GZA

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Built on trust.

GEOTECHNICAL
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CONSTRUCTION MANAGEMENT

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April 2, 2019
GZA File No. 05.0043654.40

**Via E-Mail and U.S. Mail**

Mr. Joseph Martella
Rhode Island Department of Environmental Management (RIDEM)
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908

Re: Former Tidewater Facility
200 Taft Street
Pawtucket, Rhode Island
RIDEM Case No. 95-022 / Site Remediation File No. SR-26-0934

Dear Mr. Martella:

As discussed during our March 13, 2019 call, GZA GeoEnvironmental, Inc. (GZA) has prepared this letter on behalf of The Narragansett Electric Company d/b/a National Grid (National Grid) describing certain modifications to the subsurface containment wall design described in our June 2018 *Remedial Action Workplan* (RAWP) for the former Tidewater Facility located in Pawtucket, Rhode Island (herein referred to as the Site).

As described in the RAWP, the Tidewater remedy includes among other activities the installation of a subsurface containment wall designed to mitigate potential migration of non-aqueous phase liquid (NAPL) impacts to the Seekonk River coupled with manual recovery of observed NAPL from a network of monitoring and recovery wells. The subsurface containment wall was proposed to consist of two sections (a north and a south section) with an approximately 220-foot gap between each section proximate to the electric transmission towers. The north section of the containment wall is approximately 1,100-feet long extending across the Former Gas Plant Area (FGPA) and the Former Power Plant Area (FPPA) where the majority of the observed NAPL impacts have been observed. The southern section of the containment wall was proposed to be approximately 180 feet long extending from the southern electric transmission tower across the northern portion of the South Fill Area (SFA). The attached Figure 1 depicts the layout of the containment wall as presented in the RAWP.

Subsequent to the preparation of the RAWP, GZA's licensed soil scientist performed a survey of the Site as part of the remedy design and permitting process. Based on this survey, the southern section of the containment wall is located within a tidal wetland area. In addition, we have also recently become aware of the potential presence of electrical distribution submarine cables proximate to the south transmission tower. These submarine cables reportedly extend from a vault on the Site, below the river and to the eastern shore of the Seekonk River. These cables were used to provide electrical power to the east side of the river prior to construction of the transmission towers. The attached Figure 2 depicts the layout of the containment wall as presented in the RAWP, including the edge of the tidal wetland, the approximate location of the vault for the submarine cables, and the approximate layout of the submarine cables within the Seekonk River.

Due to the presence of the tidal wetland and the submarine cables, we have re-evaluated the plan for addressing the limited NAPL observed in this area with the southern section of the containment wall. Since July 2011, GZA has performed NAPL gauging and recovery activities at the Site on an approximately quarterly basis. The observations made during these activities indicate NAPL impacts are limited to the presence of dense non-aqueous phase liquid (DNAPL)[1] within 3 of the 12 monitoring wells (MW-1, MW-320S and MW-320D) in the SFA. As indicated in attached cross sectional profiles B-B' and G-G' (Figures 6 and 11 from the January 2011 *Site Investigation Data Report*), with the exception of monitoring wells MW-318S and MW-318D, these NAPL detections are generally consistent with the limited extent of visible soil impacts previously observed in this area during the various rounds of environmental investigations. Monitoring wells MW-318S and MW-318D are located approximately 60 feet to the north of monitoring well MW-1 and visible soil impacts were also observed at this location similar to those observed at monitoring wells MW-1, MW-320S, MW-320D. However, NAPL has not been observed within these 2 monitoring wells to date. Given these observations, the southern section of the containment wall was designed to address the observed measurable DNAPL impacts within monitoring wells MW-1, MW-320S and MW-320D. However, as indicated on Figure 2, monitoring well MW-1 is located at the top of the riverbank (outside the wetlands) and DNAPL has only been periodically observed within this well at trace levels (less than 0.01 feet) since July 2011. DNAPL has also been observed at monitoring wells MW-320S and MW-320D within the wetlands at the bottom of the riverbank. DNAPL thicknesses within monitoring well MW-320S have ranged from trace levels (less than 0.01 feet) to 2.5 feet; however, as a result of quarterly recovery efforts, the observed DNAPL thicknesses within monitoring well MW-320S decreased to trace levels in 2018. DNAPL thicknesses in well MW-320D have historically ranged from approximately 1 foot to 14.5 feet. The DNAPL within this deeper monitoring well is viscous and recovery efforts with a peristaltic pump to date have not been successful in removing the DNAPL from this well. We also note that groundwater monitoring wells act as collection points for NAPL and therefore the thickness measured within wells is often significantly greater than what is actually present in the subsurface. Consistent with the relatively immobile nature and the observed viscosity of the DNAPL in this area, GZA has not observed the presence of sheens in the waterfront area adjacent to monitoring wells MW-320S/D.

If the southern section of the containment wall was installed as currently described in the RAWP, the tidal wetlands would be severely impacted during the installation process. In addition, the wall would have to be shortened at a minimum to avoid the subsurface electrical infrastructure still in place at the site. In an effort to minimize impacts to the tidal wetlands in this portion of the Site and due to concerns regarding installation

[1] Note, LNAPL has not been historically observed within the SFA.

of a steel sheet containment wall proximate to the submarine cables, we propose to replace the southern section of the containment wall with a row of seven (7) 4-inch diameter recovery wells installed approximately at the mid-slope of the riverbank. This well based recovery system is adequate to address the limited NAPL observed in this area of the Site. The recovery wells will be spaced approximately every 20 feet between well couplets farther up the slope where NAPL impacts were not observed during previous investigation activities (i.e., MW-318S/D and MW-319S/D). The bottom of each new well screen will be set at an elevation consistent with monitoring well MW-320D (Elevation -18.1 NAVD 88). In addition, the riverbank will be re-graded to create a uniform slope from the top of the riverbank to the edge of the tidal wetlands and capped with a reactive core mat as a precaution to mitigate the potential migration of NAPL to the shallow river sediments. The approximate layout of these recovery wells and a preliminary grading plan for the riverbank is attached as Figure 3. We will also evaluate the use of alternative recovery techniques to remove the observed DNAPL at monitoring well MW-320D as well as any observed DNAPL that may collect in these proposed recovery wells.

We believe this alternative approach is still protective of the environment based on the viscous and immobile nature of the DNAPL in this area and will also minimize impacts to the tidal wetlands and risks associated with the existing submarine cable. We therefore request your approval of this alternative approach.

Should you have any questions or comments regarding the information presented herein, please do not hesitate to contact the undersigned or Kenneth Lento from National Grid at (781) 907-3655.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

David Rusczyk, P.E.
Associate Principal

James J. Clark, P.E.
Senior Principal

Attachments: Figure 1: Overall Site Plan
Figure 2: Original Proposed Layout of South Section of Containment Wall
Figure 3: Proposed Alternative to the South Section of Containment Wall
Figure 6: Cross Sectional Profile B-B’
Figure 11: Cross Sectional Profile G-G’

cc: Kenneth Lento, National Grid


## LEGEND

| | |
|---|---|
| | SITE BOUNDARY LINE |
| 10 | CONTOUR 5 FOOT INTERVAL |
| | CONTOUR 1 FOOT INTERVAL |
| | SHORE LINE |
| WF-1 | WETLAND FLAG LOCATION |
| | WETLAND LINE |
| | BUILDING |
| | CONCRETE SURFACE |
| X | FENCE |
| | GRAVEL SURFACE |
| | BITUMINOUS PAVEMENT |
| | RETAINING WALL |
| | TREE LINE |
| | PROPERTY LINE |
| | EASEMENT LINE |
| | ABANDON STREET LINE |
| | MEAN HIGH WATER LINE |
| | MEAN LOW WATER LINE |
| | SITE ACCESS ROADWAY |
| B-109/ MW-109 | MONITORING WELL |
| M&E MW-1 | MONITORING WELL |
| MW-320 S/D | MONITORING WELL |

## UTILITY LEGEND:

| | |
|---|---|
| | DRAIN MANHOLE |
| | ELECTRIC MANHOLE |
| | SEWER MANHOLE |
| | CATCH BASIN |
| | UTILITY POLE |
| | LIGHT POST |
| OHW | EXISTING OVERHEAD LINE |
| HVOHW | EXISTING HIGH VOLTAGE OVERHEAD LINE |
| E | EXISTING UNDERGROUND ELECTRIC |
| S | EXISTING SEWER LINE |
| D | EXISTING DEDICATED STORMWATER LINE |

## GENERAL NOTES:

1) BASE MAP DEVELOPED FROM THE FOLLOWING:
   - ELECTRONIC CAD FILE 17-NG-52_PAWTUCKET NO1 SUB TIDEWATER-JEG-07.DWG, TITLED "AS BUILT PLAN PAWTUCKET NO. 1 SUBSTATION," DATED AUGUST 22, 2017, ORIGINAL SCALE 1" = 20', CREATED BY TAUPER LAND SURVEY, INC. FOR NATIONAL GRID AND PROVIDED TO GZA ON SEPTEMBER 12, 2017.
   - ELECTRONIC CAD FILE AERO1408_PROJECT.DWG, TITLED "DIGITAL PHOTOGRAMMETRIC MAPPING FOR TIDEWATER," DATED JUNE 27, 2016, ORIGINAL SCALE 1" = 40', CREATED BY AEROTECH CORP. FOR GZA.
   - ELECTRONIC CAD FILE 2016-161-AS BUILT-MID-WAY.DWG, TITLED "SUBGRADE AS-BUILT PLAN," DATED JULY 2016, ORIGINAL SCALE 1" = 10', SHEET 1 OF 1, CREATED BY NATIONAL SURVEYORS-DEVELOPERS INC. AND PROVIDED BY NRC.
   - PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING TITLED "PERIMETER SURVEY OF LAND AT THE TIDEWATER FORMER MGP SITE IN PAWTUCKET, RHODE ISLAND FOR ATLANTIC ENVIRONMENTAL SERVICES INC." DEVELOPED BY LOUIS FEDERICI AND ASSOCIATES.
   - GIS DATA WAS PROVIDED BY THE CITY OF PAWTUCKET IN OCTOBER 2016 FOR REFERENCE PURPOSES ONLY AND SHOULD NOT BE CONSIDERED A LEGALLY AUTHORITATIVE SOURCE AS TO LOCATION OF ANY LINE OR FEATURE. THESE DATA ARE FOR PLANNING PURPOSES ONLY AND DO NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.
2) HORIZONTAL DATUM IS BASED ON NORTH AMERICAN DATUM 1983 (NAD83) FROM BASE MAPPING PROVIDED BY AEROTECH CORP.
3) VERTICAL DATUM IS BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) FROM BASE MAPPING PROVIDED BY AEROTECH CORP.
4) SITE BOUNDARIES ARE APPROXIMATE.

0 40 80 160 240

SCALE IN FEET 1" = 80'

| NO. | ISSUE/DESCRIPTION | BY | DATE |
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FORMER TIDEWATER FACILITY
PAWTUCKET, RHODE ISLAND

**OVERALL SITE PLAN**

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: nationalgrid

| | | | |
|---|---|---|---|
| PROJ MGR: DJR | REVIEWED BY: TG | CHECKED BY: DJR | FIGURE |
| DESIGNED BY: MP | DRAWN BY: SAB | SCALE: AS SHOWN | 1 |
| DATE: SUBMISSION-DATE | PROJECT NO. 43654.40 | REVISION NO. | SHEET NO. 1 OF 3 |

GZA-J:\ENV\43654.40\CAD\01_CURRENT\PLANS\RIDEM WALL REMOVAL-REQUEST\43645.40_01-OVERALL-SITE PLAN.DWG OVERALL SITE APRIL 2, 2019 4:06PM SCOTT BUXTON


GZA-J:\ENV\43654.40\CAD\01_CURRENT\PLANS\RIDEM WALL REMOVAL-REQUEST\43645.40_ORIGINAL-PROP-SOUTH WALL.DWG ORIGINAL PROPOSED APRIL 2, 2019 4:09PM SCOTT BUXTON

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3) VERTICAL DATUM IS BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) FROM BASE MAPPING PROVIDED BY AEROTECH CORP.

4) SITE BOUNDARIES ARE APPROXIMATE.

0 10 20 40 60
SCALE IN FEET 1" = 20'

## LEGEND

- SITE BOUNDARY LINE
- CONTOUR 5 FOOT INTERVAL
- CONTOUR 1 FOOT INTERVAL
- SHORE LINE
- WF-1 WETLAND FLAG LOCATION
- WETLAND LINE
- BUILDING
- CONCRETE SURFACE
- FENCE
- GRAVEL SURFACE
- BITUMINOUS PAVEMENT
- RETAINING WALL
- TREE LINE
- PROPERTY LINE
- EASEMENT LINE
- ABANDON STREET LINE
- MEAN HIGH WATER LINE
- MEAN LOW WATER LINE
- SITE ACCESS ROADWAY
- B-109/MW-109 MONITORING WELL
- M&E MW-1 MONITORING WELL
- MW-320 S/D MONITORING WELL

## UTILITY LEGEND:

- DRAIN MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- CATCH BASIN
- UTILITY POLE
- LIGHT POST
- OHW EXISTING OVERHEAD LINE
- HVOHW EXISTING HIGH VOLTAGE OVERHEAD LINE
- E EXISTING UNDERGROUND ELECTRIC
- S EXISTING SEWER LINE
- D EXISTING DEDICATED STORMWATER LINE

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FORMER TIDEWATER FACILITY
PAWTUCKET, RHODE ISLAND

**ORIGINAL PROPOSED LAYOUT OF SOUTH SECTION OF CONTAINMENT WALL**

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: nationalgrid

| | | | |
|---|---|---|---|
| PROJ MGR: DJR | REVIEWED BY: TG | CHECKED BY: DJR | FIGURE |
| DESIGNED BY: MP | DRAWN BY: SAB | SCALE: AS SHOWN | 2 |
| DATE: SUBMISSION-DATE | PROJECT NO. 43654.40 | REVISION NO. | SHEET NO. 2 OF 3 |


0 10 20 40 60
SCALE IN FEET 1" = 20'

**LEGEND**

- SITE BOUNDARY LINE
- CONTOUR 5 FOOT INTERVAL
- CONTOUR 1 FOOT INTERVAL
- SHORE LINE
- WETLAND FLAG LOCATION (WF-1)
- WETLAND LINE
- BUILDING
- CONCRETE SURFACE
- FENCE
- GRAVEL SURFACE
- BITUMINOUS PAVEMENT
- RETAINING WALL
- TREE LINE
- PROPERTY LINE
- EASEMENT LINE
- ABANDON STREET LINE
- MEAN HIGH WATER LINE
- MEAN LOW WATER LINE
- SITE ACCESS ROADWAY
- MONITORING WELL (B-109/MW-109)
- MONITORING WELL (M&E MW-1)
- MONITORING WELL (MW-320 S/D)
- PROPOSED RECOVERY WELL (RW-01)
- PROPOSED FINAL GRADE (17)

**UTILITY LEGEND:**

- DRAIN MANHOLE
- ELECTRIC MANHOLE
- SEWER MANHOLE
- CATCH BASIN
- UTILITY POLE
- LIGHT POST
- EXISTING OVERHEAD LINE (OHW)
- EXISTING HIGH VOLTAGE OVERHEAD LINE (HVOHW)
- EXISTING UNDERGROUND ELECTRIC (E)
- EXISTING SEWER LINE (S)
- EXISTING DEDICATED STORMWATER LINE (D)

**GENERAL NOTES:**

1) BASE MAP DEVELOPED FROM THE FOLLOWING:
   - ELECTRONIC CAD FILE 17-NG-52_PAWTUCKET NO1 SUB TIDEWATER-JEG-07.DWG, TITLED "AS BUILT PLAN PAWTUCKET NO. 1 SUBSTATION," DATED AUGUST 22, 2017, ORIGINAL SCALE 1" = 20', CREATED BY TAUPER LAND SURVEY, INC. FOR NATIONAL GRID AND PROVIDED TO GZA ON SEPTEMBER 12, 2017.
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3) VERTICAL DATUM IS BASED ON NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) FROM BASE MAPPING PROVIDED BY AEROTECH CORP.
4) SITE BOUNDARIES ARE APPROXIMATE.

| NO. | ISSUE/DESCRIPTION | BY | DATE |
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FORMER TIDEWATER FACILITY
PAWTUCKET, RHODE ISLAND

**PROPOSED ALTERNATIVE TO THE SOUTH SECTION OF THE CONTAINMENT WALL**

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com

PREPARED FOR: nationalgrid

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|---|---|---|---|
| PROJ MGR: DJR | REVIEWED BY: TG | CHECKED BY: DJR | FIGURE |
| DESIGNED BY: MP | DRAWN BY: SAB | SCALE: AS SHOWN | 3 |
| DATE: SUBMISSION-DATE | PROJECT NO. 43654.40 | REVISION NO. | SHEET NO. 3 OF 3 |


## LEGEND:

H+1.70 GROUNDWATER LEVELS AT HIGH TIDE BETWEEN 08/10/2010 AND 08/12/2010 (FOR MULTI-LEVEL WELL LOCATIONS, GROUNDWATER LEVEL AT DEEP WELL LOCATION PRESENTED)

L+1.18 GROUNDWATER LEVELS AT LOW TIDE BETWEEN 08/10/2010 AND 08/12/2010 (FOR MULTI-LEVEL WELL LOCATIONS, GROUNDWATER LEVEL AT DEEP WELL LOCATION PRESENTED)

230 TOTAL VOLITILE ORGANIC COMPOUND (TVOC) SOIL SAMPLE SCREENING RESULTS IN PARTS PER MILLION/ VOLUME AIR (PPMV)

NR INDICATES NO TVOC READING COLLECTED

ND INDICATES NO TVOC READING ABOVE INSTRUMENT DETECTION LIMIT OF APPROXIMATE 1 (PPMV) OBSERVED.

R INDICATES REFUSAL ON POSSIBLE STRUCTURE NOTED

MW–441 INDICATES 2010 MONITORING WELL LOCATION PERFORMED BY EXPEDITION DRILLING BETWEEN 05/03/10 AND 05/20/10 AND OBSERVED BY GZA PERSONNEL.

TB–302 INDICATES 2010 SOIL BORING LOCATION PERFORMED BY EXPEDITION DRILLING BETWEEN 05/03/10 AND 05/20/10 AND OBSERVED BY GZA PERSONNEL.

TP–306 INDICATES 2010 TEST PIT EXPLORATION LOCATION PERFORMED BY T. FORD BETWEEN 06/01/10 AND 06/16/10 AND OBSERVED BY GZA PERSONNEL.

B–109/ MW–109 INDICATES HISTORIC EXPLORATION LOCATION. TYPE OF EXPLORATION & DATE VARIES–SEE PLAN FOR DETAILS

TP–T7NW (GZ–01) INDICATES 2009 TEST PIT LOCATION PERFORMED BY GZA

INDICATES INFERRED STRATIGRAPHY

SITE AREA BOUNDARY LINE

PROPERTY LINE

### SOIL/BEDROCK STRATIGRAPHY LEGEND

- FILL
- SILT
- SAND
- CONCRETE
- TILL
- BEDROCK

### VISUAL OBSERVATIONS LEGEND

| PETROLEUM –LIKE | | COAL TAR –LIKE | MISCELLANEOUS |
|---|---|---|---|
| | SHEEN | | TRACE BLUE STAINING |
| | STAINED | | HEAVY BLUE STAINING |
| | COATED | | |
| | BLEBS | | |
| | SATURATED | | |
| | OIL/TAR | | |

## CROSS SECTIONAL PROFILE B–B'

B 2B 6 AS NOTED

## GENERAL NOTES

1. BASE MAP DEVELOPED FROM ELECTRONIC FILES FROM GEI CONSULTANTS, INC. (FORMERLY AES) ENTITLED "HISTORIC STRUCTURES AND SAMPLE LOCATIONS", ORIGINAL SCALE 1"=80', DATED JULY 1999 AND ELECTRONIC FILES FROM VANASSE HANGEN BRUSTLIN, INC. ENTITLED "SOIL BORING, TEST PIT AND MONITOR WELL LOCATIONS", SCALE: 1"=60'.
2. PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING ENTITLED "PERIMETER SURVEY OF LAND AT THE TIDEWATER FORMER MGP SITE IN PAWTUCKET, RHODE ISLAND FOR ATLANTIC ENVIRONMENTAL SERVICES INC." DEVELOPED BY LOUIS FEDERICI AND ASSOCIATES AND AN AUTO CAD FILE ENTITLED "MAX READ FIELD TRACK EXPANSION 2007" PROVIDED BY THE CITY OF PAWTUCKET.
3. THE LOCATION(S) OF THE EXISTING STRUCTURE(S) ON THE EXISTING SITE WAS PROVIDED BY OTHERS AS INDICATED IN NOTE 1 AND HAS NOT BEEN VERIFIED BY GZA.
4. THE VISUAL OBSERVATIONS DESCRIPTIONS OF THE 2009/2010 SUPPLEMENTAL SITE INVESTIGATIONS ARE DEFINED IN THE CORRESPONDING TEXT. THE VISUAL OBSERVATIONS DESCRIPTIONS OF BORINGS PERFORMED PRIOR TO THE 2009/2010 SUPPLEMENTAL SITE INVESTIGATION ARE FROM INTERPRETATIONS MADE BY GZA AND ARE DEFINED IN THE CORRESPONDING REPORT TEXT.
5. GROUNDWATER ELEVATIONS ARE PRESENTED FOR MEASUREMENTS COLLECTED ON BETWEEN 08/10/2010 AND 08/12/2010 FOR THE MONITORING WELLS INDICATED.
6. ELEVATIONS ARE RELATIVE TO THE 1929 NATIONAL GEODETIC VERTICAL DATUM (NGVD 1929).
7. HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY GEI CONSULTANTS, INC.
8. VERTICAL DATUM IS BASED ON NGVD 1929 (MSL) FROM BASE MAPPING PROVIDED BY GEI CONSULTANTS, INC.

SCALE IN FEET: 0, 20', 40', 80', 160' HORIZ.; 0', 2', 4', 8', 16' VERT.



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# FORMER TIDEWATER FACILITY

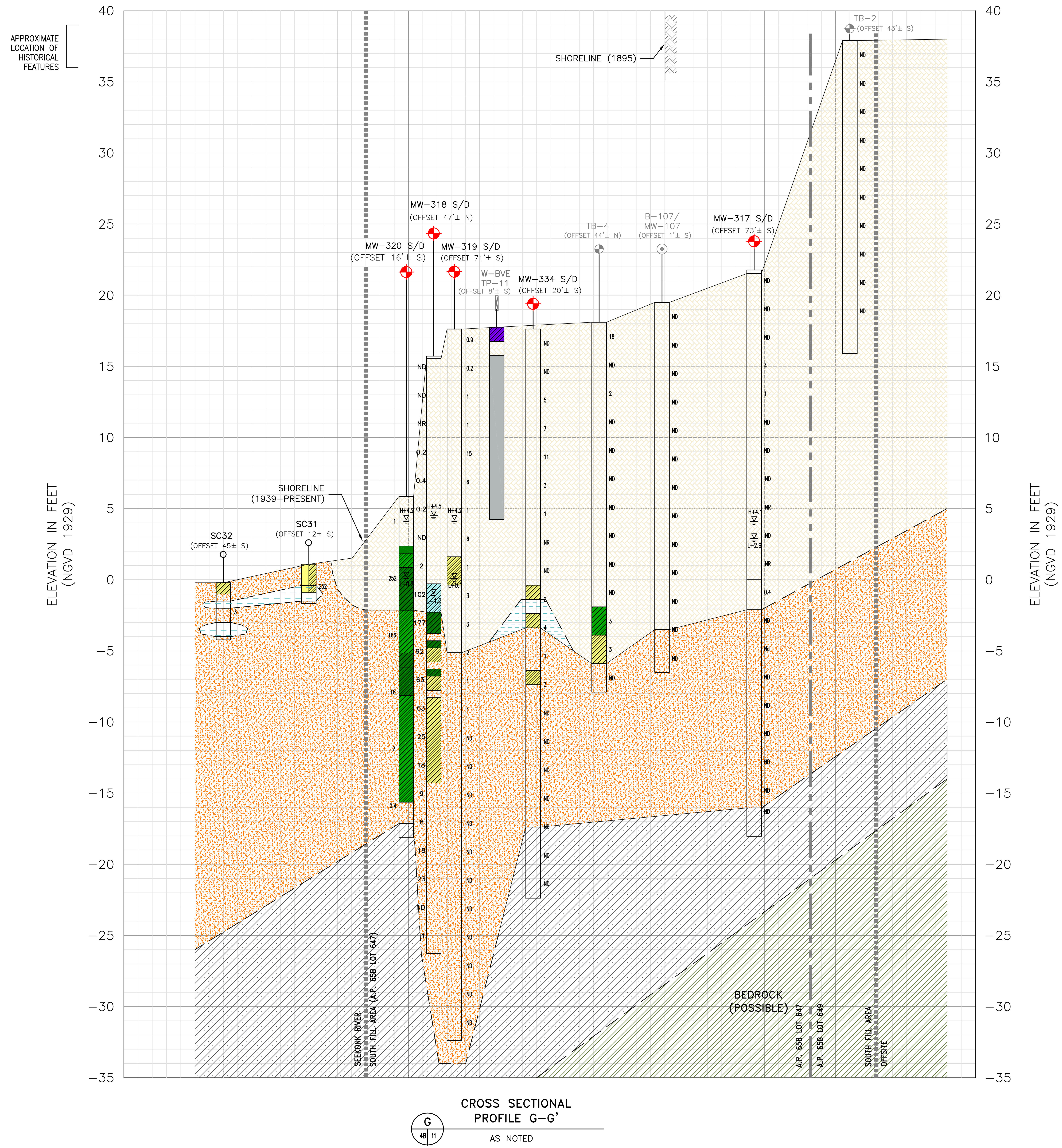
PAWTUCKET, RHODE ISLAND

CROSS SECTIONAL PROFILE B-B'

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists 530 BROADWAY PROVIDENCE, RHODE ISLAND 02909 (401) 421-4140

PREPARED FOR: NATIONAL GRID

| | | | |
|---|---|---|---|
| PROJ MGR: MSK | REVIEWED BY: WF | CHECKED BY: MSK | FIGURE |
| DESIGNED BY: WF | DRAWN BY: CRD | SCALE: 1"= 40" | 6 |
| DATE JANUARY 2011 | PROJECT NO. 43654.00 | REVISION NO. 0 | SHEET NO. 7 OF 24 |




## GENERAL NOTES

1. BASE MAP DEVELOPED FROM ELECTRONIC FILES FROM GEI CONSULTANTS, INC. (FORMERLY AES) ENTITLED "HISTORIC STRUCTURES AND SAMPLE LOCATIONS", ORIGINAL SCALE 1"=80', DATED JULY 1999 AND ELECTRONIC FILES FROM VANASSE HANGEN BRUSTLIN, INC. ENTITLED "SOIL BORING, TEST PIT AND MONITOR WELL LOCATIONS", SCALE: 1"=60'.
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## LEGEND:

| | |
|---|---|
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| L+1.18 | GROUNDWATER LEVELS AT LOW TIDE BETWEEN 08/10/2010 AND 08/12/2010 (FOR MULTI-LEVEL WELL LOCATIONS, GROUNDWATER LEVEL AT DEEP WELL LOCATION PRESENTED) |
| 230 | TOTAL VOLITILE ORGANIC COMPOUND (TVOC) SOIL SAMPLE SCREENING RESULTS IN PARTS PER MILLION/ VOLUME AIR (PPMV) |
| NR | INDICATES NO TVOC READING COLLECTED |
| ND | INDICATES NO TVOC READING ABOVE INSTRUMENT DETECTION LIMIT OF APPROXIMATE 1 (PPMV) OBSERVED. |
| R | INDICATES REFUSAL ON POSSIBLE STRUCTURE NOTED |
| MW-441 | INDICATES 2010 MONITORING WELL LOCATION PERFORMED BY EXPEDITION DRILLING BETWEEN 05/03/10 AND 05/20/10 AND OBSERVED BY GZA PERSONNEL. |
| TB-302 | INDICATES 2010 SOIL BORING LOCATION PERFORMED BY EXPEDITION DRILLING BETWEEN 05/03/10 AND 05/20/10 AND OBSERVED BY GZA PERSONNEL. |
| TP-306 | INDICATES 2010 TEST PIT EXPLORATION LOCATION PERFORMED BY T. FORD BETWEEN 06/01/10 AND 06/16/10 AND OBSERVED BY GZA PERSONNEL. |
| B-109/ MW-109 | INDICATES HISTORIC EXPLORATION LOCATION. TYPE OF EXPLORATION & DATE VARIES-SEE PLAN FOR DETAILS |
| TB-4 | INDICATES HISTORIC EXPLORATION SOIL BORING LOCATION PERFORMED BY ATLANTIC. TYPE OF EXPLORATION & DATE VARIES-SEE PLAN FOR DETAILS |
| W-BVE TP-11 | WESTON/BLACKSTONE VALLEY ELECTRIC TEST PIT LOCATION |
| SC-31 O | INDICATES ARCADIS SEDIMENT SAMPLE LOCATION (2008) |
| — — — — | INDICATES INFERRED STRATIGRAPHY |
| ▪▪▪▪▪▪ | SITE AREA BOUNDARY LINE |
| — - - — | PROPERTY LINE |

## SOIL/BEDROCK STRATIGRAPHY LEGEND

- FILL
- SILT
- SAND
- CONCRETE
- TILL
- BEDROCK

## VISUAL OBSERVATIONS LEGEND

| | PETROLEUM -LIKE | COAL TAR -LIKE |
|---|---|---|
| SHEEN | | |
| STAINED | | |
| COATED | | |
| BLEBS | | |
| SATURATED | | |
| OIL/TAR | | |

MISCELLANEOUS
- TRACE BLUE STAINING
- HEAVY BLUE STAINING

SCALE IN FEET
0 20' 40' 80' 160' HORIZ.
0' 2' 4' 8' 16' VERT.



| NO. | ISSUE/DESCRIPTION | BY | DATE |
|---|---|---|---|

# FORMER TIDEWATER FACILITY

PAWTUCKET, RHODE ISLAND

CROSS SECTIONAL PROFILE G-G'

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists 530 BROADWAY PROVIDENCE, RHODE ISLAND 02909 (401) 421-4140

PREPARED FOR: NATIONAL GRID

| | | | |
|---|---|---|---|
| PROJ MGR: MSK | REVIEWED BY: WF | CHECKED BY: MSK | FIGURE |
| DESIGNED BY: WF | DRAWN BY: CRD | SCALE: 1"= 40" | 11 |
| DATE JANUARY 2011 | PROJECT NO. 43654.00 | REVISION NO. 0 | SHEET NO. 12 OF 24 |