STEEL CAP AND TIMBER FENDER SYSTEM NOT SHOWN FOR CLARITY. REFER TO SUBSEQUENT DRAWINGS FOR FURTHER DETAILS.
5. INSTALL NEW FENCING PRIOR TO START OF WORK AND REMOVAL OF EXISTING FENCE.

0 15' 30' 60' 90'
SCALE IN FEET 1" = 30'

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DECEMBER, 2019

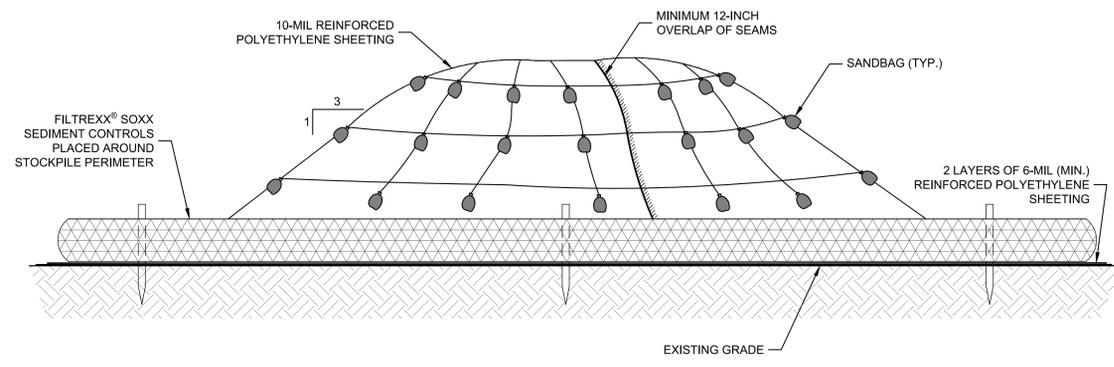
NO.	ISSUE/DESCRIPTION	BY	DATE
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<p>THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD PROVIDENCE, RHODE ISLAND</p>			
<p>FINAL CONDITIONS PLAN</p>			
<p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p>		<p>PREPARED FOR: nationalgrid</p>	
<p>PROJ MGR: MJP DESIGNED BY: KBN DATE: DECEMBER 2019</p>	<p>REVIEWED BY: MJP DRAWN BY: MEA PROJECT NO.: 33554.98</p>	<p>CHECKED BY: MJP SCALE: AS NOTED REVISION NO.:</p>	<p>FIGURE C-5 SHEET NO. 8 OF 14</p>

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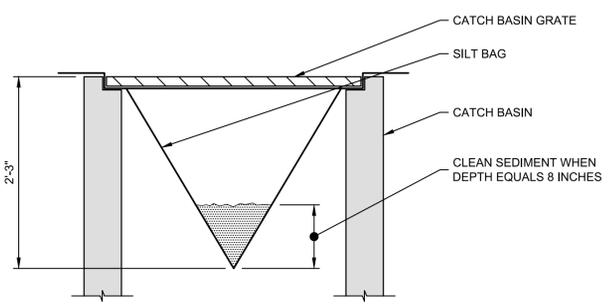
- NOTES:**
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
 2. STAKES/REBAR PINS SHALL HAVE PROTECTIVE CAPS INSTALLED TO PREVENT FALL INJURY.

1 Filtrexx® SOXX SEDIMENT CONTROL DETAIL
C-3 | C-6 NOT TO SCALE



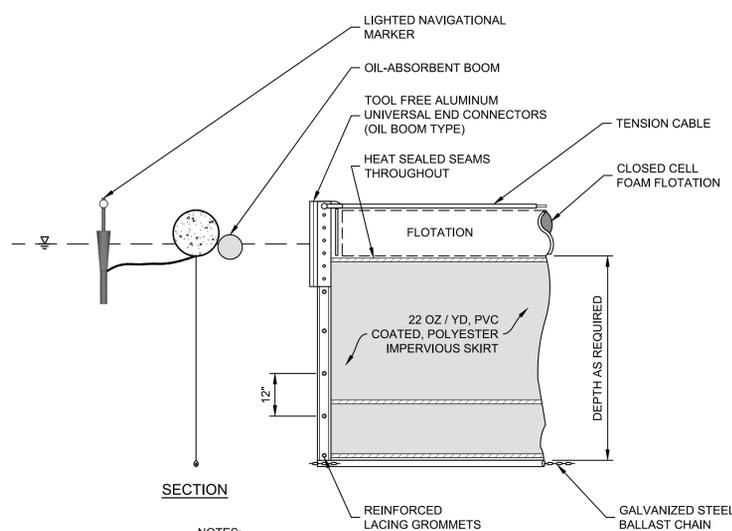
- SOIL STOCKPILE NOTES:**
1. SOIL STOCKPILES SHALL BE PLACED ON AND COVERED WITH POLYETHYLENE SHEETING AT ALL TIMES.
 2. SHEETING COVERING STOCKPILE SHALL BE MAINTAINED TIGHTLY IN PLACE BY USING SANDBAGS ON ROPES WITH A MAXIMUM 10'-0" GRID SPACING IN ALL DIMENSIONS.
 3. MINIMUM 12" OVERLAP OF ALL SEAMS REQUIRED.
 4. STOCKPILE SIDE SLOPES SHALL BE NO STEEPER THAN 3 (HORIZONTAL) TO 1 (VERTICAL).
 5. STOCKPILE SHALL BE SURROUNDED BY EROSION CONTROLS AS SHOWN.
 6. STOCKPILE SHALL NOT BE PLACED WITHIN 30 FEET OF EXISTING BULKHEAD.

2 TYPICAL SOIL STOCKPILE DETAIL
C-3 | C-6 NOT TO SCALE



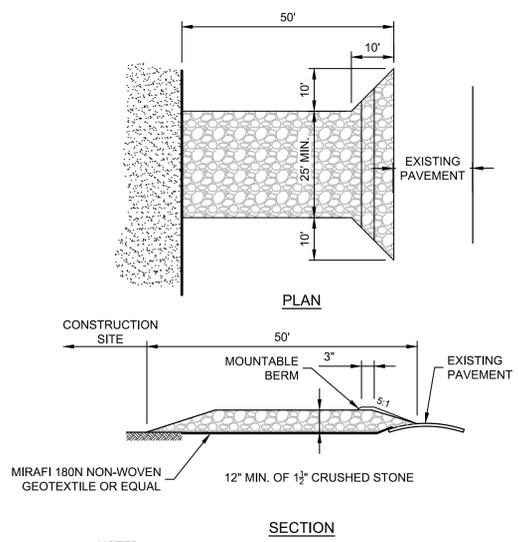
- NOTES:**
1. SEDIMENT BAG INLET PROTECTION TO BE SILT SACK MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS INC. RICHMOND, VA OR APPROVED EQUAL.
 2. STORM WATER CATCH BASINS OR DRAINS SHALL BE PROTECTED FROM MATERIALS RUN-OFF. CONTRACTOR SHALL INSTALL SILT SACKS WITHIN EACH CATCH BASIN IN THE VICINITY OF ANY WORK AREAS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL USE ALL BMP'S NECESSARY TO PROTECT THESE INLETS FROM SEDIMENT AND DEBRIS.

3 SILT SACK DETAIL (AS NECESSARY)
C-3 | C-6 NOT TO SCALE



- NOTES:**
1. REFER TO CONTRACT DOCUMENTS FOR MINIMUM REQUIREMENTS OF TURBIDITY CURTAINS.
 2. END OF CURTAIN SHALL BE ANCHORED SECURELY AT THE SHORELINE ABOVE MEAN HIGH WATER ELEVATION IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS AND CONTRACT DOCUMENTS.
 3. TURBIDITY CURTAINS SHALL BE INSPECTED REGULARLY TO DETERMINE IF ALL COMPONENTS ARE FUNCTIONING PROPERLY.

4 TURBIDITY CURTAIN AND OIL-ABSORBENT BOOM
C-3 | C-6 NOT TO SCALE



- NOTES:**
1. ENTRANCE WIDTH SHALL BE TWENTY-FIVE (25) FEET MINIMUM.
 2. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING AND ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
 3. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED BY CONTRACTOR.

5 TEMPORARY CONSTRUCTION ENTRANCE / EXIT / WHEEL WASH STATION
C-3 | C-6 NOT TO SCALE

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THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD PROVIDENCE, RHODE ISLAND			
TEMPORARY CONTROLS DETAILS (1 OF 2)			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MJP	DESIGNED BY: KBN	REVIEWED BY: MJP	CHECKED BY: MJP
DATE: DECEMBER 2019	DRAWN BY: MEA	PROJECT NO: 33554.98	SCALE: AS NOTED
			FIGURE C-6
			REVISION NO: SHEET NO. 9 of 14



PROVIDENCE RIVER

FLOOD → EBB

6+61 6+50 6+00 5+50 5+00 4+50 4+00 3+50 3+00 2+50 2+00 1+50 1+00 0+50 0+00

SECTION 1
SHEET PILE WALL W/ TIEBACKS
AND TIMBER FENDER SYSTEM

STEEL TIEBACK ANCHOR
SPACED AT 9.19' O.C. (TYP.)
SEE DRAWING S-2

STEEL TIEBACK ANCHOR
SPACED AT 9.19' O.C. (TYP.)
SEE DRAWING S-2

TIMBER FENDER SYSTEM

CONTAINMENT DIKE

CONTAINMENT DIKE

BUILDING

HOLCIM CEMENT
STORAGE

LNG TANK

SUMP

- LEGEND:**
- INDICATES MEAN HIGH WATER
 - INDICATES MEAN LOW WATER
 - EXISTING CONTOURS (MAJOR)
 - EXISTING CONTOURS (MINOR)
 - OHW INDICATES EXISTING OVERHEAD WIRES
 - FENCE LINE
 - NEW MOORING BOLLARD LOCATION
 - AREA OF REVETMENT
 - ASPHALT PAVEMENT
 - WATERFRONT STRUCTURE INSTALLATION

- NOTES:**
- STEEL CAP, TIMBER FENDER SYSTEM, AND BOLLARDS NOT SHOWN FOR ILLUSTRATIVE PURPOSES. REFER TO SUBSEQUENT DRAWINGS FOR FURTHER DETAILS.
 - PRIOR TO INSTALLATION OF BULKHEAD WALL, CONTRACTOR SHALL PROBE AND REMOVE ALL OBSTRUCTIONS WITHIN PROPOSED WALL ALIGNMENT.

0 15' 30' 60' 90'
SCALE IN FEET 1" = 30'

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DECEMBER, 2019

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<p>THE NARRAGANSETT ELECTRIC COMPANY BULKHEAD PROVIDENCE, RHODE ISLAND</p>			
<p>OVERALL WATERFRONT STRUCTURE LAYOUT PLAN</p>			
<p>PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com</p>		<p>PREPARED FOR: nationalgrid</p>	
<p>PROJ MGR: MJP DESIGNED BY: KBN DATE: DECEMBER 2019</p>	<p>REVIEWED BY: MJP DRAWN BY: MEA PROJECT NO.: 33554.98</p>	<p>CHECKED BY: MJP SCALE: AS SHOWN REVISION NO.:</p>	<p>FIGURE S-1 SHEET NO. 11 OF 14</p>

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APPENDIX A

REGULATORY AGENCY APPLICATION FORMS



State of Rhode Island and Providence Plantations
Coastal Resources Management Council
 Oliver H. Stedman Government Center
 4808 Tower Hill Road, Suite 3
 Wakefield, RI 02879-1900

(401) 783-3370
 Fax (401) 783-2069

MAINTENANCE CERTIFICATION APPLICATION

Project Location <u>125, 181, 185, 195 Terminal Road Providence, RI</u> <small>No. Street City/Town</small>	File No. (CRMC USE ONLY):
Owner's Name <u>The Narragansett Electric Co. dba National Grid</u>	Plat: <u>56</u> Lot(s): <u>5, 316,317, and 273</u>
Mailing Address <u>280 Melrose Street</u> <small>City/Town Providence State RI Zip Code 02907</small>	Contact No.:
Contractor RI Reg. #: <u>TBD</u> Address:	
Name of Waterway: <u>Providence River</u>	Estimated Project Cost: \$ <u>14,600,000</u> Fee (chart based on EPC): \$ <u>5,000</u>
Description of facility to be maintained (type of facility and present conditions) See attached narrative.	
Describe accurately the maintenance work proposed. (Use additional sheets of paper if necessary and attach this form.) See attached narrative.	
Describe equipment to be used, construction methods, access routes, etc. See attached narrative.	

Have you or any previous owner filed an application for and/or received an assent for any activity on this property?
 (If so please provide the file and/or assent numbers): 2018-01-027, 2017-11-006, 2016-08-016, 2016-05-003, 2016-04-057

Is this site within a designated historic district? YES NO

Is this application being submitted in response to a coastal violation? YES NO

If YES, you must indicate NOV or C&D Number: _____

NOTE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible adhered to the policies and standards of the program. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. The filing of false information can result in the Coastal Resources Management Council revoking state assent.

William R. Howard

Owner's Signature

SEE REVERSE SIDE →

INCLUDE THE FOLLOWING FOR REVIEW IN 4 COLLATED PACKAGES

(See CRMC Fee Schedule for Application Fees)

- **APPLICATION FEE** (See chart below)
- **PHOTOGRAPHS OF EXISTING ACTIVITY ARE REQUIRED.**
- **PHOTOGRAPHS OF COASTAL FEATURE AND PROJECT AREA ARE RECOMMENDED.**
- **APPLICATION FORM.**
- **LETTER FROM LOCAL BUILDING OFFICIAL** (except for dock repairs, seawall, tree removal, OWTS).
- **PROOF OF PROPERTY OWNERSHIP/LETTER FROM TAXASSESSOR'S OFFICE.**
- **LOCATION MAP.**
- **SITE PLANS, SPECIFICATIONS AND DESCRIPTIONS OF PROPOSED MAINTENANCE ACTIVITY.**
 - DETAILED SITE PLANS, CROSS SECTIONS ARE APPROPRIATE, ESPECIALLY IF NO PRIOR CRMC APPROVAL IS ON FILE.
- **COPY OF ANY PREVIOUS CRMC PERMITS**
- **COPY OF ANY PREVIOUSLY APPROVED PLANS & SPECIFICATIONS (IF NONE CAN BE FOUND, PROVIDE PREVIOUS OWNERS NAMES BACK TO 1971).**
- **FOR OWTS PROJECTS: APPLICANT MUST SUBMIT DEM OWTS PERMIT AND APPROVED STAMPED PLANS.**

NOTE "A" - PLEASE NOTE THAT PER RICRMP 1.3.1(N), MAINTENANCE OF STRUCTURES INCLUDES REBUILDING, RECONSTRUCTION, REPAIRING, OR RE-ESTABLISHING TO PREVIOUSLY ASSENTED CONDITIONS AND DIMENSIONS OF A DAMAGED OR DETERIORATED STRUCTURE OR FACILITY. WITH THE EXCEPTIONS OF MARINAS (SEE SECTION 300.4) MAINTENANCE INCLUDES ONLY THOSE ACTIVITIES THAT DO NOT ALTER THE APPROVED DESIGN, PURPOSE, AND SIZE OF THE STRUCTURE. HOWEVER, CONSTRUCTION, REPAIR, ALTERATION OR REPLACEMENT OF EXISTING MALFUNCTIONING ONSITE WASTEWATER TREATMENT SYSTEM (OWTS) OR CESSPOOLS TO MEET D.E.M. REQUIRED DESIGN STANDARDS SHALL ALSO BE CONSIDERED MAINTENANCE ACTIVITY. IN THE CASE OF STRUCTURES FOR WHICH NO C.R.M.C. ASSENT HAS BEEN OBTAINED, THE COUNCIL'S EXECUTIVE DIRECTOR SHALL DETERMINE WHAT STANDARDS OF THE R.I. COASTAL RESOURCES MANAGEMENT PROGRAM APPLY.

<u>EPC (Estimated Project Cost)</u>	<u>APPLICATION FEE</u>
Up to \$500.00	\$20.00
Greater than \$500.00 less than or equal to \$1,000.00	\$35.00
Greater than \$1,000.00 less than or equal to \$5,000.00	\$50.00
\$5,001.00 - \$10,000.00	\$100.00
\$10,001.00 - 20 million	\$100.00 plus .005 of EPC beyond \$10,000 up to fee = \$100,050.00
> \$20 million	\$100,050.00 plus .0025 of EPC beyond \$20 million



Application for Stormwater Construction Permit and Water Quality Certification

Use this form to request a Stormwater Construction Permit or Water Quality Certification (WQC). [This form replaces the formerly used WQC Program Application; Applications for a Stormwater Discharge System Registration and to Modify a Groundwater or Stormwater Discharge System (GWD/UIC Program); and the RIPDES Notice of Intent (NOI) Stormwater General Permit for Construction Activity (CGP).] **If a Freshwater Wetlands (FWW) Application is required, this form must be submitted in addition to the [FWW Application form](#).**

Please complete this form online before printing. Submit the completed form with all required documentation and fee to: **Permit Application Center (PAC)**
RIDEM
235 Promenade Street, Room 260
Providence, RI 02908-5767

(Check or money order must be made payable to the Rhode Island General Treasurer.)
 Stormwater Construction Permit Fee will be waived for applications submitted concurrently with a Freshwater Wetlands Application.

Provide all applicable information by completing the shaded areas.

Double-click to select:		<input checked="" type="checkbox"/> New Permit Fee = \$400.	<input type="checkbox"/> Permit Modification		
Site & Project	City/Town: Click to Select	Street Address: 125, 181,185, 195 Terminal Road		Water Body Class: SB1*	
	Plat(s): 56	Lot(s): 5, 316, 317, 273	Project Name: Bulkhead Repairs		
	Location: 121 Terminal Road Providence RI		Water Body Name(s): Providence River		
	Latitude:	Longitude:	Utility Pole #:	Total Site Area: 1.97 acres	Site Area to be Disturbed: 0.36 acres
	RI Federal Aid Project #:	RI Contract #:	Was there a Pre-Application Meeting? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Owner / Applicant	Organization/Company Name: The Narragansett Electric Co. d/b/a National Grid		Contact Name of Owner's Representative for Questions: Matthew Page P.E.		
	First Name: William	Last Name: Howard	Email: william.howard@nationalgrid.com	Phone: (401)255-2888	
	Address: 280 Melrose Street		City/Town: Providence	State: RI	Zip: 02907
	I certify under penalty of law that I've requested and authorized the investigation, compilation, and submission of all the information, in whatever form, contained in this Application; I have personally examined and am familiar with the information submitted herein; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate and complete. I'm aware that it's the owner's responsibility to implement or hire a qualified contractor responsible to implement any required Soil Erosion and Sediment Control Plan, so as to effectively control stormwater discharges leaving the site during the construction period. I authorize RIDEM personnel access to the property for purposes of observing conditions pertinent to this application and assessing compliance with any permit or determination resulting from this application.				
Applicant's Signature: 		Title: Manager-Environmental	Date: 12/16/19		
Professional	Organization/Company Name: GZA GeoEnvironmental, Inc.		Professional's License Type(s) and Number(s): Registered Professional Engineer No. 0009448		
	Professional's Name: Matthew Page, P.E.		Email: matthew.page@gza.com	Phone: (401)439-1070	
	I certify under penalty of law that the project described in this application and associated materials is in compliance with the RI Stormwater Design and Installation Standards Manual (as amended) and the Rhode Island Soil Erosion and Sediment Control Handbook (as amended) [if required] and I believe all information presented in this application and the accompanying materials are true, accurate and complete. All engineering designs, plans and specifications [if required] included in this application were done by me or by someone working directly for me. The Natural Heritage Area Information [if required] and the site specific Soil Erosion and Sediment Control Plan [if required] were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering or developing the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete at the time this application is made. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.				
Professional's Signature: 		Title: Senior Project Manager	Date: 12/16/19		

PERMIT HISTORY AND APPLICABILITY - **Double-click** to check all boxes that apply to the proposed project.

Permit History	Provide all other application or file numbers associated with this site.			RIDEM USE ONLY
	RI CRMC Assent: TBD	US Army Corps of Engineers: TBD	RIDEM Program Name & File Number: SR-28-1152	
Stormwater Construction Activity	<p>Select all that apply. [Stormwater submissions must comply with all requirements of the Stormwater Management, Design and Installation Rules.] Click links below to refer to other applicable Rules.]</p> <p>There are Freshwater Wetlands on the subject or adjacent property, AND the project proposes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> New or increased impervious cover for property other than a single family home; or <input type="checkbox"/> Disturbance of more than 10,000 sq. ft. of existing impervious cover; or <input type="checkbox"/> To fill in any amount of floodplain or alter storm flowage to a river, stream or wetland on any lot. <p style="text-align: center;"><i>Refer to Freshwater Wetland: Rules</i></p>			STW/WQC Application # Required:
	<p>The project requires an application to RI CRMC, AND proposes:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A residential development of 6 units or more; or <input type="checkbox"/> A project that results in the creation of 10,000 sq. ft. or more of impervious area. <p style="text-align: center;"><i>Refer to Water Quality: Rules</i></p>			
	<p>The project proposes an infiltration system listed in 8.21 of the Stormwater Rules (i.e. infiltration trench, infiltration basin, UIC chamber or drywell) that receives stormwater from:</p> <ul style="list-style-type: none"> <input type="checkbox"/> A residential impervious area that is more than 10,000 sq. ft.; or <input type="checkbox"/> A non-residential roof area greater than 10,000 sq. ft.; or <input type="checkbox"/> A non-residential (commercial, industrial, institutional...) road or parking area of any size. <p>Indicate if the treatment system discharges:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Below the ground (UIC); or <input type="checkbox"/> Above the ground and infiltrates (not UIC), but must be reviewed for compliance with the RISDISM to be protective of groundwater. <p style="text-align: center;"><i>Refer to Groundwater Discharge: Rules</i></p>			
	<p>The project proposes discharge of stormwater to waters of the State [including a Separate Storm Sewer System (MS4)], AND :</p> <ul style="list-style-type: none"> <input type="checkbox"/> Disturbs less than 1 acre, but the activity is part of a larger common plan resulting in more than 1 acre of disturbance. <input type="checkbox"/> Disturbs more than 1 acre of property. <p style="text-align: center;"><i>Refer to RI Pollutant Discharge Elimination System: General Permit</i></p>			
Water Quality Certification (WQC)	<p>Select all project type(s):</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Discharge that requires a Federal Permit RI CRMC Jurisdiction <ul style="list-style-type: none"> <input type="checkbox"/> Federal Energy Regulatory Commission (FERC) <input type="checkbox"/> Marinas - New Construction or Expansion <input type="checkbox"/> Individual Permit <input checked="" type="checkbox"/> Fill Waters of the State Programmatic General Permit (PGP) Eligible <input type="checkbox"/> Harbor Management Plan <input type="checkbox"/> Flow Alteration <input type="checkbox"/> Stormwater Master Plan <p style="text-align: center;"><i>Refer to Water Quality: Rules Guidance</i></p>			
Submission Requirements	<p>Please submit separately bound documents, as required. Additional copies are required when submitting concurrently with a Freshwater Wetlands Application.</p> <ul style="list-style-type: none"> 1 Site Plan(s) 1 Appendix A Checklist and LID Planning Assessment 1 Stormwater Analysis and Drainage Report 1 Soil Erosion and Sediment Control (SESC) Plan 1 Post-Construction Operation and Maintenance (O&M) Plan <p>Appropriate Fee: New Permit = \$400; Permit Modification = \$200.</p>			<p>Amt Paid:</p> <p>Check No:</p> <p>Date Received:</p>



APPENDIX B

CRMC COASTAL HAZARD APPLICATION WORKSHEET

RI CRMC COASTAL HAZARD APPLICATION WORKSHEET

APPLICANT NAME: The Narragansett Electric Co. dba National Grid

PROJECT SITE ADDRESS: 125, 181, 185, 195 Terminal Road Providence, RI

STEP 1. PROJECT DESIGN LIFE

- A. Indicate FEMA FIRM base flood elevation (BFE) for the project location, available from FEMA, or the municipal building official. 12 ft
- B. Using the [CRMC Shoreline Change maps](#), indicate the transect number closest to your site, and erosion rate listed for that transect. Transect #: 938.00
- C. How long do you want your project to last? Identify the expected design life for the project (CRMC recommends a minimum of 30 years) Erosion Rate: NA ft/yr
- D. Add the number of years you identified in 1C to the current year. (For example, if you are completing this form in the year 2020, and you want your project to last 30 years, your design life year will be 2050.) 50 years
- E. CHECK beneath the sea level rise (SLR) projection that matches or comes closest to project design life year. Design Life Year: 2070

Year	2020	2030	2040	2050	2060	2070	2080	2090	2100
SLR	1.05	1.67	2.33	3.25	4.20	5.35	6.69	8.14	9.61
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

Source: Sea Level Rise (SLR) Projections (Feb. 2017). NOAA High Curve, 83% Confidence Interval. Newport, RI Tide Gauge. All values are expressed in feet relative to NAVD88. <http://www.corpsclimate.us/ccaceslcurves.cfm>

NOTE: The STORMTOOLS sea level rise scenarios depict how high the water will be above the average height of the daily high tide over the 19-year period between 1983 and 2001. There have been between 4 and 5 inches of sea level rise in Rhode Island since then. The higher modeled water level accounts for the uncertainties in ice sheet and ocean dynamics.

STEP 2. SITE ASSESSMENT

- A. Open RICRMC [Coastal Hazard Mapping Tool](#). Following the tutorial along the left side of the screen, enter the project site address and turn on the sea level layer closest to the number you circled in 1E.
- B. ENTER the STORMTOOLS SLR map layer closest to the SLR value you checked in Step 1E above. If the value falls between the available STORMTOOLS SLR map layers, round off to the closest of these sea level rise (SLR) numbers: 1ft, 2ft, 3ft, 5ft, 7ft, 10ft, or 12ft 5 ft
- C. Does the STORMTOOLS SLR map layer you circled above expose your project site to future tidal inundation? CHECK YES or NO YES
 NO
- D. List any roads or access routes that are potentially inundated from SLR and storms. To do this, ZOOM OUT from your project location, change BASEMAP on the viewer to "street view" – see Step 2A.
Terminal Road

STEP 3. STORMTOOLS DESIGN ELEVATION (SDE)

- A. Based on the project location, CHECK the SDE Viewer for your site, and open the corresponding tab in Mapping Tool:
 South Coast SDE Viewer: Napatree to Pt. Judith Narragansett Bay SDE Viewer: North and East of Pt. Judith
- B. Follow the tutorial included along the left panels of the viewer to enter the address of your project site. Select the tab across the top that corresponds to the sea level rise projection you identified in STEP 1E.
- C. Click on the map at project site to identify STORMTOOLS Design Elevation (SDE) from the pop up box. Enter the SDE value: 22.1 ft

****Please be advised that CRMC staff may also review the implications of sea level rise in combination with nuisance storm flooding and discuss these potential project concerns with the applicant. Nuisance flooding impacts may be viewed in STORMTOOLS [here](#).**

RI CRMC COASTAL HAZARD APPLICATION WORKSHEET

STEP 4. SHORELINE CHANGE

A. Setbacks are required per RI Coastal Resources Management Program (RICRMP), Section 1.1.9. Indicate the annual shoreline change rate value from STEP 1B, and the design life selected in STEP 1C above. Enter values in 4C below.

B. CHECK below the Projected Erosion Rate that corresponds to the design life you identified above.

Year	2050	2060	2070	2080	2090	2100
Projected Future Erosion Multiplier	1.34	1.45	1.57	1.70	1.84	2.00
	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Source: Projected Shoreline Change Rate multipliers. (Oakley et al., 2016)

C. COMPLETE EROSION SETBACK CALCULATION:

Historic shoreline change rate, STEP 1B	Design Life, STEP 1C	Projected Future Erosion Multiplier, STEP 4B	Erosion Setback (ft) 1B x 1C x 4B
0	X 50	X 1.57	= 0

NOTE: A minimum setback of 50-feet is required, but a greater setback may be necessary and/or desirable based on this analysis.

STEP 5. CERl & OTHER SITE CONSIDERATIONS

A. If you live in a community where a Coastal Environmental Risk Index (CERl) has been completed (Barrington, Bristol, Charlestown, Narragansett, South Kingstown, Warren, Warwick, Westerly), CHECK the level of projected damage to your location, as indicated on the map that corresponds to the design life identified in STEP 1.

CERl Level:
 Moderate
 High
 Severe
 Extreme
 Inundated by 2100
 Not applicable

B. Consider and discuss with your design consultant other forces or factors that might impact the development, such as coastal habitats, shoreline features, public access, wastewater, storm water, depth to water table/groundwater dynamics, saltwater intrusion, or other issues not listed above. In addition, pressure from rising sea levels will result in rising subsurface groundwater levels ultimately effecting wells and septic systems.

STEP 6. LARGE PROJECTS

This step is for Large Projects and Subdivisions only, six (6) or more units, as defined by RI CRMP Section 1.1.6.(1)(f). This step may be skipped for other projects.

A. Use the Sea Level Affecting Marshes Model (SLAMM) Maps to assess potential impacts to large projects and subdivisions from salt marsh migration resulting from projected sea level rise. CRMC SLAMM maps can be accessed [here](#). YES NO

The CRMC recommends using the 5-foot SLR projection within SLAMM to assess future potential project impacts on migrating marshes. Does the SLAMM map that corresponds to the design life you identified in STEP 1 expose your project site to future salt marsh migration? CHECK YES or NO

STEP 7: DESIGN EVALUATION

A. Using Chapter 7 of the RI Shoreline Change SAMP as a guide, investigate mitigation options for the exposure identified above and include that in the final application.

This fully completed Coastal Hazard Application Guidance worksheet must accompany the application. If you are a design or engineering professional, please print and sign here that you have discussed the findings of this worksheet with the Owner.

DESIGN/ENGINEER SIGNATURE: _____ DATE: 12/16/2019

OWNER'S SIGNATURE: William R Howard DATE: 12/16/2019

Please refer to the [RI Shoreline Change Special Area Management Plan](#), Chapter 5 for background.



APPENDIX C

PROOF OF OWNERSHIP AND ABUTTERS LIST

Abutters List – 125, 181, 185, 195 Terminal Road
Providence, Rhode Island

Plat	Lot	Owner(s)	Property Address	Mailing Address
55	196	Triton Terminaling LLC	610 Allens Avenue	PO Box 4369 Houston, TX 77210-4369
56	271	Glen Falls Lehigh Cement Co.	0 Terminal Road	313 Warren Street Glen Falls, NY 12801
56	6	Hudson Terminal Corp	29 Terminal Road	89 Ship Street Providence, RI 02903-4218
56	348	New England Petroleum Terminal LLC	75 Terminal Road	85-87 Terminal Road Providence RI 02901
56	327	Univar USA Inc.	175 Terminal Road	Three Galleria Tower 13155 Noel Road 12 th floor Dallas, TX 75241-5090
56	331	City of Providence	105 Terminal Road	City Hall Providence, RI 02903
101	497	City of Providence	700 Allens Avenue	City Hall Providence, RI 02903
101	493	Triton Terminaling LLC	655 Allens Avenue	PO Box 4369 Houston, TX 77210-4369
101	1	Narragansett Electric Co.	2 Allens Avenue	40 Sylvan Road Waltham, MA 02451

NF = Now or formerly of

Abutters' information (names and property addresses) obtained on September 30, 2019 from "Providence Parcel and Zoning Map"

125 TERMINAL RD

Location 125 TERMINAL RD

Plat Lot Unit 56/ / 273/ LL01/

Owner NARRAGANSETT ELECTRIC
CO

Building Name

Assessment \$2,039,300

PID 39331

Building Count 1

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$168,200	\$1,871,100	\$2,039,300

Owner of Record

Owner NARRAGANSETT ELECTRIC CO
Co-Owner
Address 40 SYLVAN RD
WALTHAM, MA 02451-2286

Sale Price \$0
Book & Page 99999/9999
Sale Date 07/07/2012

Ownership History

Ownership History			
Owner	Sale Price	Book & Page	Sale Date
NARRAGANSETT ELECTRIC CO	\$0	99999/9999	07/07/2012
Narragansett Electric Co	\$0	99999/999	07/07/2012
Narragansett Electric Co	\$11,468,000	8243/243	08/25/2006
Narragansett Electric Co	\$0	0001/0001	01/01/1900

Building Information

Building 1 : Section 1

Year Built:

Replacement Cost: \$0

Building Percent

Good:

Replacement Cost

Less Depreciation: \$0

Building Attributes	
Field	Description
Style	Vacant Land

Grade:	
Stories:	
Occupancy:	
Exterior Wall 1:	
Exterior Wall 2:	
Roof Structure:	
Roof Cover:	
Interior Wall 1:	
Interior Wall 2:	
Interior Floor 1	
Interior Floor 2	
Heat Fuel:	
Heat Type:	
AC Type	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Rooms	
Bath Style	
Kitchen Style:	
Total Kitchens	
Fireplaces	
Extra Openings	
Gas Fireplaces	
Bsmt Garages	
Fin Bsmt Area	
Fin Bsmt Type	
Rec Rm Area	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout

(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 499
Description Utility Vac Ln
Neighborhood
Alt Land Appr No

Land Line Valuation

Size (Acres) 3.90
Assessed Value \$1,871,100

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Assessed Value	Bldg #
BD3	Boat Dock - Heavy			2410 SF	\$48,200	1
PAV2	Paving Conc			20000 SF	\$40,000	1
PAV1	Paving Asph			80000 SF	\$80,000	1

Valuation History

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$168,200	\$1,871,100	\$2,039,300

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181 TERMINAL RD

Location 181 TERMINAL RD

Plat Lot Unit 56 / / 317 / /

Owner NARRAGANSETT ELECTRIC CO

Building Name

Assessment \$278,100

PID 40528

Building Count 1

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$36,800	\$241,300	\$278,100

Owner of Record

Owner NARRAGANSETT ELECTRIC CO

Sale Price \$0

Co-Owner

Book & Page 99999/9999

Address 40 SYLVAN RD
WALTHAM, MA 02451-2286

Sale Date 07/07/2012

Ownership History

Ownership History			
Owner	Sale Price	Book & Page	Sale Date
NARRAGANSETT ELECTRIC CO	\$0	99999/9999	07/07/2012
Narragansett Electric Co	\$0	99999/999	07/07/2012
Narragansett Electric Co	\$11,468,000	8243/243	08/25/2006
Narragansett Electric Co	\$0	0001/0001	01/01/1900

Building Information

Building 1 : Section 1

Year Built:

Replacement Cost: \$0

Building Percent

Good:

Replacement Cost

Less Depreciation: \$0

Building Attributes	
Field	Description
Style	Vacant Land

Grade:	
Stories:	
Occupancy:	
Exterior Wall 1:	
Exterior Wall 2:	
Roof Structure:	
Roof Cover:	
Interior Wall 1:	
Interior Wall 2:	
Interior Floor 1	
Interior Floor 2	
Heat Fuel:	
Heat Type:	
AC Type	
Total Bedrooms	
Total Full Baths	
Total Half Baths	
Total Rooms	
Bath Style	
Kitchen Style:	
Total Kitchens	
Fireplaces	
Extra Openings	
Gas Fireplaces	
Bsmt Garages	
Fin Bsmt Area	
Fin Bsmt Type	
Rec Rm Area	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos/\00\03\67>)

Building Layout

(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/4>)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 298
Description Comm OBY
Neighborhood
Alt Land Appr No

Land Line Valuation

Size (Acres) 0.50
Assessed Value \$241,300

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Assessed Value	Bldg #
FN1	Fence, Chain	6	6 ft	975 LF	\$6,800	1
PAV2	Paving Conc			15000 SF	\$30,000	1

Valuation History

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$36,800	\$241,300	\$278,100

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185 TERMINAL RD

Location 185 TERMINAL RD

Plat Lot Unit 56 / / 316 / /

Owner NARRAGANSETT ELECTRIC
CO

Building Name

Assessment \$9,201,900

PID 34303

Building Count 3

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$1,306,100	\$7,895,800	\$9,201,900

Owner of Record

Owner NARRAGANSETT ELECTRIC CO
Co-Owner
Address 40 SYLVAN RD
WALTHAM, MA 02451-2286

Sale Price \$0
Book & Page 99999/9999
Sale Date 07/07/2012

Ownership History

Ownership History			
Owner	Sale Price	Book & Page	Sale Date
NARRAGANSETT ELECTRIC CO	\$0	99999/9999	07/07/2012
Narragansett Electric Co	\$0	99999/999	07/07/2012
Narragansett Electric Co	\$11,468,000	8243/243	08/25/2006
Narragansett Electric Co	\$0	0001/0001	01/01/1900

Building Information

Building 1 : Section 1

Year Built: 1973
Replacement Cost: \$340,224
Building Percent 65
Good:
Replacement Cost
Less Depreciation: \$221,100

Building Attributes	
Field	Description
STYLE	Office Bldg

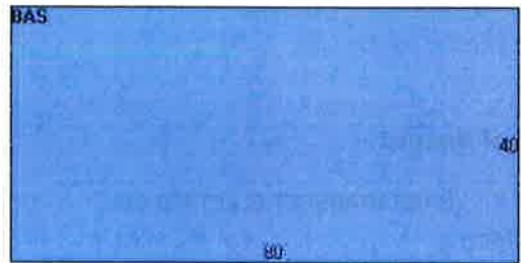
MODEL	Comm/Ind
Grade:	C
Stories:	1
Occupancy:	1
Exterior Wall 1:	Concr/CinderBl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	Tar + Gravel
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Forced Air
AC Type:	Central
Bldg Use:	Office
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	Heat/Ac Pkgs
Frame Type:	Masonry
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	12
% Corn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//\00\03\15\>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,200	3,200
		3,200	3,200

Building 2 : Section 1

Year Built: 1973
Replacement Cost: \$32,344
Building Percent Good: 65
Replacement Cost Less Depreciation: \$21,000

Building Attributes : Bldg 2 of 3	
Field	Description
STYLE	Pre-Eng Warehs
MODEL	Ind/Comm
Grade:	C
Stories:	1

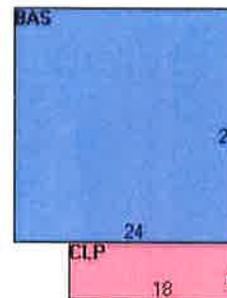
Occupancy:	1
Exterior Wall 1:	Pre-Finsh Metl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	Tar + Gravel
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Steel
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	10
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	600	600
CLP	Loading Platform	108	0
		708	600

Building 3 : Section 1

Year Built: 1985
Replacement Cost: \$62,941
Building Percent Good: 72
Replacement Cost Less Depreciation: \$45,300

Building Attributes : Bldg 3 of 3	
Field	Description
STYLE	Pre-Eng Warehs
MODEL	Ind/Comm
Grade:	C

Stories:	1
Occupancy:	1
Exterior Wall 1:	Pre-Finsh Metl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	Tar + Gravel
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	None
Heating Type:	None
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Steel
Baths/Plumbing:	None
Rooms/Prtns:	Average
Wall Height:	14
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,360	1,360
		1,360	1,360

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 218
Description Office
Neighborhood

Land Line Valuation

Size (Acres) 31.96
Assessed Value \$7,895,800

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Assessed Value	Bldg #
LT	Light	2	Double	3 UNITS	\$5,300	1
KSK1	Kiosk Ret or Gas			32 SF	\$2,400	1
CNP1	Canopy Ave			72 SF	\$1,100	1
SHD1	Shed	MT	Metal	100 SF	\$600	1
FN1	Fence, Chain	6	6 ft	1333 LF	\$9,300	1
PAV2	Paving Conc			500000 SF	\$1,000,000	1

Valuation History

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$1,274,200	\$7,895,800	\$9,170,000

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195 TERMINAL RD

Location 195 TERMINAL RD

Plat Lot Unit 56 / / 5 / /

Owner NARRAGANSETT ELECTRIC CO

Building Name

Assessment \$5,277,400

PID 38463

Building Count 5

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2019	\$845,000	\$4,432,400	\$5,277,400

Owner of Record

Owner NARRAGANSETT ELECTRIC CO

Sale Price \$0

Co-Owner

Book & Page 99999/9999

Address 40 SYLVAN RD
WALTHAM, MA 02451-2286

Sale Date 07/07/2012

Ownership History

Ownership History			
Owner	Sale Price	Book & Page	Sale Date
NARRAGANSETT ELECTRIC CO	\$0	99999/9999	07/07/2012
Narragansett Electric Co	\$0	99999/999	07/07/2012
Narragansett Electric Co	\$11,468,000	8243/243	08/25/2006
Narragansett Electric Co	\$0	0001/0001	01/01/1900

Building Information

Building 1 : Section 1

Year Built: 1950
Replacement Cost: \$113,685
Building Percent 62
Good:
Replacement Cost
Less Depreciation: \$70,500

Building Attributes	
Field	Description
STYLE	Industrial

MODEL	Ind/Comm
Grade:	C
Stories:	1
Occupancy:	1
Exterior Wall 1:	Brick/Masonry
Exterior Wall 2:	Concr/CinderBl
Roof Struct:	Gable
Roof Cover:	Asphalt Shingl
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Masonry
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	14
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//\00\03\51>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	1,500	1,500
		1,500	1,500

Building 2 : Section 1

Year Built: 1915
Replacement Cost: \$32,432
Building Percent Good: 73
Replacement Cost Less Depreciation: \$23,700

Building Attributes : Bldg 2 of 5	
Field	Description
STYLE	Industrial
MODEL	Ind/Comm
Grade:	D
Stories:	1

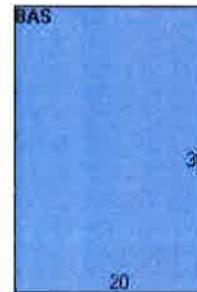
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Gable
Roof Cover:	Asphalt Shingl
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Masonry
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	10
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	600	600
		600	600

Building 3 : Section 1

Year Built: 1915
Replacement Cost: \$199,522
Building Percent Good: 73
Replacement Cost Less Depreciation: \$145,700

Building Attributes : Bldg 3 of 5	
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade:	D
Stories:	1

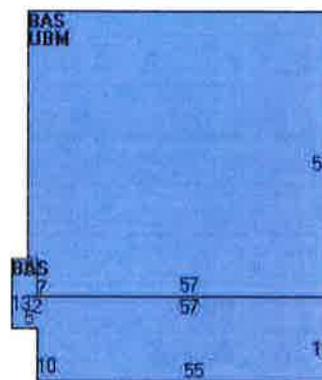
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Gable
Roof Cover:	Asphalt Shingl
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Ind/Whs Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Fireprf Steel
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	14
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,966	3,966
UBM	Basement	3,021	0
		6,987	3,966

Building 4 : Section 1

Year Built: 1915
Replacement Cost: \$314,933
Building Percent Good: 73
Replacement Cost Less Depreciation: \$229,900

Building Attributes : Bldg 4 of 5	
Field	Description
STYLE	Warehouse
MODEL	Ind/Comm
Grade:	D

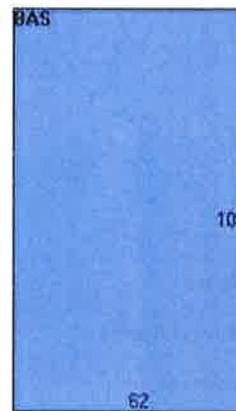
Stories:	1
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Gable
Roof Cover:	Asphalt Shingl
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Ind/Whs Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Fireprf Steel
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	34
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	6,696	6,696
		6,696	6,696

Building 5 : Section 1

Year Built: 1915
Replacement Cost: \$111,123
Building Percent Good: 73
Replacement Cost Less Depreciation: \$81,100

Building Attributes : Bldg 5 of 5	
Field	Description
STYLE	Industrial
MODEL	Ind/Comm
Grade:	D
Stories:	1

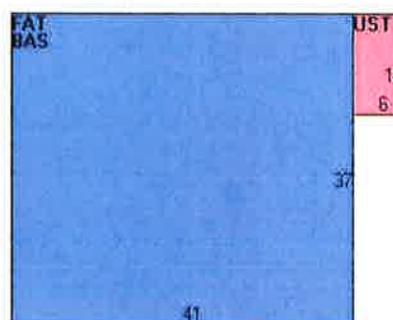
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Gable
Roof Cover:	Asphalt Shingl
Interior Wall 1:	Typical
Interior Wall 2:	
Interior Floor 1:	Typical
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Space Heater
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	
Ttl Baths:	
Ttl Half Baths:	
Ttl Xtra Fix:	
1st Floor Use:	
Heat/AC:	None
Frame Type:	Fireprf Steel
Baths/Plumbing:	Average
Rooms/Prtns:	Average
Wall Height:	20
% Comn Wall:	

Building Photo



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//default.jpg>)

Building Layout



(<http://images.vgsi.com/photos/ProvidenceRIPhotos//Sketches/3>)

Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
BAS	First Floor	1,517	1,517	
FAT	Finished Attic	1,517	379	
UST	Unfinished Utility Storage	72	0	
		3,106	1,896	

Extra Features

Extra Features				Legend
Code	Description	Size	Assessed Value	Bldg #
MR1	Monitor Roof	1512 SF	\$5,200	4
MR1	Monitor Roof	328 SF	\$1,100	5

Land

Land Use

Land Line Valuation

Use Code 300
Description Industrial Mdl 96
Neighborhood
Alt Land Appr No

Size (Acres) 9.25
Assessed Value \$4,432,400

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Assessed Value	Bldg #
PAV1	Paving Asph			200000 SF	\$200,000	1
SHD1	Shed	FR	Frame	336 SF	\$1,400	2
UTIL	Utility	FR	Frame	72 SF	\$900	5
RR1	Track - Railroad			1000 LF	\$30,000	1
SHD1	Shed	FR	Frame	196 SF	\$800	2
LT	Light	2	Double	10 UNITS	\$17,700	1
SHD1	Shed	MT	Metal	100 SF	\$400	2
LT	Light	2	Double	8 UNITS	\$14,200	1
UTIL	Utility	FR	Frame	456 SF	\$5,700	2
FN1	Fence, Chain	4	4 ft	2333 LF	\$12,800	1
SHD1	Shed	MT	Metal	180 SF	\$1,500	2
KSK1	Kiosk Ret or Gas			32 SF	\$2,400	1

Valuation History

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$813,300	\$4,432,400	\$5,245,700

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APPENDIX D

SITE PHOTOGRAPHS

Site Photographs – Bulkhead/Seawall
642 Allens Avenue/121 Terminal Road
Providence, Rhode Island



Photo 1: Aerial view of Site

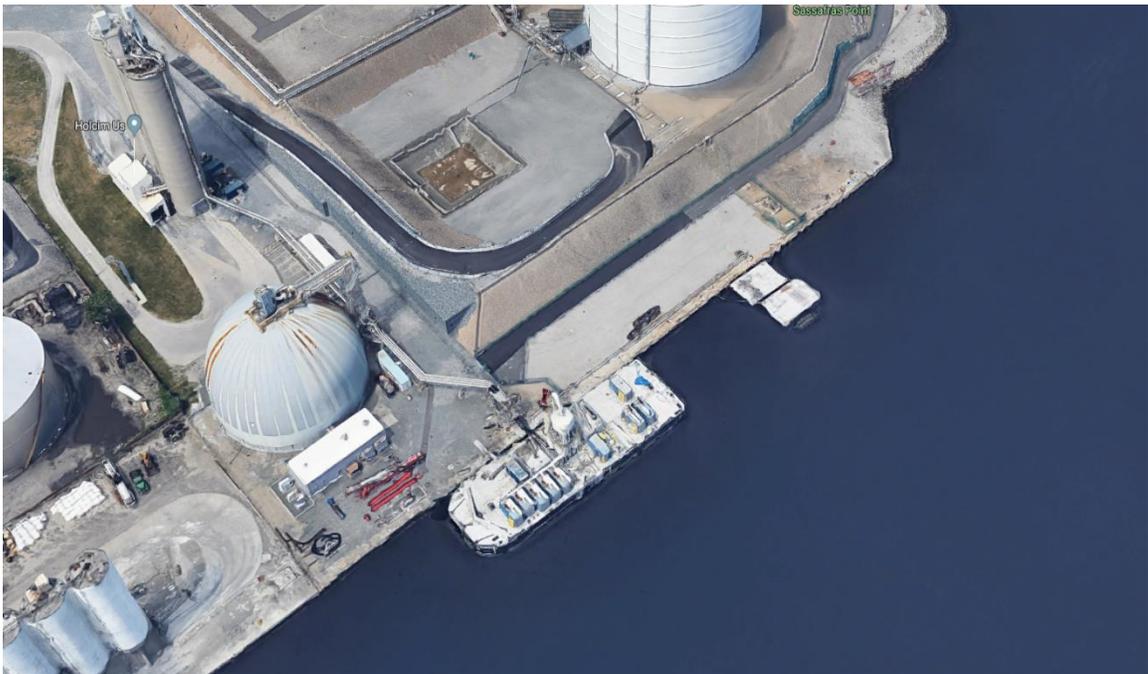


Photo 2: Aerial view of Site

Site Photographs – Bulkhead/Seawall
642 Allens Avenue/121 Terminal Road
Providence, Rhode Island



Photo 3: Existing seawall



Photo 4: Existing granite block wall

Site Photographs – Bulkhead/Seawall
642 Allens Avenue/121 Terminal Road
Providence, Rhode Island



Photo 5: Existing steel sheet pile wall



Photo 6: Existing steel sheet pile wall and riprap slope



GZA GeoEnvironmental, Inc.