Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
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WATER
CONSTRUCTION MANAGEMENT

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October 11, 2017
GZA File No. 03.0033554.60-C

Mr. Joseph Martella
Rhode Island Department of Environmental Management (RIDEM)
Office of Waste Management
235 Promenade Street, 3rd Floor
Providence, Rhode Island 02908

Re: Short Term Response Action Plan (STRAP) Addendum
Proposed Liquefaction Facility
121 Terminal Road
RIDEM File No. SR-28-1152
RIDEM Case Number: 98-004
Providence, Rhode Island

Dear Mr. Martella:

GZA GeoEnvironmental, Inc. (GZA), on behalf of National Grid LNG LLC (NGLNG), has prepared this *Short Term Response Action Plan (STRAP) Addendum* for the Proposed Liquefaction Project located in Providence, Rhode Island (herein referred to as the Site). GZA prepared and submitted a *STRAP* to RIDEM for the Proposed Liquefaction Project on May 12, 2017 (referred to herein as the May 2017 *STRAP*). This addendum serves as our response to your *STRAP Comment Letter* dated October 6, 2017. For your convenience, each of the Department's comments are repeated below followed by our responses in italics.

Comment No.1a:
Page 4, Section 3.1 (Project Description), Please clarify the planned order of proposed remedial events, including raising the level of the STRAP Area, pre-drilling/driving piles, installing underground utilities, removing existing groundwater monitoring wells, reinstalling replacement monitoring wells, installing engineered caps and implementing related restoration activities, etc.

Response:
The proposed liquefaction project schematic is illustrated on Figure 6, Proposed Final Conditions Plan. These figures, which were included in the May 2017 STRAP, are attached for reference.

Activities under this STRAP will include installing erosion and sedimentation controls, testing of and import of clean fill materials, grading and off-Site disposal of excess materials, management of excess soil and groundwater during earthwork activities, installation of engineered caps and restoration activities (fencing, gate installation and monitoring well re-installation).

With respect to planned construction sequence, the following provides the currently anticipated details of work within the STRAP Area; please note, however, that the planned order of work is subject to change based on Site conditions and Federal Energy Regulatory

Commission (FERC) approvals of the contractor's implementation plan. (Limits of the STRAP Area are shown on Figure 2 of the May 2017 STRAP which is attached here for reference.) Following installation of erosion controls and establishment of the temporary laydown area, initial subgrade construction will include tie-in to existing gas lines, water lines and installation of the storm water discharge line and underground electric/control lines. Next, pre-clearing or pre-drilling of selected piles will be completed. The majority of the STRAP Area will be raised approximately 9 to 11 feet above existing grade. This work will be completed incrementally, once initial subgrade construction and utility tie-ins are completed, until the finish subgrade is achieved. This incremental filling will include installation of stone pile caps for slope stability and riprap revetment. Raising the area will help to protect the liquefaction facility from damage during storm events. Installation of piles for building and equipment will take place throughout the entire STRAP Area at various stages of Site preparation and construction, as determined by the contractor. All areas of soil and groundwater disturbance will be capped as described herein to mitigate potential direct exposure to underlying impacted soils consistent with RIDEM requirements. All imported fill will be tested in accordance with the sampling requirements discussed in Section 6.4 of the May 2017 STRAP. The project will result in the creation of additional impervious area at the Site. The stormwater runoff generated from the new impervious areas will be treated via a forebay and lined sand filter system designed in accordance with the Rhode Island Stormwater Design and Installation Standards Manual (RISDISM). No infiltration into Site soils are proposed under this STRAP. A final outfall is proposed for discharge to the Providence River. Installation of engineered caps includes final paving for roadways and final tie-in into storm water collection systems.

It is currently estimated that approximately 2,988 cubic yards (CY) of excess soil materials will be removed to facilitate installation of piles and utilities. The contractor may reuse Site soil materials, but will only do so under an engineered cap (described in Section 6.1 of the May 2017 STRAP). All excess soil materials not reused under an engineered cap will be disposed of off-Site at a licensed and permitted facility. The excess soil will be managed in an approximately 10,000 square foot area (see below response to Comment No. 1d) outside of the 200-foot Coastal Resource Management Council (CRMC) jurisdictional zone.

The construction of the liquefaction facility will require the use of a temporary laydown area and construction access road. No earthwork activities are proposed in this temporary laydown area or construction access road. This area will not be capped as part of this work as the laydown area will be utilized for storage and parking only. The laydown area is located to the west of the Project Work Site and covers approximately 6.2 acres. This proposed laydown area is illustrated on the attached Figure 1A, Laydown Plan. Crushed stone will be utilized to stabilize surfaces for storage and parking. The soil and groundwater management area is included within the temporary laydown area, as presented in Figure 1A and further described in the response to Comment No.1d.

In accordance with our May 2016 Proposed Upcoming Groundwater Monitoring Activities letter submitted to RIDEM, monitoring wells at the Project Work Site have already been decommissioned. Monitoring well decommissioning was conducted in accordance with Appendix 1 of the Rhode Island Water Quality Rules.

After restoration activities at the Site are complete, select monitoring wells will be replaced/installed. It is anticipated that NGLNG will submit a Supplemental Site Investigation Work Plan (SSSIWP) with final proposed locations and installation methods to RIDEM for review prior to performing this work. The response to Comment No.10 provides additional information about these monitoring well replacement activities.

Comment No.1b:
Page 4, Section 3.1 (Project Description), The third paragraph indicates *"Note the majority of the Project Work Site will be raised approximately 9 to 11 feet above existing grade."* This seems to contradict other references to the very

limited amount of strictly non-intrusive work proposed to be completed in the Project Work Site. Please clarify this discrepancy.

Response:
The referenced statement on Page 4, Section 3.1 incorrectly refers to the "Project Work Site". It should have referenced the "STRAP Area", the majority of which is being raised approximately 9 to 11 feet above existing grade.

Comment No.1c:
Page 4, Section 3.1 (Project Description), What are the planned dimensions of the temporary laydown area?

Response:
The laydown area is located to the west of the Project Work Site and covers approximately 6.2 acres. This proposed laydown area is illustrated on the attached Figure 1A, Laydown Plan.

Comment No.1d:
Page 4, Section 3.1 (Project Description), Will any regulated materials be stored in the temporary laydown area, and if so, how?

Response:
Yes, regulated materials (soil and groundwater) will be stored in the Laydown Area. The proposed location for the regulated material storage is presented on the attached Figure 1A with a call out "Soil and Groundwater Management Area".

Soils will be temporarily stored in the soil and groundwater management area on at least two layers of polyethylene sheeting and covered with a layer of polyethylene sheeting (or NGLNG or environmental professional approved equivalent) to control the generation of wind-blown dusts and potential migration of soils with stormwater runoff. Stockpile areas will be equipped with appropriate controls to limit the loss of the cover and protect against storm water erosion. These controls will include the installation of Filtrexx Siltsoxx (or equivalent) surrounding the perimeter of the stockpiles and weighting the polyethylene cover with sand bags or concrete blocks. Stockpiles will be inspected daily by the environmental professional. Should tears or punctures be observed in either the polyethylene sheeting covering or underlying the piles, repairs shall be made immediately. Daily shutdown procedures shall include the covering and securing of all stockpiled material area with polyethylene sheeting and appropriately sized materials to secure the polyethylene sheeting in place. All excess soil will be disposed/recycled off-Site at a licensed and permitted disposal/recycling facility. This area will be completed with a RIDEM-approved engineered cap during future remedial activities.

All groundwater will be containerized into fractionation tanks and disposed/recycled off-Site at a licensed and permitted disposal/recycling facility approved by NGLNG. These fractionation tanks will be stored in the soil and groundwater management area.

Comment No.1e:
Page 4, Section 3.1 (Project Description), Please provide a site figure showing the proposed location and layout of the temporary laydown area.

Response:
This proposed laydown area is illustrated on the attached Figure 1A, Laydown Plan.

Comment No. 2:
Page 4, Section 3.2 (Former MGP Structures) - Are there any known or suspected subsurface former MGP structures that may still contain MGP residuals such as coal tar, which may be disturbed during construction or predrilling?

Response:
Former Manufactured Gas Plant (MGP) structures within the proposed STRAP Area are shown on Figure 3 of the May 2017 STRAP. There are no known or suspected subsurface former MGP structures that contain MGP residuals that will be disturbed during the construction or pre-drilling. Former MGP structures located within the STRAP Area were either cleaned out and backfilled as part of previous remedial activities or will not be disturbed as part of the proposed STRAP work.

Comment No. 3:
Page 8, first sentence — The referenced Site Piling Plan is in Appendix D, not Appendix C, please correct this.

Response:
Acknowledged. The Site Piling Plan (Drawing Number 102761-B-00-0000-STR-SK-5800 REV A) is attached for reference.

Comment No. 4:
Page 13, Section 6.1 (Excavated Soil Reuse) - Please clarify how and where any soils which exhibit excessive visual or olfactory evidence of contamination will be segregated and temporarily stored until off-Site disposal/recycling is done. Please provide a site figure showing the proposed management/storage locations. If appropriate, this item may be included on the site figure requested in comment 1.e above.

Response:
As described in Section 6.1 of the May 2017 STRAP, if observations of non-aqueous phase liquid (NAPL), buried containers, or unusual odors are made during excavation, work in the subject areas will stop immediately. These materials will be segregated and stockpiled separately by the contractor and characterized (visual observations and total volatile organic compound (TVOC) headspace screening via a photoionization detector (PID) or equivalent) by the environmental professional. The contractor, with guidance from the environmental professional, will segregate and separately stockpile any soil with free NAPL or unusual odors based on visual observations and TVOC headspace screening via a PID. Any soils which exhibit excessive visual or olfactory evidence of impact or evidence of NAPL will be segregated and stockpiled separately for off-Site disposal/recycling at a permitted/licensed facility and will be kept in designated, separate piles from other Site soils that may be reused under the engineered cap. These excessively impacted soils will be stored in the soil and groundwater management area (see attached Figure 1A, Laydown Plan) and managed as described in the response to Comment No.1d.

Comment No.5:
Page 14, Section 6.3 (Soil Disposal/Recycling) - Please clarify how and where excess soils described in this section will be segregated and temporarily stored until off-Site disposal/recycling occurs. Please provide a site figure showing the proposed management/storage locations. If appropriate, this item may be included on the site figure requested in comment 1e above.

Response:
Please see response to Comment No.1d above.

Comment No.6:
Page 14, Section 6.4 (Import Sampling) - Please clarify how and where imported soil material described in this section will be segregated and temporarily stored. Please provide a site figure showing the proposed management/storage locations. If appropriate, this item may be included on the site figure requested in comment 1.e above.

Response:
The majority of soil imported to the Site will be placed directly as fill and will generally not be stockpiled. If imported soil requires stockpiling, the imported soil stockpiles will be managed as follows. Stockpiles of imported materials will be placed in close proximity to the work area where the material will be ultimately used. Stockpiled materials will be placed on either previously placed clean soil or at least two layers of polyethylene sheeting and covered with a layer of polyethylene sheeting (or NGLNG or environmental professional approved equivalent) to control the generation of wind-blown dusts and potential migration of soils with stormwater runoff. Stockpiles will be inspected daily by the environmental professional. Note that material imported to the Site is subject to testing requirements as described in Section 6.4 of the May 2017 STRAP.

Comment No.7:
Page 15, Section 6.6 (Required Air Monitoring and Controls) - Please include a copy of Attachment N, Clarification to the Proposed Air Monitoring Program for STRAP Activities, STRAP Proposed Liquefaction Project, 121 Terminal Road/642 Allens Avenue, Providence, Rhode Island, from the October 5, 2017, Response to Public Comments, in the final STRAP Addendum.

Response:
Attachment N, Clarifications to the Proposed Air Monitoring Program for STRAP Activities, from the October 5, 2017 Meeting Summary, Response to Public Comments and Additional Clarifications for the STRAP: Proposed Liquefaction Project prepared by GZA on behalf of NGLNG has been attached to this STRAP Addendum for reference.

Comment No.8:
Page 16, Section 6.7 (Decontamination Protocol) — Indicates that "If sediment is tracked out of the Project Site, the sediment must be removed by sweeping, shoveling, or vacuuming by the end of the work day." Please revise this section to indicate that any regulated material tracked out of the Project Site shall be removed and appropriately managed promptly and completely.

Response:
Acknowledged. In the unlikely event that any regulated material (sediment, soil or groundwater) is tracked out of the Project Work Site, the regulated material will be promptly removed by sweeping, shoveling, or vacuuming and managed in accordance with Section 6.7 of the May 2017 STRAP. All entrances/exits to the Project Work Site (limits are presented on the attached Figure 2 from the May 2017 STRAP) will be inspected at least two times per day by the environmental professional.

Comment No. 9:
Page 16, Section 6.8 (Soil Stockpile Management Requirements) - Please provide a site figure showing the proposed locations of the temporary soil stockpile area, the central soil stockpile area, and the long-term soil, construction

material and/or debris stockpile areas referenced in this Section. If appropriate, this item may be included on the site figure requested in comment No. 1e above.

Response:
Please see response to Comment No. 1d above. Temporary stockpiles will be staged on two layers of minimum 6-mil polyethylene sheeting or in water-tight containers directly proximate to the excavation area. At the end of each work day and to the extent practical during the workdays, working stockpiles and drilling spoils will be relocated to a central stockpile area and managed consistent with the response to Comment No.1d above. All other stockpiles (including the central stockpile area, long term, construction material and/or debris stockpiles) will be located in the soil and groundwater management area described above in the response to Comment No.1d and shown on the attached Figure 1A, Laydown Plan.

Comment No.10:
Page 17, Section 6.11 (Monitoring Well Re-Installation) — Section 4.4 (Groundwater and NAPL Measurements) indicated that Light Non-Aqueous Phase Liquid (LNAPL) has been historically detected in the STRAP Area at thicknesses ranging from trace amounts to 3.58 feet, in nine (9) monitoring wells. This section indicates that only three (3) replacement monitoring wells are proposed. Please clarify the reason for decreasing the number of potential future LNAPL monitoring/recovery wells. Please be advised that the final remedy for the Site will likely include some form of long-term LNAPL gauging and recovery in addition to groundwater monitoring.

Response:
Acknowledged. The long-term remedy for the Site will include NAPL gauging and recovery in addition to groundwater monitoring.

As described in Section 4.4 of the May 2017 STRAP, LNAPL has been historically (between 2002 and 2016) detected in the STRAP Area at thicknesses ranging from trace amounts to 3.58 feet, in wells RCA-4, RCA-21, RCA-39, RCA-40, CHES RW-2, CHES RW-3, CHES RW-4, CHES RW-5 and RW-1. Please see the below rationale for monitoring well replacement or permanent decommissioning for each well where LNAPL was historically detected.

- *CHES RW-3/RCA-4: CHES RW-3 was installed as a replacement for RCA-4 in 2002 and since 2002, LNAPL had been detected in trace amount only. We do not believe that these limited detections of LNAPL warrant replacement of this well.*
- *RW-1/RCA-21: RW-1 was installed as a replacement for RCA-21 in 2014 and since 2014, LNAPL has been detected between trace amounts and 0.02 feet. We do not believe that these limited detections of LNAPL warrant replacement of this well.*
- *RCA-39: RCA-39 is an existing monitoring well. We do not anticipate decommissioning RCA-39.*
- *CHES RW-5/RCA-40: CHES RW-5 was located approximately 5 feet to the west of RCA-40. In the last ten years, LNAPL has been detected at thicknesses of up to only 0.09 feet, with most of the observations between non-detected or trace amounts only. We do propose to replace RCA-40 with RCA-40R. This replacement monitoring well should provide adequate coverage for CHES RW-5.*
- *CHES RW-4: In the last ten years, LNAPL has been detected at thicknesses of up to only 0.1 feet in CHES RW-4. We do not believe that these limited detections of LNAPL warrant specific replacement of CHES RW-4. In addition, proposed replacement wells RCA-5R and GZ-315DR are located approximately 40 feet downgradient of CHES RW-4.*
- *CHES RW-2: Since 2002, LNAPL has been detected in trace amounts only in CHES RW-2. We do not believe that these limited detections of LNAPL warrant replacement of this well.*

We believe that the proposed well replacement as described in Section 6.11 of the May 2017 STRAP will provide an adequate network of wells for current and future LNAPL gauging in the Project Work Site.

Comment No.11:
Regarding Drawing 4 (Completed Remedial Activities) and Drawing 6 (Proposed Final Conditions Plan), please clarify plans for areas within the proposed Project Work Site that have not been subject to prior remediation and capping, and do not currently have an existing equivalent cap, but are not identified on Drawing 6 as being subject to proposed capping. Please be advised that any unremediated areas on the Site, that are not subject to remedial activities under the Liquefaction STRAP, shall be subject to remediation under the anticipated Site Investigation Report (SIR) Addendum for the remainder of the Site.

Response:
Acknowledged. All areas disturbed by the proposed STRAP activities will be restored with a RIDEM-approved engineered cap consistent with those presented in the May 2017 STRAP. Areas within the Project Work Site which do not have an existing equivalent cap and are not identified on Drawing 6 as being subject to proposed capping will be subject to remediation under the future SIR Addendum for the remainder of the Site.

Comment No.12:
Please provide certification that the STRAP and STRAP Addendum were prepared under the supervision of a Registered Professional Engineer in the State of Rhode Island, stamped by that engineer.

Response:
Please see the attached certification page.

Comment No.13:
Please submit a STRAP Addendum that addresses the abovementioned comments on or before October 11, 2017.

Response:
As requested this STRAP Addendum is submitted on or before October 11, 2017.

This *STRAP Addendum* is subject to the attached Limitations.

We trust this information addresses your comments. Should you have any questions or comments regarding the information presented herein, please do not hesitate to contact the undersigned or Amy Willoughby of National Grid at (781) 907-3644.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

Sophia Narkiewicz, P.E.
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401-421-4140 – sophia.narkiewicz@gza.com

James J. Clark, P.E.
Consultant/Reviewer
860-858-3134 - james.clark@gza.com

Margaret S. Kilpatrick, P.E.
Associate Principal
401-421-4140 – margaret.kilpatrick@gza.com

cc: Ms. Amy Willoughby, National Grid
Federal Energy Regulatory Commission (FERC) Docket CP16-121-000

Attachments:

Figure 6, Proposed Final Conditions Plan (from the May 2017 *STRAP*)
Figure 2, Overall Aerial Photograph (from the May 2017 *STRAP*)
Figure 1A, Laydown Plan
Site Piling Plan (Drawing Number 102761-B-00-0000-STR-SK-5800 REV A)
Attachment N, Clarifications to the Proposed Air Monitoring Program for STRAP Activities, from the October 5, 2017 *Meeting Summary, Response to Public Comments and Additional Clarifications for the STRAP: Proposed Liquefaction Project* prepared by GZA on behalf of NGLNG
Certification Page
Limitations

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FIGURE 6, PROPOSED FINAL CONDITIONS PLAN (FROM THE MAY 2017 STRAP)

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 FILE14-152_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.
- ELECTRONIC CAD FILES PROVIDED BY KIEWIT
  1. "2007EXP_102761-CIV_SITE.DWG"
  2. "2007EXP_102761-CIV_LAYDOWN.DWG"
  3. "102761_MEC_STR_BASE.DWG"
  4. "102761-SURVEY_SITE.DWG"
  5. "2007EXP_102761-CIV_STORM_.DWG"
  6. "2007EXP-102761-CIV_SURFACING.DWG"
  7. "102761-CIV_GRADING.DWG"
  8. "POST DEVELOPMENT DRAINAGE MAP.DWG
- PDFS OF THE FOLLOWING DRAWINGS PROVIDED BY NATIONAL GRID
  1. "CATCH BASINS AND SANITARY SEWER SYSTEM" PREPARED BY PROVIDENCE GAS COMPANY, DATED SEPTEMBER 25, 1981.
  2. "PLAN SHOWING UNDERGROUND UTILITIES LNG FACILITY" DATED 0CTOBER 6, 1983, "SUBSURFACE UTILITY ENGINEERING" PREPARED BY BAYSTATE SUBSURFACE INVESTIGATION, INC., DATED MAY 17, 2005.

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.

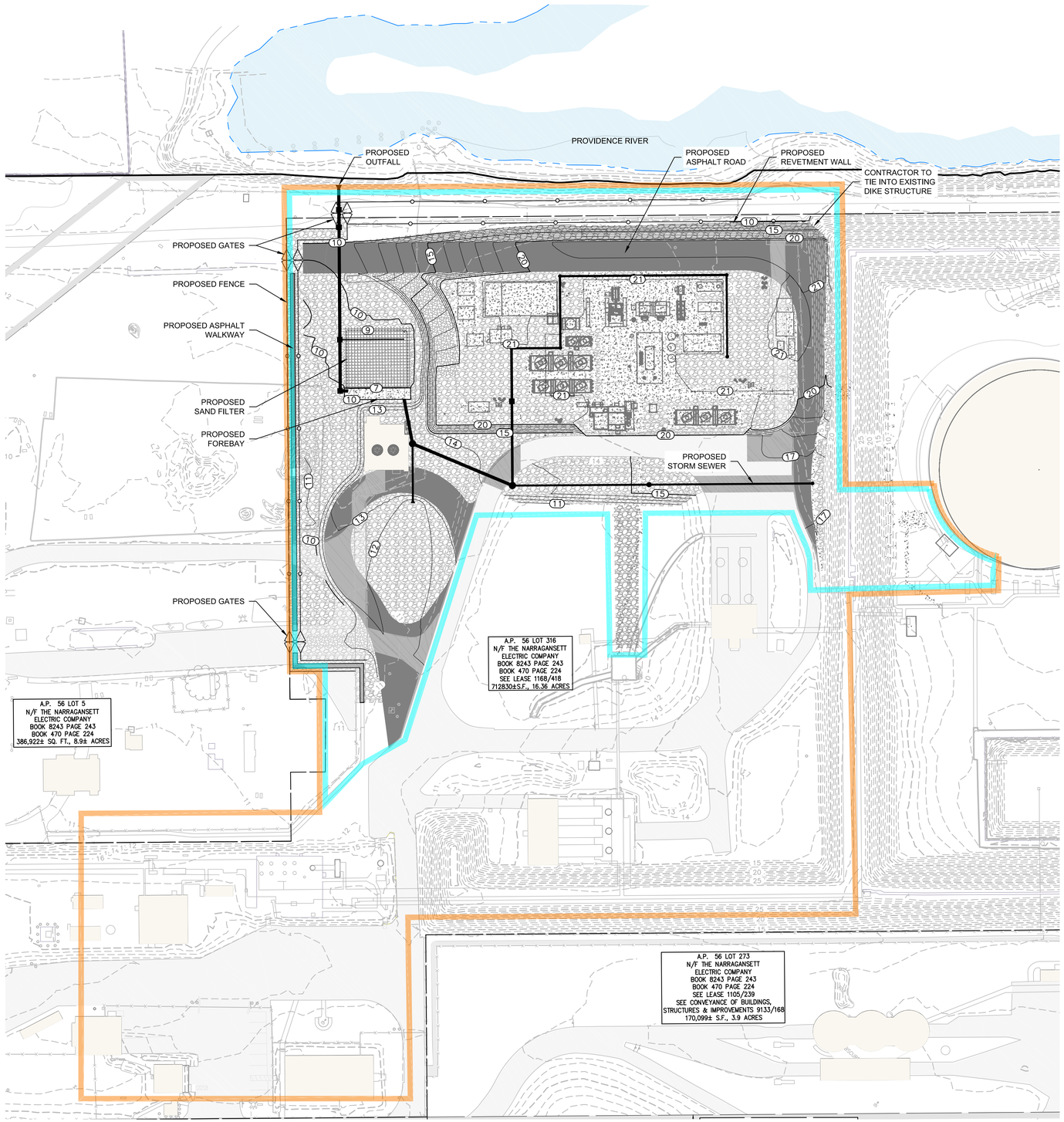
4) SELECT PRESENTED SITE UTILITIES WERE TAKEN FROM HISTORIC FIGURES PROVIDED BY NATIONAL GRID. ALL UTILITY LOCATIONS ARE APPROXIMATE AND HAVE BEEN ALIGNED AND ADJUSTED FOR THE "BEST FIT" AND THESE DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED. UTILITIES ARE SHOWN FOR REFERENCE ONLY. **OTHER LOCATIONS MAY EXIST.**

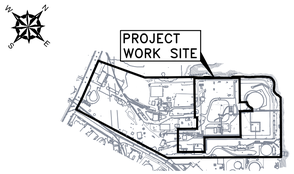
5) ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.

6) 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.

7) SITE BOUNDARIES ARE APPROXIMATE.

8) DETAILS OF REMEDIAL CAPPING ARE PRESENTED ON FIGURE 7.





KEY PLAN:
SCALE: 1"=800'

LEGEND:

- EXISTING STRUCTURE
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING PAVEMENT
- EASEMENT AREA
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- PROPERTY LINES
- INTERIOR PROPERTY LINE
- PROPOSED CONTOUR (MAJOR 5 FOOT INTERVAL)
- PROPOSED CONTOUR (MINOR 1 FOOT INTERVAL)
- PROPOSED ASPHALT CAP
- PROPOSED CRUSHED STONE CAP
- PROPOSED CONCRETE CAP
- PROPOSED SAND FILTER
- PROJECT WORK SITE
- STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)
- PROPOSED ROUND CATCH BASIN
- PROPOSED SQUARE CATCH BASIN
- PROPOSED RIP RAP CAP

NATIONAL GRID PROPOSED LIQUEFACTION PLANT
PROVIDENCE, RHODE ISLAND
SHORT TERM RESPONSE ACTION PLAN (STRAP)

PROPOSED FINAL CONDITIONS PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING 6
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	
DATE: MAY, 2017	PROJECT NO. 33554.60	REVISION NO. 0	SHEET NO. 6 OF 7

FIGURE 2, OVERALL AERIAL PHOTOGRAPH (FROM THE MAY 2017 STRAP)

LEGEND:

- PROPERTY LINES
- 642 ALLENS AVENUE FORMER MGP SITE
- PROJECT WORK SITE
- STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)

REFERENCE NOTES:

1. THIS MAP CONTAINS THE ESRI ARCGIS ONLINE BING MAPS AERIAL LAYER PACKAGE. IMAGE COURTESY OF USGS EARTHSTAR GEOGRAPHICS SIO © MICROSOFT CORPORATION 2015.
2. PARCEL AND STREET 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.
3. SITE BOUNDARIES ARE APPROXIMATE.

N W E S

0 75' 150' 300' 450'

SCALE IN FEET 1" = 150'

NATIONAL GRID PROPOSED LIQUEFACTION PLANT
PROVIDENCE, RHODE ISLAND
SHORT TERM RESPONSE ACTION PLAN (STRAP)

OVERALL AERIAL PHOTOGRAPH

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

PREPARED FOR: nationalgrid

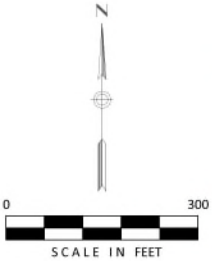
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	2
DATE: MAY, 2017	PROJECT NO. 33554.60	REVISION NO. 0	SHEET NO. 2 OF 7

FIGURE 1A, LAYDOWN PLAN

Kiewit	LAYDOWN PLAN	KIEWIT DOCUMENT NO. 102761-B-00-0000-CIV-SK-6018			
nationalgrid	FIELDS POINT LIQUEFACTION PROJECT PROJECT NO.:102761	IFP	REV	0	1 OF 1

Legend

- Proposed Project Boundary
- Proposed Laydown Area
- Proposed Construction Access
- Proposed Soil and Groundwater Management Area

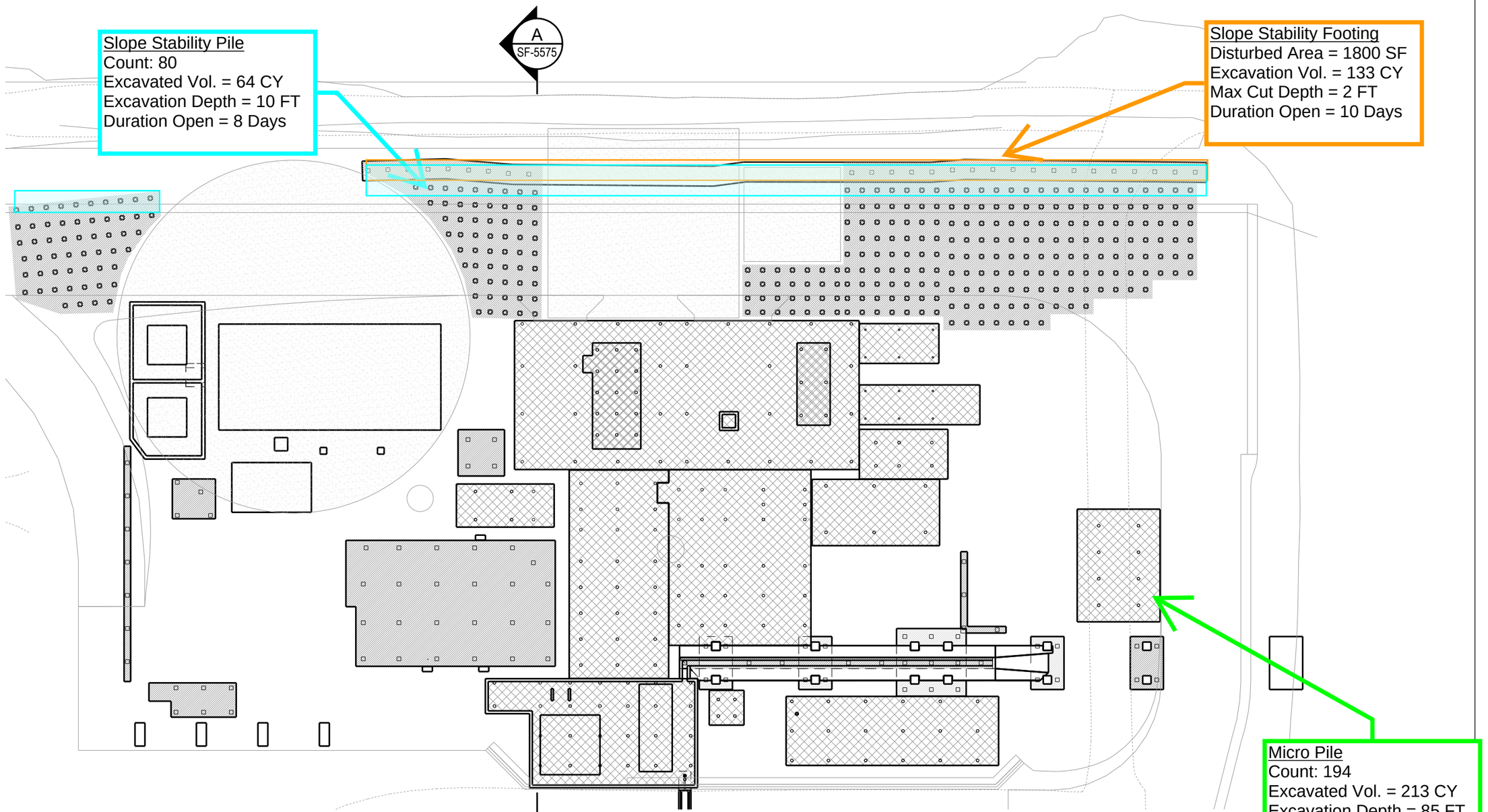


Notes:
1. Sources: Esri, DeLorme, FAO, IFL, NGA, NOAA, EPA

Kiewit Engineering & Design Co. 9401 Renner Boulevard Lenexa, Kansas 66219	Fields Point Liquefaction Project National Grid LNG, LLC	Figure 1A Laydown Plan

SITE PILING PLAN (DRAWING NUMBER 102761-B-00-0000-STR-SK-5800 REV A)

Kiewit	SITE PILING PLAN	KIEWIT DOCUMENT NO. 102761-B-00-0000-STR-SK-5800	nationalgrid	PROVIDENCE LIQUEFACTION PROJECT PROJECT NO.: 102761	REV A		DATE 11-22-16



14" DRIVEN PILES

10" MICROPILES

EXISTING FOUNDATION

SITE PILING PLAN

Kiewit Engineering & Design Co. 9401 Renner Boulevard Lenexa, Kansas 66219	Fields Point Liquefaction Project National Grid LNG, LLC

ATTACHMENT N, CLARIFICATIONS TO THE PROPOSED AIR MONITORING PROGRAM FOR STRAP ACTIVITIES, FROM THE OCTOBER 5, 2017 MEETING SUMMARY, RESPONSE TO PUBLIC COMMENTS AND ADDITIONAL CLARIFICATIONS FOR THE STRAP: PROPOSED LIQUEFACTION PROJECT PREPARED BY GZA ON BEHALF OF NATIONAL GRID LNG

Attachment N
Clarifications to the Proposed Air Monitoring Program for STRAP Activities
STRAP-Proposed Liquefaction Project
121 Terminal Road / 642 Allens Avenue
Providence, Rhode Island

October 5, 2017
GZA Job No. 03.0033554.60

PROPOSED AIR MONITORING PROGRAM

The following provides additional details concerning the proposed air monitoring program (AMP) to be implemented during earthwork activities associated with the proposed Liquefaction Project Short Term Response Action Plan (STRAP). It was further refined based on comments received during the July 13, 2017 and August 9, 2017 public meetings and the comment period. As a result, we have included three unmanned continuous air monitoring stations located along the perimeter of the STRAP area (known herein as the STRAP area perimeter). These stations will likely be positioned in the direction of the nearest receptors (primarily along the southwestern and southeastern STRAP area perimeter).

The AMP for the proposed Liquefaction project STRAP, as originally presented, was developed based on the results of the estimated emissions presented in Section 5.0 of the May 12, 2017 *STRAP*. It was designed to achieve the following primary objectives:

- Minimize exposure risks to both on-Site workers and the surrounding community associated with potential airborne constituents during implementation of the proposed STRAP work; and
- Provide an early warning of Site conditions allowing oversight personnel to proactively manage potential air quality issues via implementation of engineered controls and/or adjustments to work practices/procedures, including stopping the work.

The AMP for the proposed STRAP work has been designed to be protective by using real-time air monitoring. The real-time monitoring will involve the use of portable instrumentation. This monitoring strategy is designed to provide an early warning to Site personnel of potential air quality issues and allow for the implementation of engineered controls and/or modifications to work practices. This monitoring will include both any observations of odors or visual dust as well as measurements of total volatile organic compounds (TVOCs) and respirable dust using field instruments. The air monitoring program for this STRAP is at least comprehensive with previous air monitoring programs used for similar size/scope projects performed at the Site.

AIR MONITORING PROGRAM

During all STRAP earthwork activities, real time air monitoring will be performed involving the use of the following portable instrumentation.

- Portable Photoionization Detector (PID) MiniRAE – this instrument measures TVOCs with a detection limit of 0.1 parts per million (ppm) or 100 parts per billion (ppb). TVOC readings are measured every 10 seconds and an average is electronically logged every 3 minutes.

- DustTRAK Dust Meter – this instrument uses infrared electromagnetic radiation to sense airborne particles less than 10 microns in size. The detection limit for this instrument is 1 microgram per cubic meter ($\mu g/m^3$). Similar to the PID, the readings from this hand held instrument are measured every 10 seconds and an average is electronically logged every 3 minutes.

Portable field equipment was determined to be appropriate for the STRAP based on the nature of the proposed earthwork (pile driving and shallow utility trenching). In addition, the use of portable field equipment allows field personnel responsible for environmental monitoring to respond to active work locations and changing wind directions.

The readings from these portable instruments are displayed in real time on the units and regularly monitored by GZA's field personnel. If readings above the action levels are encountered (see below), a visible and audible alarm is activated (including notification to field personnel). The data is also electronically logged on each unit and available for download at the end of the work day. All monitoring field equipment is calibrated at the beginning of each work day and as necessary during the work day, consistent with the manufacturer's recommendations.

During activities which involve earthwork, readings will be collected both within the work area itself as well as at certain pre-designated locations along the STRAP area perimeter (known herein as perimeter locations). Refer to the attached Figure N1 (*Air Monitoring Plan – Perimeter Locations*) for approximate perimeter locations. Field personnel will select the appropriate monitoring location for perimeter readings depending on activities being performed and wind direction; location and number of perimeter monitoring locations may also be subject to modification as the earthwork progresses. As indicated, three of these perimeter locations will be unmanned stations designated for continuous air monitoring. At the remaining perimeter locations, readings will be collected a minimum of 4 times per day during the course of an 8-hour work day; these readings will be collected over a minimum period of 6 minutes.

ACTION LEVELS/RESPONSE ACTIONS

The following table presents the real-time monitoring action levels for the STRAP perimeter locations. Figure N1 shows approximate perimeter locations that will be monitored during the earthwork. Note, as shown on Figure N1, these monitoring locations are conservatively situated proximate to the STRAP area perimeter.

Real Time Monitoring – Action Levels	
Compound	**STRAP Perimeter**
Total Volatile Organic Compounds (TVOC)	1 ppm
Respirable Particulate Dust (PM_{10})	150 µg/m^3

The above action levels were conservatively established to be protective of worker safety and public health. The presented action levels are consistent with those for similar projects with similar site conditions that have been reviewed and approved by the Rhode Island Department of Environmental Management (RIDEM). In the event these values are exceeded at sustained levels at the perimeter locations (*i.e.,* in excess of the respective action levels for a period of 5 minutes), GZA will identify the likely cause, and the Contractor will implement appropriate engineering controls and/or modify work practices. The following table presents the actions that will be undertaken if a sustained exceedance of either respirable dust or TVOC is encountered.

Compound	Immediate Actions in the Event of a Sustained Exceedance of Action Levels
Total Volatile Organic Compounds (TVOC)	1. Evaluate the likely source of sustained readings (i.e. truck emissions, moisture in the area, off-Site source, actual work, etc.) 2. If determined that the source is the actual work, Contractor shall implement appropriate engineering controls and/or modify work practices to address exceedances. Engineering controls shall include covering of materials with polyethylene sheeting, application of odor suppressing foams, application of water, limiting trenching lengths, backfilling excavation, etc.
Respirable Particulate Dust (PM_{10})	1. Evaluate the source of sustained readings (i.e. earthwork, possible weather events, off-Site source, etc.) 2. If determined that the source is the actual work, Contractor shall implement appropriate engineering controls (e.g., application of water, calcium chloride, mulching work area, etc.) and/or modify work practices to address the exceedances.

The likely source of the sustained TVOC or respirable particulate dust readings will be evaluated by Site personnel based field deductions using a combination of visual and/or olfactory evidence and real-time field measurements. By using portable field equipment, Site personnel can easily move these instruments from location to location to "track down" likely sources of emissions.

If determined that the source is the actual work, examples of engineered controls and/or modifications to work practices to address exceedances which may be implemented include application of water and/or calcium chloride to mitigate fugitive dust, and covering open trench excavations with plastic sheeting, and/or application of specially engineered foams to mitigate vapor emissions. These activities would be implemented within the limits of work.

As would be typical of any project at this Site, in the unlikely event that unexpected soil conditions are encountered, the Contractor will be directed to halt Site work and cordon off the area. The area will be stabilized and covered with plastic sheeting and work will not proceed until an appropriate course of action is determined based on the nature of materials encountered.

DOCUMENTATION AND REPORTING

Results of the air monitoring will be provided to RIDEM on a weekly basis. These submittals will be publicly available on the 642 Allens Avenue website RIDEM maintains (http://www.dem.ri.gov/programs/wastemanagement/site-remediation/Providence-Gas-Co.php). In addition, in the event of sustained perimeter exceedance, these weekly reports will include information regarding the date/time of exceedance, nature of exceedance and field measures/work practice modifications implemented in response to the exceedance.

Figure N1 Air Monitoring Plan – Perimeter Locations

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LEGEND:

- PROPERTY LINES
- 642 ALLENS AVENUE FORMER MGP SITE
- PROJECT WORK SITE
- STRAP AREA (LIMITS OF SOIL AND GROUNDWATER DISTURBANCE)
- PROPOSED PERIMETER MONITORING LOCATION

REFERENCE NOTES:

1. THIS MAP CONTAINS THE ESRI ARCGIS ONLINE BING MAPS AERIAL LAYER PACKAGE. IMAGE COURTESY OF USGS EARTHSTAR GEOGRAPHICS SIO © MICROSOFT CORPORATION 2015.
2. SITE BOUNDARIES ARE APPROXIMATE.
3. ACTUAL LOCATIONS OF PROPOSED PERIMETER MONITORING LOCATIONS WILL BE FIELD DETERMINED.

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W E
S

0 75' 150' 300' 450'
SCALE IN FEET 1" = 150'

NATIONAL GRID PROPOSED LIQUEFACTION PLANT
PROVIDENCE, RHODE ISLAND
SHORT TERM RESPONSE ACTION PLAN (STRAP)

AIR MONITORING PLAN
PERIMETER LOCATIONS

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

PREPARED FOR: nationalgrid

PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: SDN	DRAWING
DESIGNED BY: SDN	DRAWN BY: LDT	SCALE: AS NOTED	N1
DATE: OCTOBER 2017	PROJECT NO. 33554.60	REVISION NO. 0	

CERTIFICATION PAGE

GZA GeoEnvironmental, Inc. certifies to the best of its knowledge, that the May 2017 Short Term Response Action Plan (STRAP) and October 2017 Short Term Response Action Plan (STRAP) Addendum, are complete and accurate and have been prepared under the supervision of a Registered Professional Engineer in the State of Rhode Island.

Margaret S. Kilpatrick, P.E.
Associate Principal
GZA GeoEnvironmental, Inc.
Rhode Island Registered Professional Engineer #8114

National Grid certifies, to the best of its knowledge, that the May 2017 Short Term Response Action Plan (STRAP) and October 2017 Short Term Response Action Plan (STRAP) Addendum, is a complete and accurate representation of the contaminated Site and the release(s) and contains all known facts surrounding the release(s).

Amy Willoughby
Lead Environmental Scientist
New England Site Investigation and Remediation Group
National Grid

LIMITATIONS

LIMITATIONS

1. This Short Term Response Action Plan (STRAP) Addendum has been prepared on behalf of and for the exclusive use of National Grid LNG LLC (NGLNG), solely for use in documenting the work completed as described herein at the 121 Terminal Road / 642 Allens Avenue Former MGP ("Site") under the applicable provisions of the State of Rhode Island Department of Environmental Management Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations). This report and the findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor used by any other party in whole or in part, without the prior written consent of GZA GeoEnvironmental, Inc.(GZA) or NGLNG.

2. GZA's work was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and GZA observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. GZA's findings and conclusions must be considered not as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the study. No other warranty, express or implied is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during the work described herein.

3. The observations described in this report were made under the conditions stated therein. The conclusions presented in the report were based upon services performed and observations made by GZA.

4. In the event that NGLNG or others authorized to use this report obtain information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

5. The conclusions and recommendations contained in this report are based in part upon the data obtained from environmental samples obtained from relatively widely spread subsurface explorations. The nature and extent of variations between these explorations may not become evident until further exploration. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.

7. In the event this work included the collection of water level data, these readings have been made in the test pits, borings and/or observation wells at times and under conditions stated on the exploration logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors different from those prevailing at the time measurements were made.

8. The conclusions contained in this report are based in part upon various types of chemical data and are contingent upon their validity. These data have been reviewed and interpretations made in the report. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional chemical data become available in the future, these data should be reviewed by GZA and the conclusions and recommendations presented herein modified accordingly.

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